Tychonis Brahe Dani Thesaurus Observationum, Tomus III

(1925)

by Tycho Brahe (1546–1601), observations; J. L. E. Dreyer (1852–1926), editor, with J. Raeder

Translation by Scott Weisman



Ars Astronomica

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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)

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A note on the work

For twenty-one years on the island of Hven, and afterwards in Bohemia, Tycho Brahe and his assistants recorded what they saw. The observations were entered nightly into folio logbooks that survived Tycho's death, passed to Kepler, were kept by Kepler's son, and were finally bought for the Danish crown; they have been in the Royal Library in Copenhagen ever since. They were the data from which Kepler derived the elliptical orbit of Mars, and they remain the most accurate body of naked-eye positional astronomy ever assembled. This volume is the third part of J. L. E. Dreyer's *Thesaurus Observationum*, the edition that printed those logbooks complete from the manuscripts for the first time, covering 1590 through 1595.

This is a transcription of manuscripts, not a re-edition of a printed book, and it should be read differently from Dreyer's volumes of Tycho's published works. In editing the *Progymnasmata* he emends freely and his notes say what Brahe ought to have written; here his task was to establish what the codices actually say. His footnotes accordingly record manuscript variants and readings of particular codices far more often than corrections.

The manuscripts themselves have never been digitized. Until they are, this edition and Erasmus Bartholin's seventeenth-century collated copy at the Paris Observatory are the only complete witnesses to Tycho's observation books; the *Historia Coelestis* printed at Augsburg in 1666 from Viennese copies is complete but, in Dreyer's own judgement, has "scarcely a column which is not full of errors."

A note on the translation process

This translation was produced with the translation-pipeline. See the linked repository for details on the process.

This edition has been checked at citation grade. A stratified sample of it was independently re-transcribed from the original page by readers given no sight of the translation, and the two readings were then reconciled letter by letter. Every disagreement in the layer a citing reader depends on — figures, names, headings, and whether a passage is present at all — was settled against the page before publication, and none was left open.

What that does and does not mean. It is a claim about a sample, not about every line. A passage the sample did not reach is neither confirmed nor denied, and silence in an independent reading is not agreement. Where the page itself will not settle a reading, this edition withdraws rather than guesses: a bracketed pair marks a genuine ambiguity the original cannot decide, and a question mark a character that could not be read. Those marks are deliberate refusals, and they are worth more than the confident readings they replace.

A note on the references. A scriptural or bibliographic reference given in brackets or parentheses is, in most cases, an **editorial identification of an allusion rather than a citation printed in the source**. Books of this kind quote and weave scripture constantly without naming it, and the identification

is supplied here as a convenience to the reader. Where the source does print a reference of its own, it is given as printed. **An identified allusion is not evidence that the author cited that passage —** look at the original before resting an argument on one.

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

The scanned copy used here was digitized by the University of Toronto Libraries and placed in the public domain through the Internet Archive; the copy was purchased for the University of Toronto Library from a Canada Council special grant for the history of science. The edition was printed at the expense of the Carlsberg Institute under the auspices of Det Danske Sprog- og Litteratur-Selskab.

Translated with the assistance of Claude. The translator thanks the Anthropic team for making this work possible.

Notation and abbreviations

A few conventions have been applied uniformly throughout this translation, so that one quantity is always written one way. They change how a value is *written*, never what it is; where the printed source and this translation differ in notation, the source's own form is recorded in the editorial apparatus.

Numerals are Arabic, even where the source sets Roman ones. Roman numerals are kept only in headings, running headers and signatures, which are transcribed as printed.

Dates are given as year, month, day — *1572 November 11*. Dates are Julian, as the source gives them, and have not been converted to the Gregorian calendar.

Times are written with raised unit letters: $7^{h}\ 36^{m}\ 12^{s}$ for seven hours, thirty-six minutes and twelve seconds. An interval longer than a day carries a raised d — $3^{d}\ 7^{h}$. The degree and minute signs below are never used for time.

Angles are written with the conventional signs — 23° 27′ 30″. Early modern astronomy divides the degree sexagesimally and often runs to places for which modern writing has no common symbol; the orders used in this book are:

sign	order	the source's term
°	degrees	*partes*, *gradus*
′	minutes of arc	*scrupula prima*, *minuta*
″	seconds of arc	*scrupula secunda*
‴	thirds	*scrupula tertia*

A **sign** is 30° — one twelfth of the circle — and is written with a raised s: 5^{s} 3° 57′ is five signs and 3° 57′, that is 153° 57′. The source uses the sign both as a place in the zodiac and as a plain unit of 30° for a motion or a distance, and this translation keeps that distinction by writing the count rather than naming a constellation.

The signs of the zodiac. Longitude is reckoned eastward from the first point of Aries.

	Latin	English	longitude
♈	Aries	the Ram	0°–30°
♉	Taurus	the Bull	30°–60°
♊	Gemini	the Twins	60°–90°
♋	Cancer	the Crab	90°–120°
♌	Leo	the Lion	120°–150°
♍	Virgo	the Virgin	150°–180°
♎	Libra	the Scales	180°–210°
♏	Scorpius	the Scorpion	210°–240°
♐	Sagittarius	the Archer	240°–270°
♑	Capricornus	the Goat	270°–300°
♒	Aquarius	the Water-bearer	300°–330°
♓	Pisces	the Fishes	330°–360°

The Sun, Moon and planets.

	Latin	English
☉	Sol	the Sun
☿	Mercurius	Mercury
♀	Venus	Venus
♂	Mars	Mars
♃	Iuppiter	Jupiter
♄	Saturnus	Saturn

Abbreviations used in table headings: **Long.** longitude; **Lat.** latitude; **Decl.** declination; **RA** right ascension; **Alt.** altitude; **Az.** azimuth; **Diff.** difference.

Where a table in the source spreads one quantity across separate columns for degrees, minutes and seconds, those columns have been joined into a single column and the value written whole. Where a value runs to thirds and beyond, the columns are kept, since there the columns are the notation.

TYCHO BRAHE THE DANE COMPLETE WORKS
[TYCHONIS BRAHE DANI / OPERA OMNIA]
Under the auspices of the Society for Danish Language and Literature
[Danish:] (The Danish Language and Literature Society)
[AUSPICIIS SOCIETATIS LINGUÆ ET LITTERARUM DANICARUM / (DET DANSKE SPROG- OG LITTERATUR-SELSKAB)]
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EDITED BY J. L. E. DREYER VOLUME XII
[TYCHONIS BRAHE DANI / OPERA OMNIA / EDIDIT / I. L. E. DREYER / TOMUS XII]
COPENHAGEN 1925 GYLDENDAL PRINTED BY NIELSEN & LYDICHE (AXEL SIMMELKIÆR)
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TYCHO BRAHE THE DANE TREASURY OF OBSERVATIONS
EDITED FROM THE MANUSCRIPTS COMPLETE FOR THE FIRST TIME BY J. L. E. DREYER AT THE EXPENSE OF THE CARLSBERG INSTITUTE VOLUME III
[TYCHONIS BRAHE DANI / THESAURUS OBSERVATIONUM / AD FIDEM CODICUM / PRIMUM INTEGRUM EDIDIT / I. L. E. DREYER / SUMPTIBUS INSTITUTI CARLSBERGICI / TOMUS III]
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[HAUNIÆ MCMXXV / IN LIBRARIA GYLDENDALIANA / TYPIS NIELSEN & LYDICHE (AXEL SIMMELKIÆR)]

OBSERVATIONS OF THE YEAR 1590 [OBSERUATIONES ANNI 1590.]

OBSERVATIONS OF THE SUN [OBSERUATIONES SOLIS.]

15 January [DIE 15 JANUARIJ.]

Line	Pinnule	Value
Meridian altitude of the Sun [Altit. ⊙ merid.]	new [nou.]	15° 9⅓′
by the Tychonic quadrant [per Tychon.]	old [vet.]	15° 9⅔′
by the steel instrument [per Chalybeum]		15° 9½′
by the revolving quadrant [per Volubilem]		15° 9⅔′
Declination of the Sun by the armillae [Decl. ⊙ per Armill.]		18° 55⅚′
	other [alt.]	18° 55′

The sky was moderately clear.

20 January [DIE 20 JANUARIJ.]

Line	Pinnule	Value
Meridian altitude of the Sun [Altit. ⊙ merid.]	new [nou.]	16° 27½′
by the Tychonic quadrant [per Tychon.]	old [vet.]	16° 27⅓′
by the revolving quadrant [per Volub.]		16° 26⅚′
by the steel instrument [per Chalyb.]		16° 27½′
Declination by the largest armillae [Declin. per Armill. max.]		17° 36⅔′
		17° 37¼′

The sky was moderately clear.

24 January [DIE 24 JANUARIJ.]

Line	Value
Meridian altitude of the Sun [Altit. ⊙ merid.]	17° 36¼′
by the Tychonic quadrant [per Tychon.]	17° 36½′
by the steel instrument [per Chalyb.]	17° 36¼′
by the revolving quadrant [per Volub.]	17° 36⅙′

Line	Value
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	16° 29′ 30″ 16° 29′ 40″

The sky was very clear.

26 January [DIE 26 JANUARIJ.]

Line	Pinnule	Value
Meridian altitude of the Sun [Altit. ⊙ merid.]		18° 11½′
by the Tychonic quadrant [per Tychon.]	old [vet.]	18° 11⅔′
by the steel instrument [per Chalyb.]		18° 13′
by the revolving quadrant [per Volub.]		18° 12⅚′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]		15° 53½′ 15° 53¾′

The sky was moderately clear.

30 January[1] [DIE 30 JANUARIJ[1].]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the Tychonic quadrant [per Tychon.]	19° 26⅔′
by the revolving quadrant [per Volub.]	19° 28⅙′
by the steel instrument [per Chalyb.]	19° 27⅚′
Declination by the armillae [Declin. per Armill.]	14° 38¼′ 14° 38½′

The sky was moderately clear.

5 February [DIE 5 FEBRUARIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	21° 26⅚′
by the steel instrument [per Chalyb.]	21° 26½′
by the mural quadrant [per Mural.]	21° 25⅔′ 21° 26′
Declination of the Sun by the equatorial armillae [Decl. ⊙ per Arm. æquat.]	12° 39¼′
other pinnule [alt. pin.]	12° 39⅙′

The sky was very clear.

6 February [DIE 6 FEBRUARIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	21° 47⅙′
by the Tychonic quadrant [per Tychon.]	21° 46⅚′
by the steel instrument [per Chalyb.]	21° 47¾′
by the revolving quadrant [per Volub.]	21° 48′
Declination by the armillae [Declin. per Armill.]	12° 19′
	12° 18¾′

The sky was very clear.

8 February [DIE 8 FEBRUARIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	22° 29⅓′
by the revolving quadrant [per Volub.]	22° 29⅓′
by the Tychonic quadrant [per Tychon.]	22° 28⅚′
other [alt.]	22° 28⅔′
Declination by the armillae [Declin. per Armill.]	11° 37′
other [alt.]	11° 36⅚′

The sky was fairly clear.

17 February [DIE 17 FEBRUARIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	25° 45′
by the Tychonic quadrant [per Tychon.]	25° 45⅙′
by the steel instrument [per Chalyb.]	25° 45′ 40″
by the revolving quadrant [per Volub.]	25° 45¾′
Declination by the armillae [Declin. per Armill.]	8° 20′
	8° 20⅙′

The sky was fairly clear.

28 February [DIE 28 FEBRUARIJ.]

At noon the clock showed 11^{h} $59\frac{1}{2}^{m}$ [H. 11 59½′]. So it was running at least half a minute slow, an error that had come upon it from 9 o'clock in the morning.

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	29° 59⅓′

Line	Value
by the Tychonic quadrant [per Tychon.]	29° 59¼′
by the revolving quadrant [per Volub.]	29° 58⅔′
by the steel instrument [per Chalyb.]	29° 59⅙′

[1] From codex V. [E codice V.]

Line	Value
Declination of the Sun by the larger armillae [Declin. ⊙ per Armill. mai.] southern, with both [austrina, vtroque]	4° 5⅚′

The sky was fairly clear.

1 March [DIE 1 MARTIJ.]

The clock was corrected at noon.

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel quadrant [per Q. Chalyb.]	30° 22⅓′
by the revolving quadrant [per Q. Volub.]	30° 22⅙′
by the Tychonic quadrant [per Q. Tychon.]	30° 22½′
	30° 21⅔′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	3° 42⅚′ M.
	3° 42⅓′

5 March [DIE 5 MARTIJ.]

Hour after noon [Hora post merid.]	The Sun was west [Erat ⊙ occid.]
$2^h\ 51^m\ 35^s$	43° 0′
$2^h\ 55^m\ 33^s$	44° 0′
$2^h\ 59⅔^m$	45° 0′
$3^h\ 7^m\ 35^s$	47° 0′

11 March [DIE 11 MARTIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	34° 18½′
by the revolving quadrant [per Volub.]	34° 18⅔′
Declination of the Sun [Declin. ⊙]	0° 13½′
by the larger armillae [per Armill. maiores]	0° 13¾′

The sky was very clear.

Line	Value
Limitata altitude [Altit. limitata]	34° 18′ 35″
Refraction, to subtract [Refr. subtr.]	42″
Altitude free of refraction [Altit. libera a refr.]	34° 17′ 53″
Parallax, to add [Parall. add.]	2′ 28″
True altitude [Vera altit.]	34° 20′ 21″
True declination [Vera declinatio]	0° 15′ 6″

Corresponding place of the Sun [Resp. locus ☉]	Our ephemerides [Nostræ ephem.]	Mästlin [Mæstlin.]	Cyprian [Cyprian.]
0° 38′ ♈	0° 38′ 52″	0° 7′ 0″	0° 53′ 29″

13 March [DIE 13 MARTIJ.]

Time	Line	Pinnule	Value
	Meridian altitude of the Sun [Alt. ☉ merid.]		
	by the revolving quadrant [per Volub.]		35° 5′ 25″
	by the steel instrument [per Chalyb.]		35° 5′ 35″
	by the mural quadrant [per Mural.]		35° 5′ 10″
			35° 5′ 20″
11^h 56^m [H. 11 56′]	The declination of the Sun was [Erat decl. ☉]		1° 0½′
	Repeated [Repetita]	other [alt.]	1° 0⅔′
12^h 0^m [12 0]	The declination of the Sun was [Erat decl. ☉]		1° 0⅔′
			1° 0⅚′

The sky was very clear.

14 March [DIE 14 MARTIJ.]

The clock was corrected at noon.

Line	Value
Meridian altitude of the Sun [Altit. ☉ merid.]	35° 29⅓′
by the mural quadrant [per Mural.]	35° 29⅔′
by the steel instrument [per Chalyb.]	35° 29′
by the revolving quadrant [per Volub.]	35° 28⅓′
Northern declination [Declin. Borea.]	1° 23¾′
	1° 24′

The sky was moderately clear.

15 March [DIE 15 MARTIJ.]

Time	Line	Pinnule	Value
$11^h\ 50^m$ [H. 11 M. 50]	Declination [Declin.]	with one pinnule [vno pin.]	1° 47½′
		with the other [altero]	1° 47¼′
$11^h\ 58^m$ [11 58]		with one [vno]	1° 47¾′
		with the other [altero]	1° 47⅝′
$12^h\ 0^m$ [12 0]		with one [vno]	1° 47¾′
		with the other [altero]	1° 47⅝′

Line	Value
Altitude of the Sun by the revolving quadrant [Altit. ⊙ per Volub.]	35° 51′ 55″
by the steel instrument [per Chalyb.]	35° 52′ 40″
by the mural quadrant [per Mural.]	35° 53′
	35° 52⅝′

Value	Remark
35° 52′ 40″	*on the authority of the steel instrument* [fide Chalybeo]
34° 5′ 15″	
1° 47′ 25″	

16 March [DIE 16 MARTIJ.]

At $12^h\ 7⅛^m$ [H. 12 7⅛′] the Sun was 1° 46′ to the east, by the shadow.

At $12^h\ 14⅝^m$ [12 14⅝] the Sun was 0° 10½′ [0 10½] to the west, by the pinnules; this is more exact.

It was not fairly clear.

17 March [DIE 17 MARTIJ.]

Time	Line	Pinnule	Value
$11^h\ 54^m$ [11 54]	Declination of the Sun [Declin. ⊙]	with one pinnule [vno pinnac.]	2° 34½′
		with the other [altero]	2° 34⅝′
$11^h\ 57^m$ [11 57]			2° 34⅔′
			2° 34½′
$12^h\ 0^m$ [12 0]			2° 34⅝′
			2° 35′

At noon the clock was running faster than it should, by about 14 minutes [M. 14 proxime]; this error came to be charged to it over two days.

Line	Pinnule	Value
By the steel instrument [Per Chalyb.]		36° 39′ 30″
by the revolving quadrant [per Volub.]		36° 38′ 50″

Line	Pinnule	Value
by the mural quadrant [per Mural.]	one [vno]	36° 39′ 45″
	other [alt.]	36° 39′ 50″

18 March [DIE 18 MARTIJ.]

Line	Pinnule	Value
Declination [Declinatio]		2° 58′
	with the other [altero]	2° 58½′
Altitude by the steel instrument [Altit. per Chalyb.]		37° 2⅔′
by the revolving quadrant [per Volub.]		37° 3⅙′
by the Tychonic quadrant [per Tychon.]		37° 2⅚′
	other [alt.]	37° 3′

It was not clear enough.

19 March [DIE 19 MARTIJ.]

At noon the clock was running 28⅙^{m} [28⅙′] faster than it should; this error was then corrected.

Line	Value
Meridian altitude of the Sun [Alt. merid. ⊙]	
by the revolving quadrant [per Volub.]	37° 26′ 5″
by the steel instrument [per Chalyb.]	37° 26′
Declination of the Sun [Declin. ⊙]	3° 21⅔′
	3° 21⅚′

It was not clear enough.

20 March [DIE 20 MARTIJ.]

Line	Pinnule	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]		37° 50′
by the Tychonic quadrant [per Tychon.]		37° 50⅓′
by the revolving quadrant [per Volub.]		37° 50¼′
by the steel instrument [per Chalyb.]		37° 50⅙′
Declination of the Sun by the larger armillae [Decl. ⊙ per Armill. mai.]	one [vno]	3° 44⅔′
	other [alt.]	3° 44½′

The sky was moderately clear.

21 March [DIE 21 MARTIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	38° 12⅔′
by the steel instrument [per Chalyb.]	38° 12½′
by the mural quadrant [per Mural.]	38° 12⅚′
	38° 13′
Declination by the armillae [Declin. per Armill.]	4° 7½′
	4° 8′

The clock was running 21 minutes [21 Minutis] faster.

25 March [DIE 25 MARTIJ.]

N.B. At noon the clock showed 1^{m} 38^{s} [1′ 38″]; this error was then corrected, and 5 little balls [globulis] were also removed because it was running too fast.

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	39° 45$\frac{1}{12}$′
by the revolving quadrant [per Volub.]	39° 44½′
by the mural quadrant [per Mural.]	39° 45′
	39° 44$\frac{11}{12}$′
Declination of the Sun by the armillae [Decl. ⊙ per Armill.]	5° 40⅓′
	5° 40′

26 March [DIE 26 MARTIJ.]

The clock was corrected at noon.

Line	Value
Declination of the Sun [Decl. ⊙]	6° 2¼′
by the armillae [per Armill.]	6° 2′
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	40° 7½′
by the revolving quadrant [per Volub.]	40° 7⅓′
by the mural quadrant [per Mural.]	40° 8½′
	40° 8′ 25″

It was not quite clear enough.

28 March [DIE 28 MARTIJ.]

The clock was running $5\frac{1}{3}^{m}$ [5⅓′] faster than it should; this error was corrected at noon, and 3 little balls were taken out.

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	40° 54′

Line	Value
by the mural quadrant [per Mural.]	40° 53½′
by the revolving quadrant [per Volub.]	40° 51⅚′
by the steel instrument [per Chalyb.]	40° 52⅔′
Declination by the armillae [Declin. per Armill.]	6° 48¼′
	6° 48⅓′

The sky was very clear.

29 March [DIE 29 MARTIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	41° 15⅓′
by the revolving quadrant [per Volub.]	41° 15′
by the mural quadrant [per Mural.]	41° 15⅚′
	41° 15⅔′
Declination of the Sun [Decl. ⊙]	7° 10¼′

The clock was running 16½ minutes [16½ minutis] slower than it should; this error was corrected.

The sky was fairly clear.

30 March [DIE 30 MARTIJ.]

When the clock was corrected at noon, two little balls were added, because it had been running $6\frac{1}{2}^{m}$ [6½′] faster than it should.

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	41° 37½′
by the steel instrument [per Chalyb.]	41° 37½′
by the mural quadrant [per Mural.]	41° 37′
	41° $37\frac{11}{12}$′
Declination by the armillae [Declin. per Armill.]	7° 32′
	7° 32½′

The sky was very clear.

3 April [DIE 3 APRILIS.]

Line	Value
Altitude of the Sun by the steel instrument [Alt. ⊙ per Chalyb.]	43° 4⅚′
by the revolving quadrant [per Volub.]	43° 4½′
by the Tychonic quadrant [per Tychon.]	43° 6′

Line	Value
	43° 6¼′

Line	Value
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	9° 0¼′
	9° 0′

The sky was very clear.
The clock was corrected at noon.

12 April [DIE 12 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	46° 14⅙′
by the steel instrument [per Chalyb.]	46° 14½′
by the mural quadrant [per Mural.]	46° 15′
Declination by the armillae [Declin. per Armillas]	12° 10⅓′
	12° 11′

It was not clear enough.

13 April [DIE 13 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	46° 34⅓′
by the revolving quadrant [per Volub.]	46° 34⅙′
by the mural quadrant [per Mural.]	46° 35⅓′
	46° 35′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	12° 29⅚′
	12° 30⅓′

It was not very clear.

14 April [DIE 14 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ Merid.]	46° 55⅓′
by the mural quadrant [per Mural.]	46° 55′
by the steel instrument [per Chalyb.]	46° 53′ 55″
by the revolving quadrant [per Volub.]	46° 53′ 40″

Line	Value
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	12° 49½′
	12° 50′

15 April [DIE 15 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	47° 13⅓′
by the revolving quadrant [per Volub.]	47° 13⅓′
by the mural quadrant [per Mural.]	47° 15′
	47° 14¾′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	13° 9¼′
	13° 9⅝′

The sky was moderately clear.

16 April [DIE 16 APRILIS.]

Line	Value
Meridian altitude [Alt. merid.]	
by the steel instrument [per Chalyb.]	47° 34½′
by the revolving quadrant [per Volub.]	47° 35′
Declination of the Sun [Declin. ⊙]	13° 29½′
	13° 29′

The sky was fairly clear.

17 April [DIE 17 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	47° 52⅝′
by the revolving quadrant [per Volub.]	47° 52⅔′
Declination by the largest armillae [Declin. per Armill. max.]	13° 47½′
	13° 48′

The sky was fairly clear.

18 April [DIE 18 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	48° 11⅔′
by the steel instrument [per Chalyb.]	48° 11⅓′
by the mural quadrant [per Mural.]	48° 12⅙′
	48° 12½′
Declination by the largest armillae [Declin. per Armill. max.]	14° 7⅙′
	14° 7¼′

The sky was very clear.

20 April [DIE 20 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	48° 49⅓′
by the revolving quadrant [per Volub.]	48° 49⅔′
Declination by the largest armillae [Declin. per Armill. max.]	14° 44½′
with both pinnules [vtroq. pinnac.]	

The sky was fairly clear.

22 April [DIE 22 APRILIS.]

Line	Pinnule	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]		49° 25′
by the mural quadrant [per Mural.]		49° 25½′
by the steel instrument [per Chalyb.]		49° 24⅚′
by the revolving quadrant [per Volub.]		49° 24⅔′
Declination by the armillae [Declin. per Arm.]	with both [vtroque]	15° 21½′

The sky was fairly clear.

23 April [DIE 23 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	49° 43′
by the revolving quadrant [per Volub.]	49° 43⅔′
by the mural quadrant [per Mural.]	49° 44′
	49° 43¾′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	15° 39′
	15° 39½′

The sky was fairly clear.

24 April [DIE 24 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	50° 1¼′
by the steel instrument [per Chalyb.]	50° 1′
by the mural quadrant [per Mural.]	50° 1⅓′
	50° 1⅙′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	15° 56⅔′
	15° 56⅚′

The sky was quite clear.

26 April [DIE 26 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	50° 35⅙′
by the steel instrument [per Chalyb.]	50° 35$\frac{1}{12}$′
Declination by the armillae [Declin. per Armill.]	16° 30′
	16° 30½′

The sky was moderately clear.

27 April [DIE 27 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	50° 51⅔′
by the revolving quadrant [per Volub.]	50° 51⅔′
by the mural quadrant [per Mural.]	50° 52′
	50° 52⅙′
Declination by the armillae [Declin. per Armill.]	16° 47′
	16° 47⅓′

29 April [DIE 29 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	51° 25⅙′
by the steel instrument [per Chalyb.]	51° 25½′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	17° 20⅓′
	17° 20½′

30 April [DIE 30 APRILIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ mer.]	
by the revolving quadrant [per Volub.]	51° 40½′
by the steel instrument [per Chalyb.]	51° 40¼′
Declination by the armillae [Declin. per Armill.]	17° 35½′
	17° 35¾′

1 May [DIE PRIMO MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	51° 55½′
by the steel instrument [per Chalyb.]	51° 56′
by the mural quadrant [per Mural.]	51° 56¾′
	51° 56½′
Declination by the largest armillae [Declin. per Armill. max.]	17° 51⅓′
	17° 51½′

The sky was fairly clear.

3 May [DIE 3 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	52° 26½′
by the revolving quadrant [per Volub.]	52° 27⅓′
by the mural quadrant [per Mural.]	52° 27′
	52° 27′
Declination by the largest armillae [Declin. per Armill. max.]	18° 21½′
	18° 22′

8 May [DIE 8 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	53° 36′ 45″
by the revolving quadrant [per Volub.]	53° 37′ 0″
by the mural quadrant [per Mural.]	53° 37′ 20″
	53° 37′ 30″
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	19° 31⅔′
	19° 31⅚′

The sky was fairly clear.

9 May [DIE 9 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ Merid.]	53° 50⅓′
by the mural quadrant [per Mural.]	53° 50½′
by the steel instrument [per Chalyb.]	53° 50⅔′
by the revolving quadrant [per Volub.]	53° 51′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	19° 45′
	19° 45⅙′

The sky was fairly clear.

11 May [DIE 11 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	54° 15⅙′
by the steel instrument [per Chalyb.]	54° 15¼′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	20° 10⅔′
	20° 11′

The sky was moderately clear.

15 May [DIE 15 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	55° 1¼′
by the revolving quadrant [per Volub.]	55° 1⅙′
by the mural quadrant [per Mural.]	55° 2′
	55° 1⅔′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	20° 57¾′
	20° 57½′

The sky was moderately clear.

17 May [DIE 17 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	55° 22⅙′
by the revolving quadrant [per Volub.]	55° 22½′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	21° 18⅙′
	21° 18′

It was not clear enough.

19 May [DIE 19 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	55° 51½′
by the revolving quadrant [per Volub.]	55° 50⅔′
by the mural quadrant [per Mural.]	55° 51⅓′
	55° 51½′
Declination by the armillae [Declin. per Armill.]	21° 46¾′
	21° 47⅙′

It was not clear enough.

26 May [DIE 26 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	56° 38½′
by the revolving quadrant [per Volub.]	56° 38⅚′
by the mural quadrant [per Mural.]	56° 38⅓′
	56° 38½′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	22° 34⅙′
	22° 34⅚′

The sky was moderately clear.

30 May [DIE 30 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	57° 2⅚′
by the steel instrument [per Chalyb.]	57° 2½′
Declination by the armillae [Declin. per Armill.]	22° 57½′
	22° 57¾′

The sky was moderately clear.

31 May [DIE 31 MAIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 8′
by the revolving quadrant [per Volub.]	57° 7⅚′

The sky was very clear.

1 June [DIE 1 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 11⅝′
by the revolving quadrant [per Volub.]	57° 11½′
by the mural quadrant [per Mural.]	57° 12′
	57° 11⅝′
Declination by the armillae [Declin. per Armillas]	23° 8′
	23° 8⅛′

The sky was fairly clear.

2 June [DIE 2 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 17′
by the revolving quadrant [per Volub.]	57° 16⅔′
by the mural quadrant [per Mural.]	57° 16⅝′
	57° 16¾′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	23° 11¾′
	23° 11′

The sky was moderately clear.

5 June [DIE 5 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 26½′
by the revolving quadrant [per Volub.]	57° 26⅔′
by the mural quadrant [per Mural.]	57° 27′
	57° 26⅝′
Declination by the armillae [Declin. per Armill.]	23° 21⅓′
	23° 21′

The sky was fairly clear.

7 June [DIE 7 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	57° 30⅛′

Line	Value
by the steel instrument [per Chalyb.]	57° 30¾′
Declination by the armillae [Declin. per Armill.]	23° 26′
	23° 26⅙′

The sky was moderately clear.

16 June [DIE 16 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	57° 31⅓′
by the steel instrument [per Chalyb.]	57° 30⅔′
by the mural quadrant [per Mural.]	57° 31⅔′
	57° 31½′
Declination by the armillae [Declin. per Armill.]	23° 26′
	23° 26⅓′

The sky was moderately clear.

18 June [DIE 18 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 26⅙′
by the revolving quadrant [per Volub.]	57° 26′
by the mural quadrant [per Mural.]	57° 26½′
Declination by the armillae [Declin. per Armill.]	23° 21′
	23° 20⅚′

It was not clear enough.

19 June [DIE 19 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 24⅓′
by the revolving quadrant [per Volub.]	57° 21⅔′ [1]
by the mural quadrant [per Mural.]	57° 24′
Declination by the armillae [Declin. per Armill.]	23° 19½′
	23° 19⅓′

It was not clear enough.

20 June [DIE 20 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 21¼′
by the revolving quadrant [per Volub.]	57° 20′

[1] Thus in codex E. [Sic in codice E.]

Line	Value
Declination by the armillae [Declin. per Armill.]	23° 15¼′
	23° 15¾′

It was not clear enough.

22 June [DIE 22 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the revolving quadrant [per Volub.]	57° 12⅔′
by the steel instrument [per Chalyb.]	57° 12⅓′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	23° 7⅚′
	23° 8′

The sky was moderately clear.

23 June [DIE 23 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	57° 6½′
by the steel instrument [per Chalyb.]	57° 7⅔′
Declination by the armillae [Decl. per Armill.]	23° 3½′
	23° 4′

The sky was moderately clear.

24 June [DIE 24 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	57° 3⅙′
by the steel instrument [per Chalyb.]	57° 3′

Line	Value
Declination by the armillae [Declin. per Armill.]	22° 57⅚′
	22° 57′

The sky was moderately clear.

25 June [DIE 25 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	56° 57⅓′
by the steel instrument [per Chalyb.]	56° 58½′
by the mural quadrant [per Mural.]	56° 58⅓′
	56° 58¼′
Declination by the armillae [Declin. per Armill.]	22° 52⅚′
	22° 53⅔′

The sky was moderately clear.

26 June [DIE 26 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	56° 51⅔′
by the steel instrument [per Chalyb.]	56° 52⅔′
by the mural quadrant [per Mural.]	56° 52¾′
	56° 52½′
Declination by the armillae [Declin. per Armill.]	22° 48′
	22° 48½′

It was not clear enough.

27 June [DIE 27 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	56° 46′ 0″
by the revolving quadrant [per Volub.]	56° 45′ 30″
by the mural quadrant [per Mural.]	56° 46⅚′
	56° 46¾′
Declination by the armillae [Declin. per Armill.]	22° 41⅙′
	22° 41⅚′

28 June [DIE 28 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	56° 40⅔′
by the revolving quadrant [per Volub.]	56° 37⅚′ — not good [non bona]
by the mural quadrant [per Mural.]	56° 41¼′
	56° 41⅙′
Declination [Declin.]	22° 35′
	22° 35½′

The sky was fairly clear.

29 June [DIE 29 JUNIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	56° 31⅚′
by the steel instrument [per Chalyb.]	56° 32¾′
by the mural quadrant [per Mural.]	56° 33½′
	56° 33⅓′
Declination by the armillae [Declin. per Armill.]	22° 27½′
	22° 27′

The sky was moderately clear.

1 July [DIE 1 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	56° 17⅚′
by the revolving quadrant [per Volub.]	56° 17′
Declination by the armillae [Declin. per Armill.]	22° 13′
	22° 13⅔′

The sky was fairly clear.

3 July [DIE 3 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	56° 2′
by the mural quadrant [per Mural.]	56° 1¾′
by the revolving quadrant [per Volub.]	56° 1½′
by the steel instrument [per Chalyb.]	56° 2⅙′

Line	Value
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	21° 57⅙′
	21° 57½′

The sky was moderately clear.

9 July [DIE 9 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	55° 3¼′
by the revolving quadrant [per Volub.]	55° 3⅙′
by the mural quadrant, by both [per Mural., vtroque]	55° 4⅙′
Declination by the armillae [Declin. per Armill.]	20° 59′
	20° 58¼′

The sky was fairly clear.

10 July [DIE 10 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the revolving quadrant [per Volub.]	54° 52′
by the steel instrument [per Chalyb.]	54° 52¾′
Declination by the armillae [Declin. per Armill.]	20° 47′
	20° 46⅔′

It was not clear enough, because of clouds.

13 July [DIE 13 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	54° 17½′
by the revolving quadrant [per Volub.]	54° 17′
by the mural quadrant [per Mural.]	54° 18¼′
	54° 18′
Declination by the armillae [Declin. per Armill.]	20° 12⅔′
	20° 12⅓′

The sky was fairly clear.

14 July [DIE 14 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	54° 6′
by Tychon. [per Tychon.]	54° 5⅚′
by the steel instrument [per Chalyb.]	54° 6⅙′
by the revolving quadrant [per Volub.]	54° 4⅙′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	19° 59⅔′
	20° 0½′

The sky was fairly clear.

Observation of the eclipse of the Sun made in the year 1590, on 21 July[1], *before noon* [OBSERUATIO ECLIPSEOS ⊙ⁱˢ FACTA ANNO 1590 DIE 21 JULIJ *ante meridiem*.]

The clock was corrected at noon of this day.

When the clock showed 6^h 37⅙^m [6ᴴ 37⅙′], the Sun was east 9° 20′, counting from ninety.

Now the observation of the eclipse begins.

Time	Line	Value
6^h 51½^m [H. 6 51½′]	The Sun was east [Erat ⊙ orient.]	76° 30′
Resp. 6^h 53^m [Reſp. 6 53]	Altitude of the Sun by the revolving quadrant [Altit. ⊙ per Volub.]	21° 29′
	The beginning was therefore [Fuit igitur initium]	6^h 50^m [H. 6 50′]
	The Sun then began to be darkened toward the west [Incipiebat tunc ⊙ ad occaſum obſcurari]	
	or rather a little before [*vel potius paulo ante*]	
6^h 56½^m [H. 6 56½]	The Sun was east [Erat ⊙ orient.]	75° 47′
Resp. 6^h 58^m *better* [Reſp. 6 58 *melius*]	Altitude of the Sun [Altit. ⊙]	23° 11′
7^h 4⅚^m [H. 7 4⅚]	The Sun east [⊙ orient.]	73° 47′
	Altitude of the Sun [Altit. ⊙]	24° 16⅔′
7^h 14^m [7 14]	The Sun was then east [Erat tunc ⊙ orient.]	71° 30′
	Altitude of the Sun [Altit. ⊙]	25° 20′
	About a quarter of the Sun was covered by the Moon [Quaſi quarta pars ⊙ a luna tegebatur.]	
7^h 35⅔^m [7 35⅔]	Almost a third of the Sun was covered by the Moon [Tertia ferme pars ⊙ a ☾ tegebatur.]	
7^h 35½^m [*7 35½*]	The Sun was then east [Erat tunc ⊙ orient.]	66° 9′
	Altitude of the Sun [Altit. ⊙]	28° 34¼′

Diagram. A column of five drawn discs at the right of the eclipse observation, one beside each group of readings, from top to bottom. Each disc is an outlined circle with no letters, numbers or other labels. Disc 1 (beside the 6 51½ group) shows a very thin dark sliver on its right-hand edge, a little above the

middle. Disc 2 (beside the 6 56½ group) shows a slightly larger dark sliver on the right-hand edge at mid-height. Disc 3 (beside the 7 4⅝ group) shows a narrow cross-hatched crescent on the right-hand edge. Disc 4 (beside the 7 14 group) shows a broader cross-hatched segment on the right-hand side. Disc 5 (beside the last group) shows a large cross-hatched segment on the lower right.

• No labels are printed on any of the five discs.

[1] Thus in codex E, in the hand of Joh. Aurifaber. But in codices V. and K. the observation begins thus: »There follows the observation of the eclipse of the Sun that occurred on the 21st of the month of July, before noon, in the year 1590. This eclipse was observed by eight observers, who at each observation, with the eyes' gaze directed at the Sun and the Sun's rays let into an oblong brass channel onto a small circle, judged and declared the same thing about its magnitude.« [Sic in codice E, manu Joh. Aurifabri. At in codd. V. et K. ſic incipit obſeruatio: »Sequitur obſeruatio Eclipſis ☉, quæ contigit 21 Menſis Julij ante Meridiem Anno 1590. Hæc Eclipſis obſeruabatur ab octo Inſpectoribus, qui de quantitate eius, ad ſingulas obſeruationes, acie oculorum in ☉ directa, radiiſque ſolaribus in Canalem orichalcicum oblongum, ad circellum intromiſsis, idem ſenſerunt & pronuntiarunt.«]

Time	Line	Value
7^h $56\frac{1}{6}{}^m$ [7 56⅙]	About a third of the Sun was covered [Tertia quaſi pars ☉ tegebatur.]	
	The Sun was then east [Erat tunc ☉ orient.]	61° 0⅔′
	Altitude of the Sun [Altit. ☉]	31° 22⅓′
8^h 4^m [8 4]	The Sun was east [Erat ☉ orient.]	59° 25½′
	Altitude of the Sun [Altit. ☉]	32° 14½′
	Here the Sun seemed to grow in light again [Hic videbatur ☉ iterum lumine creſcere.]	
8^h 12^m [8 12]	A quarter of the Sun remained eclipsed [Reſtabat quarta pars ☉ eclipſata.]	
	And the Sun was then east [Eratque ☉ tunc orient.]	57° 5′
	Altitude of the Sun [Altit. ☉]	33° 36′
8^h $20\frac{5}{6}{}^m$ [8 20⅚]	About a fifth of the Sun remained darkened, and both horns of the Sun were, as far as sight goes, at the same altitude, that is, level [Reſtabat quaſi quinta pars ☉ obſcurata, & cornu ☉ vtrumque erat quoad viſum in eadem altitudine ſiue æquilibrio.]	
	The Sun east [☉ orient.]	54° 53½′
	Altitude of the Sun [Altit. ☉]	34° 44½′
8^h $32\frac{5}{6}{}^m$ [8 32⅚]	A sixth of the Sun still appeared eclipsed [Sexta pars ☉ videbatur adhuc eclipſata.]	
	The Sun east [☉ orient.]	51° 54′
	Altitude of the Sun [Altit. ☉]	36° 12′
8^h 42^m [8 42]	About a seventh of the Sun was hidden [Quaſi ſeptima pars ☉ latebat.]	
	The Sun east [☉ orient.]	49° 37′
	Altitude of the Sun [Altit. ☉]	37° 22′
8^h $50\frac{1}{3}{}^m$ [8 50⅓]	About an eighth of the Sun remained darkened [Reſtabat quaſi octaua pars ☉ obſcurata.]	
	The Sun east [☉ orient.]	47° 34⅓′

Time	Line	Value
	Altitude of the Sun [Altit. ⊙]	38° 25′
	Azimuth of the Sun from the south toward the east [Azimuth ⊙ a meridie ad ortum]	63° 3′
8^h 55⅝^m [8h 55⅝]	The Sun was such as it appeared at first in the eclipse, when it was being observed [Erat ⊙ talis, qualis primo in Eclipſi videbatur, cum obſeruaretur.]	
	The Sun east [⊙ orient.]	46° 13½′
	Altitude of the Sun [Altit. ⊙]	39° 5′
	Azimuth of the Sun [Azimuth ⊙]	61° 40′
9^h 0^m [9h 0]	It recovered its whole light [Totus recuperauit lumen.]	
	The Sun east [⊙ orient.]	45° 10½′
	Altitude of the Sun [Altit. ⊙]	39° 35′
	Azimuth of the Sun [Azimuth ⊙]	60° 40′

Diagram. A column of eight drawn discs at the right of the eclipse observation, one beside each of the first eight groups of readings, from top to bottom; none stands beside the 9 0 group. Each disc is an outlined circle with no letters, numbers or other labels; the darkened part of each is cross-hatched. Disc 1 (beside the 7 56⅙ group) shows a large segment on the lower right. Disc 2 (beside the 8 4 group) shows a segment at the lower right, along the bottom. Disc 3 (beside the 8 12 group) shows a segment along the bottom. Disc 4 (beside the 8 20⅚ group) shows a narrower segment along the bottom. Disc 5 (beside the 8 32⅚ group) shows a thin segment along the bottom, slightly to the left. Disc 6 (beside the 8 42 group) shows a thin segment at the lower left. Disc 7 (beside the 8 50⅓ group) shows a thinner sliver at the lower left. Disc 8 (beside the 8 55⅚ group) shows a very thin sliver on the left edge, low down.

- No labels are printed on any of the eight discs.

From this it is gathered that this eclipse of the Sun began at 6^h 50^m [H. 6 M. 50] and ended at 9^h 0^m [H. 9 M. 0]. It therefore lasted 2 hours 10 minutes [per horas 2 M. 10]. And at least a third part of the Sun was eclipsed, at most 4 digits. Hence the tables, which give twice as much, namely about 9 digits, are too far astray. And these results hold quite precisely and can safely be trusted, for the sky was exceptionally clear. [Ex his colligitur, incepiſse hanc Eclipſin ⊙ H. 6 M. 50 & deſiiſse H. 9 M. 0. Durauit itaque per horas 2 M. 10. Et eclipſabatur ſaltem de ⊙ tertia pars, ad ſummum 4 digiti. Ideoque in tabulis duplo plus ponentibus vtpote digitos ferme 9 nimium aberratur. Atque hæc ſatis præciſe ſe ita habent, quibus tuto licet fidere, erat enim apprime ſerenum.]

The middle of this eclipse was at about 7^h 55^m [7^H 55^M]. From this it will be possible to reason about the parallaxes of the Moon. Or rather, seek the middle itself from the beginning and the end, by the course of the Moon relative to the ecliptic [per ductum ☾ ad eclipticam].

Indeed, considering that the third part ceased [deſijt] at 7^h 35^m [H. 7 M. 35] and at 7^h 55^m [H. 7 M. 55], the middle could in either case have been between these, at 7^h 45^m [H. 7 M. 45].

Examination of the preceding eclipse of the Sun, made for our restitution of the Moon, in the year 97[1] [Examinatio antecedentis ☉|ıs Eclipſeos facta ad reſtitutionem ☾ noſtram Anno 97.]

When everything has been weighed, and because the parallax of longitude of the Moon is greater around the beginning than around the end, it follows that the middle cannot otherwise be obtained accurately enough from the beginning and the end. [Omnibus penſitatis & quod Parallaxis longitudinis ☾ maior circa initium quam finem, vt itaque medium ex initio & fine ſatis ſcrupuloſe alias haberi nequit.]

Line	Value	Line	Value
The middle is set at [Ponitur medium]	day 21, 8^h 0^m a.m. [D. 21 H. 8 0 a. m.]	True altitude of the Moon [Altitudo ☾ vera]	9° 31′
True place [Locus verus]	7° 27′ ♌	True longitude of the Moon [Longitudo vera ☾]	6° 49′
Parallax of longitude of the Moon from the Sun [Parallaxis longit. ☾ a ☉]	38′	Our true latitude of the Moon [Vera latitudo ☾ noſtra]	0° 15½′ north [0 15½ B.]
Equated anomaly of the Moon [Anomalia ☾ coæquata]	about 317° [317 quaſi.]		
Resp. parallax of the Moon from the Sun in the circle of altitude [Reſp. Parallaxis ☾ a ☉ in circulo altitudinis]	46½′		
Resp. parallax of longitude of the Moon [Reſp. Parallaxis longitudinis ☾]	36′		
of latitude [latitudinis]	31′		
Semidiameter of the Sun [Semidiameter ☉|ıs]	15′ 5″		
of the Moon [☾]	12′ 15″		
sum [agg. S.]	27½′		
Therefore the apparent latitude [Ergo viſa latitudo]	12′ 0 [M. 12^M 0.]	Resp. Digiti Eclip. [Reſp. Digiti Eclip.]	4⅔
		The observation gives [Obſeruatio dat]	at least 4.0 [4.0 ſaltem.]

There now follows a short observation of the same eclipse of the Sun made at Rostock by D. Pegel [D. Pegelium], and sent here by D. Heinrich Brucaeus [D. Henrico Brucæo][2]. [Sequitur nunc obſeruatiuncula per D. Pegelium Roſtochij in eadem ☉ Eclipſi facta hucque a D. Henrico Brucæo transmiſsa.]

The beginning of the eclipse (Pegel wrote [ſcribebat Pegelius]) was a quarter after hour 6; the end a quarter or more before 9. Digiti Ecliptici 8. [Initium (ſcribebat Pegelius) Eclipſis quadrante poſt horam 6. Finis quadrante aut amplius ante 9. Digiti Ecliptici 8.]

On the paper the diameter of the Moon was not smaller than the diameter of the Sun (when a measurement was applied), although to simple sight, even on the paper, the Moon appeared smaller. [Lunæ Diameter in charta non minor

Solis Diametro erat (adhibita dimenſione) licet aſpectu ſimplici etiam in charta videretur Luna minor.]

[Heinrich Brucaeus, Doctor of Philosophy and Medicine, professor at Rostock, sent Pegel's short observation, inserted above, here to Uraniborg, and at the end of his slip he added what follows[3].] [Henricus Brucæus Philoſophiæ et Medicinæ Doctor, Profeſsor Roſtochienſis præinſertam Pegelij obſeruatiunculam huc Vraniburgum transmiſit, ſchedulæque in fine inſeruit hæc quæ ſequuntur.]

He made this observation in a room, receiving the Sun's rays through an opening, which Reinhold [Reinoldus] mentions elsewhere. [Habuit hanc obſeruationem in Cubiculo excipiens radios ſolares per foramen, cuius meminit alibi Reinoldus.]

22 July [DIE 22 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	52° 15$\frac{1}{12}$′
by the revolving quadrant [per Volub.]	52° 15′
by the mural quadrant [per Mural.]	52° 15⅙′
	52° 15⅓′
Declination by the armillae [Declin. per Armill.]	18° 9⅓′
subterranean [ſubterraneas]	18° 10′

The sky was fairly clear.

23 July [DIE 23 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	51° 59$\frac{1}{12}$′
by the revolving quadrant [per Volub.]	51° 58½′
by the mural quadrant [per Mural.]	52° 0⅙′
with both pinnules [vtroque pinnacidio]	
Declination by the armillae [Declin. per Armill.]	17° 54⅙′
	17° 55′

The sky was fairly clear.

[1] From codices V. and K. [E codd. V. et K.] [2] From codex V. [E codice V.] [3] Struck through with lines. [Lineis inducta.]

24 July, morning[1] [DIE 24 JULIJ, MANE[1].]

At about 1^h 46½^m [Circa horam primam M. 46½] the clock was corrected; and when it afterwards showed 5^h 56½^m [horam 5 M. 56½], the Sun was east [erat ⊙ orient.] 89° 5′ in the equator, that is, 3^m 40^s [3′ 40″] past hour 6.

This correction of the clock was made against 1 of the wing of Pegasus [ad 1 alæ Pegaſi].

28 July [DIE 28 JULIJ.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	50° 38½′
by the revolving quadrant [per Volub.]	50° 38⅓′
Declination by the armillae [Declin. per Armill.]	16° 33½′
	16° 33⅚′

The sky was moderately clear.

2 August [DIE 2 AUGUSTI.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	49° 11⅚′
by the revolving quadrant [per Volub.]	49° 11¾′
by the mural quadrant [per Mural.]	49° 12′
	49° 11$^{11}/_{12}$′
Declination by the armillae [Declin. per Armill.]	15° 6⅓′
	15° 6½′

The sky was very clear.

3 August [DIE 3 AUGUSTI.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	48° 53⅔′
by the revolving quadrant [per Volub.]	48° 52⅚′
by the mural quadrant [per Mural.]	48° 54⅔′
	48° 55′
Declination by the armillae [Declin. per Armill.]	14° 47⅓′
	14° 48⅚′

It was not clear enough.

5 August [DIE 5 AUGUSTI.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	48° 17′ 0″
by the revolving quadrant [per Volub.]	48° 15½′
by the mural quadrant [per Mural.]	48° 17⅓′
	48° 17⅔′
Declination by the armillae [Declin. per Armill.]	14° 11½′
	14° 11¼′

The sky was fairly clear.

10 August [DIE 10 AUGUSTI.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	46° 40⅔′
by the revolving quadrant [per Volub.]	46° 40⅙′
by the mural quadrant [per Mural.]	46° 41′
	46° 40⅚′
Declination by the armillae, subterranean [Declin. per Armill. subt.]	12° 34⅓′
	12° 34′

The sky was moderately clear.

13 August [DIE 13 AUGUSTI.]

We could no longer make out any evening twilight remaining. But the sky in that region was mixed with some clouds. At that time the bright star of the Flying Vulture [lucida Vulturis volantis] was about 20½ degrees from the south toward the west [a meridie ad occaſum 20½ ferme graduum].

14 August [DIE 14 AUGUSTI.]

Line	Value
Meridian altitude of the Sun by the revolving quadrant [Alt. ⊙ merid. per Volub.]	45° 19½′
Declination by the armillae [Declin. per Armillas]	11° 13½′
	11° 14′

The sky was fairly clear.

15 August [DIE 15 AUGUSTI.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	44° 59′

Line	Value
by the revolving quadrant [per Volub.]	44° 59⅙′
by the mural quadrant [per Mural.]	45° 0′
	45° 4′
	uncertain [incertæ]
Declination by the armillae [Declin. per Armill.]	10° 54′
	10° 53⅔′

The sky was moderately clear.

16 August [DIE 16 AUGUSTI.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	44° 17⅙′
by the steel instrument [per Chalyb.]	44° 17⅚′
by the mural quadrant [per Mural.]	44° 17′ 35″
	44° 17′ 25″
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	10° 12′
subterranean [ſubterr.]	10° 12½′

The sky was fairly clear.

1 September [DIE 1 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	38° 45′
by the steel instrument [per Chalyb.]	38° 45⅔′
by the mural quadrant [per Mural.]	38° 45⅔′
with both pinnules [vtroque pinnacidio]	
Declination by the armillae, with one [Declin. per Armill. vno]	4° 40¼′
with the other [alt.]	4° 39⅚′

The sky was very clear.

[1] From codices V. and K. [E codd. V. et K.]

5 September [DIE 5 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	37° 13′ 40″
by the revolving quadrant [per Volub.]	37° 13′ 15″
by the mural quadrant [per Mural.]	37° 13′ 45″

Line	Value
Declination of the Sun by the armillae [Decl. ⊙ per Armill.]	3° 7′
subterranean [ſubter.]	3° 6⅔′
Observed altitude of the Sun [Altit. ⊙ obſeruata]	37° 13′ 40″
Refraction, to be removed [Refractio auferenda]	0′ 23″
	37° 13′ 17″
Parallax, to be added [Parallaxis addenda]	2′ 22″
True altitude [Altitudo vera]	37° 15′ 39″
True declination [Vera declinatio]	3° 10′ 9″
Corresponding longitude of the Sun [Reſp. Longitudo ⊙]	22° 4′ 10″ ♍

Place of the Sun at noon, from [Locus ⊙ in meridie ex]

the true declination [Decl. vera]	Tycho's ephemerides [Ephem. Tych.]	Mästlin [Mæſtlino]	Leowitz [Leouitio]
22° 2′ 20″ ♍	22° 2′ 46″ ♍	21° 56⅚′	22° 2⅔′

6 September [DIE 6 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	36° 50½′
by the revolving quadrant [per Volub.]	36° 50′
by the mural quadrant [per Mural.]	36° 50½′
	36° 50′ 35″
Declination of the Sun [Declin. ⊙]	2° 45′ twice [bis]

The sky was fairly clear.

Place of the Sun at noon on the same 6th day of September, from [Locus ⊙ in meridie ad eundem 6 diem Septembris, ex]

the true declination [Decl. vera]	Tycho's ephemerides [Ephem. Tych.]	Mästlin [Mæſtl.]	Cyprian [Cypriano]
23° 0′ 40″ ♍	23° 1′ 26″ ♍	22° 56′ 48″	23° 1′ 25″

8 September [DIE 8 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	36° 4′
by the revolving quadrant [per Volub.]	36° 3⅔′
Declination by the armillae [Declin. per Armill.]	1° 57⅓′
	1° 57⅔′

It was not clear enough.

Line	Value
Declination from the meridian altitude [Declin. ex altit. Merid.]	1° 58½′
To be subtracted for refraction [Subtrahenda pro refract.]	30″
	1° 58′ 0″
Add for parallax [Adde pro parallaxi]	2′ 25″
True declination [Vera declinatio]	2° 0′ 25″

Place of the Sun at noon on the same day, 8 September, from [Locus ☉ in Meridie ad eundem diem 8 Septembris ex]

the true declination [Decl. vera]	Tycho's ephemerides [Ephem. Tych.]	Mästlin [Mæſtlin.]	Cyprian [Cyprian.]
24° 58′ 0″ ♏	24° 58′ 52″	24° 52′ 49⅚″	24° 59′ 4″

8 September [DIE 8 SEPTEMBRIS.]

The twilight was observed, with clouds scattered about. When the Vulture was at 8° 48½′ [Cum erat Vultur 8° 48½′], some very slight trace of the twilight still seemed to be visible, for this reason: around the meridian toward the west the Sun's rays shone more brightly than toward the east. When the Vulture was at 8° 50⅓′, no trace of the twilight appeared.

9 September [DIE 9 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ☉ merid.]	
by the steel instrument [per Chalyb.]	35° 40$\frac{1}{12}$′
by the revolving quadrant [per Volub.]	35° 39½′
by the mural quadrant [per Mural.]	35° 40¾′
	35° 40½′
Declination of the Sun [Declin. ☉]	1° 33½′
by the armillae [per Armillas]	1° 33⅔′

The sky was moderately clear.
For the same 9th day of September [Ad eundem 9 diem Septemb.]

Line	Value
Limitata altitude of the Sun [Alt. limitata ☉]	35° 40′ 0″
Refraction, to be removed [Refractio auferenda]	33″
Parallax, to be added [Parallax. addenda]	2′ 26″
	35° 41′ 53″
True declination [Declinatio vera]	1° 36′ 23″

Place of the Sun in the zodiac, from [Locus ⊙ in Zodiaco ex]

the true declination [Declin. vera]	Tycho's ephemerides [Ephem. Tych.]	Mästlin [Mæſtlino]	Cyprian [Cypriano]
25° 58′ 17″ ♍	25° 57′ 38″	25° 51′ 50″	25° 57′ 56″

10 September [DIE 10 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	35° 17′
by the revolving quadrant [per Volub.]	35° 16½′
by the mural quadrant [per Mural.]	35° 16⅝′
	35° 17′
Declination by the armillae, max. [Declin. per Arm. max.] with both pinnules [vtroque pinn.]	1° 11′

The sky was moderately clear.
For the same 10th of September [Ad eundem 10 Septemb.]

Line	Value
Altitude of the Sun [Altitudo ⊙]	35° 17′ 0″
Refraction, to be subtracted [Refractio ſubtrahenda]	34″
Parallax, to be added [Parallax. addenda]	2′ 26″
True altitude [Altitudo vera]	35° 18′ 52″
True declination [Vera declinatio]	1° 13′ 22″
Hence the corresponding longitude of the Sun [Hinc reſp. Longitudo ⊙]	26° 56⅛′ ♍

From [Ex]

Tycho's new ephemerides [Ephem. Tych. noua]	Mästlin [Mæſtlino]	Cyprian [Cypriano]
26° 56′ 27″ ♍	26° 49′ 49″	26° 56′ 49″

12 September [DIE 12 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	34° 30′ 0″
by the revolving quadrant [per Volub.]	34° 30′ 30″
by the mural quadrant [per Mural.]	34° 30⅛′
	34° 30¼′
Declination by the armillae, max. [Declin. per Armill. max.]	0° 25′ 0″
	0° 24′ 10″

The sky was fairly clear.
For the same 12th of September [Ad eundem 12 Septemb.]

Line	Value
Limitata altitude of the Sun [Altit. ⊙ limitata]	34° 30′ 0″
Refraction, to be subtracted [Refractio ſubtrahenda]	40″
Parallax, to be added [Parallax. addenda]	2′ 28″
	34° 31′ 48″
True declination [Declinatio vera]	0° 26′ 18″

Place of the Sun, from [Locus ⊙ ex]

the true declination [Declin. vera]	Tycho's ephemerides [Ephem. Tych.]	Mästlin [Mæſtlino]	Cyprian [Cypriano]
28° 54′ 3″ ♍	28° 54′ 11″	28° 47′ 50″	28° 54′ 40″

18 September [DIE 18 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	32° 8¾′
by the revolving quadrant [per Volub.]	32° 8⅝′
by the mural quadrant [per Mural.]	32° 8¾′
with both pinnules [vtroque pinn.]	
Declination of the Sun by the equatorial armillae [Declin. ⊙ per Armil. æquator.], with both pinnules [vtroque pinnacidio]	1° 57⅔′

The sky was fairly clear.

Line	Value
Meridian altitude of the Sun [Altit. ⊙ Merid.]	32° 8′ 45″
Refraction, to be subtracted [Refractio ſubtrahenda]	1′ 3″
Parallax, to be added [Parallax. addenda]	2′ 32″
	32° 10′ 14″
True declination [Declinatio vera]	1° 55′ 16″
Resp. longitude [Reſp. Longitudo]	4° 49′ 5″ ♎

From Tycho's ephemerides [Ex Ephem. Tychon.]	Mästlin [Mæſtlino]	Cyprian [Cypriano]
4° 48′ 10″ ♎	4° 40′ 50″	4° 49′ 24″

19 September [DIE 19 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	31° 45½′
by the revolving quadrant [per Volub.]	31° 45½′
by the mural quadrant, with both [per Mural., vtroq.]	31° 45¾′
Declination by the armillae, with both pinnules [Decl. per Arm., vtroq. pinn.]	2° 20½′

The sky was moderately clear.
For the same 19th day of September [Ad eundem 19 diem Septemb.]

Line	Value
Altitude of the Sun [Alt. ⊙]	31° 45′ 30″
Refraction, to be subtracted [Refractio ſubtrahenda]	1′ 10″
Parallax, to be added [Parall. addenda]	2′ 33″
True altitude [Vera altitudo]	31° 46′ 53″
True declination [Vera declinatio]	2° 18′ 37″
Hence the longitude [Inde Longitudo]	5° 47′ 47″

Tycho's ephemerides [Ephem. Tychon.]	Mästlin [Mæſtlino]	Leowitz [Leovitio]
5° 47′ 19″ ♎	5° 39′ 50″	5° 48′ 40″

21 September [DIE 21 SEPTEMBRIS.]

When the bright star of the Vulture was occid. 9 10 [Cum erat lucida Vult. occid. 9 10], the twilight still appeared. A trace of the twilight still appeared, the bright star of the Vulture occ. 9 50 [luc. Vult. occ. 9 50]. No trace of the twilight remained, the bright star of the Vulture occ. 12 17½ [luc. Vult. occ. 12 17½].

23 September [DIE 23 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	30° 12⅔′
by the revolving quadrant [per Volub.]	30° 12⅚′
by the mural quadrant [per Mural.]	30° 12′
	30° 12⅙′
Declination of the Sun [Declin. ⊙]	3° 55′
	3° 54½′

The sky was moderately clear.

Line	Value
Mean altitude [Altitudo media]	30° 12′ 30″
Refraction, subt. [Refractio ſubt.]	1′ 20″
Parallax, add. [Parall. add.]	2′ 35″
	30° 13′ 45″
True declination [Vera declinatio]	3° 51′ 45″
Resp. longitude [Reſp. Longitudo]	9° 42′ 57″ ♎

For the same day at noon [Ad eundem diem in Meridie]

Tycho's ephemerides [Tychonis Ephem.]	Mästlin [Mæſtlin.]	Leowitz [Leouit.]
9° 45′ 12″ ♎	9° 36′ 50″	9° 46′ 20″

25 September [DIE 25 SEPTEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	29° 25½′
by the revolving quadrant [per Volub.]	29° 26⅙′
by the mural quadrant [per Mural.]	29° 26′
	29° 25⅔′
Declination by the armillae [Declin. per Armill.]	4° 40½′
	4° 40¾′

The sky was fairly clear.

6 October [DIE 6 OCTOBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	25° 15½′
by the revolving quadrant [per Volub.]	25° 15⅙′
Declination [Declinatio]	8° 51⅔′
	8° 51⅓′

7 October [DIE 7 OCTOBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [Per Chalyb.]	24° 54′
by the revolving quadrant [per Volub.]	24° 53¾′
by the mural quadrant [per Mural.]	24° 53′
	24° 52⅚′

Line	Value
Declination by the armillae, with both pinnules [Decl. per Arm., vtroq. pin.]	6° 45′

8 October [DIE 8 OCTOBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	24° 32′
by the revolving quadrant [per Volub.]	24° 32½′
by the mural quadrant [per Mural.]	24° 31½′
with one pinnule only (the new one) [vno tantum pinnacid. (nouo)]	
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	9° 35½′
	9° 36′

The sky was fairly clear.

9 October [DIE 9 OCTOBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	24° 9⅔′
by the revolving quadrant [per Volub.]	24° 9⅚′
by the mural quadrant [per Mural.]	24° 9¼′
	24° 9⅓′
Declination of the Sun by the armillae[1] [Declin. ⊙ per Armill.[1]] with both pinnules [vtroque pinnacidio]	9° 57′

The sky was fairly clear.

10 October [DIE 10 OCTOBRIS.]

Time	Declination of the Sun [Declinatio ⊙], with one [vno]	with the other [altero]	The Sun east [⊙ orient.]
8^h $15¾^m$ [H. 8 15¾′]	10° 12′	10° 12⅔′	55° 18′
8^h $27⅔^m$ [8 27⅔]	10° 13′	10° 14′	52° 21½′
8^h $44⅓^m$ [8 44⅓]	10° 13′	10° 14′	48° 20′
9^h 11^m [9 11]	10° 15′	10° 14⅚′	41° 47′
9^h 24^m 25^s [9 24 25]	10° 15¼′	10° 15½′	38° 40′
9^h 40^m 50^s [9 40 50]	10° 15½′	10° 16′	34° 32′
9^h 50^m 20^s [9 50 20]	10° 15½′	10° 16⅙′	32° 10′

Time	Declination of the Sun [Declinatio ⊙], with one [vno]	with the other [altero]	The Sun east [⊙ orient.]
10^{h} 14^{m} 40^{s} [10 14 40]	10° 16½′	10° 16½′	26° 19′

Meridian altitude of the Sun [Solis Altit. Merid.]

Line	Value
by the steel instrument [per Chalyb.]	*23° 48′*
by the revolving quadrant [per Volub.]	*23° 48½′*
by the mural quadrant [per Mural.]	*23° 47½′*
Declination by the armillae, with one pinnule [Declin. per Armill. vno pinn.]	*10° 19¼′*
with the other [altero]	*10° 18⅚′*

N.B. At this noon the clock was running 2 minutes faster than it should; this fault had been in it since the sixth hour of the morning, for at that time it was checked against the stars. [*N. B. Horologium in hoc Meridie 2 minutis iuſto celerius mouebatur, quod vitium illi ab Hora ſexta Matutina adfuit, tunc enim ad ſtellas verificabatur.*]

15 October [DIE 15 OCTOBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	22° 1½′
by the revolving quadrant [per Volub.]	22° 2′
by the mural quadrant [per Mural.]	22° 1′
	22° 1½′
Declination by the greater armillae [Declin. per Arm. maiores]	12° 4⅓′
	12° 5′

It was not clear enough.

30 October [DIE 30 OCTOBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	17° 14⅚′
by the revolving quadrant [per Volub.]	17° 15⅔′
by the armillae [per Armill.]	16° 51′
with the better pinnule [meliori pinnacid.]	16° 51⅚′

The sky was moderately clear.

31 October [DIE 31 OCTOBRIS.]

Line	Value
Meridian altitude of the Sun [Allt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	16° 58¼′
by the revolving quadrant [per Volub.]	16° 59′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	17° 8½′
	17° 8⅔′

The sky was moderately clear.

14 November [DIE 14 NOUEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	13° 34′
by the steel instrument [per Chalyb.]	13° 34⅙′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	20° 34⅓′
	20° 34⅔′

The sky was moderately clear.

Place of the Sun in the zodiac for the same time [Locus ⊙ in Zodiaco ad idem tempus.]

Line	Value
Meridian altitude of the Sun [Altit. Merid. ⊙]	13° 34′
Refraction, subtrah. [Refractio ſubtrah.]	8′ 14″
Parallax, adden. [Parallaxis adden.]	2′ 49″
	13° 28′ 35″
True declination [Declinatio vera]	20° 36′ 55″

Resp. longitude from [Reſp. Longitudo ex]

the observation [Obſeruatione]	our ephemerides [Ephem. noſt.]	Mästlin [Mæſtlino]	Cyprian [Cypriano]
1° 53′ 53″ ♐	1° 54′ 0″	1° 35′	2° 1′ 6″

4 December [DIE 4 DECEMBRIS.]

Line	Value
Meridian altitude of the Sun by the steel instrument [Alt. ⊙ merid. per Chalyb.]	10° 54′
by the revolving quadrant [per Volub.]	10° 54¼′
Declination by the armillae [Declin. per Armill.]	23° 13′

Line	Value
	23° 12½′

It was not clear enough.

[1] Compare below, among the observations of Venus [Cf. infra inter obſeruationes Veneris.]

6 December [DIE 6 DECEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	10° 48⅚′
by the steel instrument [per Chalyb.]	10° 48⅓′
by the new sextant [per nouum Sext.]	10° 48⅚′
Declination by the largest armillae [Decl. per Armill. max.]	23° 17¾′
	23° 17¾′

The sky was fairly clear.

Place of the Sun in the zodiac for the same time [Locus ⊙ ſub Zodiaco ad idem tempus.]

Line	Value
Meridian altitude [Alt. Merid.]	10° 48⅔′
Refraction, to be subtracted [Refractio ſubtrah.]	9′ 40″
Parallax at the least distance from the Earth, to be added [Parallaxis in diſtantia minima a terra addenda]	3′ 3″
	10° 42′ 3″
True declination [Vera declinatio]	23° 23′ 27″

10 December [DIE 10 DECEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	10° 42⅚′
by the steel instrument [per Chalyb.]	10° 43⅚′
by the new brass [per nou. orich.]	10° 42⅚′
by the mural quadrant [per Mural.]	10° 39⅔′
with the old pinnules, twice [veteri pinnacid. bis]	
Declination by the armillae [Declin. per Armill.]	23° 25½′
	23° 25⅙′

It was not clear enough.

Line	Value
Mean altitude [Altit. media]	10° 43′
Refraction, to be subtracted [Refractio ſubtrah.]	9′ 39″
Parallax, to be added [Parallaxis addenda]	3′ 3″
	10° 36′ 24″
True declination [Vera declinatio]	23° 28′ 51″

18 December [DIE 18 DECEMBRIS.]

Time on the clock. Morning. [Tempus in horologio. Mane.]

Time on the clock	Remark
7^h 15⅓^m [H. 7 15⅓]	Then Spica ♍ was west 8 41 [Tunc erat Spica ♍ occident. 8 41]
8^h 35^m [8 35]	The Sun was rising [Oriebatur ☉]

Line	Value
Meridian altitude of the Sun [Alt. ☉ merid.]	
by the revolving quadrant [per Volub.]	10° 52⅓′
by the steel instrument [per Chalyb.]	10° 51½′
by the mural quadrant, old pinnules [per Mural., veteri pinn.]	10° 50′
Declination by the greater armillae [Decl. per Armill. maiores]	23° 15⅙′
	23° 15¼′

The sky was fairly clear.

At this noon the clock was running 1 minute faster than it should; the error was corrected. [Horologium mouebatur in hoc meridie 1 minuto iuſto celerius, qui error corrigebatur.]

20 December [DIE 20 DECEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ☉ merid.]	
by the steel instrument [per Chalyb.]	10° 58′
by the revolving quadrant [per Volub.]	10° 58⅓′
Declination of the Sun by the armillae [Decl. ☉ per Armill.]	23° 7½′
	23° 7⅚′

The sky was fairly clear.

The clock was running 58 minutes faster than it should, an error it had gained since yesterday's noon. [Horologium mouebatur 58 minutis iuſto celerius, qui error illi ab heſterno Meridie acceſserat.]

Note, however, that before this noon the clock had stopped for a little while, for about 3 or 4 minutes. Some of the weight was taken off. [Nota autem quod horologium ante hunc Meridiem, paululum quieuerat, per minuta 3 vel 4 circiter Eximebatur aliquid ponderis.]

23 December [DIE 23 DECEMBRIS.]

Line	Value
Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	11° 11′
by the revolving quadrant [per Volub.]	11° 11⅓′
by the mural quadrant [per Mural.]	11° 10¾′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	22° 55¼′
	22° 55⅙′

The sky was fairly clear.

The clock was running 24½^{m} faster than it should; yesterday evening we took off some of the weight, and now again. [Horologium mouebatur iuſto celerius 24½′, heſterno Veſpere aliquid ponderis eximebamus, & nunc etiam.]

28 December [DIE 28 DECEMBRIS.]

The clock was corrected at noon to the Sun. For observing the altitude and declination, however, it was not clear enough. [Corrigebatur Horologium in Meridie ad ⊙. Pro obſeruandis autem Altitudine & Declinatione non erat ſatis ſerenum.]

OBSERVATIONS OF THE MOON [OBSERUATIONES LUNÆ.]

4 February, evening [DIE 4 FEBRUARIJ, VESPERI.]

At 8^{h} 50^{m}1 the Moon was in the 90th degree. [Hora 8 M. 50¹ ☾ in 90 Gradu.]

The diameter of the Moon was observed with the armillae, and it was [Obſeruabatur diameter ☾ per Armillas eratque]

Line	Value
with one pinnule [vno pinn.]	31′
	31½′
with the other [altero.]	31½′

N.B. At hour 8 the clock was corrected to Aldebaran. [N. B. Hora 8 corrigebatur Horologium ad Aldeboram.]

Time	Line	Value
8^{h} 5⅓^{m} [H. 8 M. 5⅓]	Declination of the upper limb of the Moon [Declin. ſuperioris limbi ☾]	19° 54¼′2
	of the lower [inferioris]	19° 22½′
	Diameter	31¾′
8^{h} 10^{m} 30^{s} [8 10′ 30″]	The declination repeated, as it approached the 90th degree [Repetita declin. cum appropinquaret 90 gradui.]	

Time	Line	Value
	Upper limb [Superioris limbi]	19° 53⅓′
	Lower [Inferioris]	19° 23⅙′
	Diameter	30 10
8^h $18^{2}/_{3}{}^m$	Between the western limb of the Moon [Inter occid. limb. ☾]	31° 10′
8^h $20^{1}/_{3}{}^m$	and Aldebaran [& Aldeboram]	31° 11¾′
8^h $21^{1}/_{6}{}^m$	The distance repeated [Repetita dift.]	31° 12¼′
8^h $23^{2}/_{3}{}^m$		31° 12¾′
8^h $28^{1}/_{6}{}^m$	The altitude of the upper limb [Erat Alt. ſuper. limbi]	
	of the Moon by the steel instrument was [☾ per Chalybeum]	53° 57′ 10″
	Of the lower limb by the steel instrument [Inferioris limbi per Chal.]	53° 26′ 30″
	Of the upper limb by the revolving quadrant [Superioris limbi per Vol.]	53° 57′ 40″
	Of the lower limb by the revolving quadrant [Inferioris limbi per Vol.]	53° 26′ 20″
8^h $40^{5}/_{6}{}^m$	Between the western limb [Inter occid. limb.]	15° 59′
8^h $42^{1}/_{2}{}^m$	of the Moon and the lower [☾ & inferius]	16° 1′
8^h $43^{1}/_{6}{}^m$	head of ♊ [caput ♊]	16° 0′
8^h $45^{1}/_{3}{}^m$		15° 58⅔′
8^h 47^m		15° 59′
8^h $48^{1}/_{6}{}^m$		15° 58′
8^h $49^{1}/_{6}{}^m$		15° 56′
8^h $50^{1}/_{2}{}^m$	Between the western limb [Inter occid. limb.]	31° 21′
8^h $51^{1}/_{2}{}^m$	of the Moon and the eye of ♉ [☾ & oculum ♉]	31° 21¾′
8^h 52^m 35^s	Declination of the upper limb of the Moon [Decl. ſuper. limb. ☾]	19° 54′
	of the lower [inferioris]	19° 22′
8^h 55^m 20^s	Between the western limb and [Inter occ. limb. &]	
	the eye of ♉ [oc. ♉]	31° 24′
8^h $56^{1}/_{3}{}^m$	Repeated [Repetita]	31° 24′
8^h 57^m		31° 25¼′
8^h 59^m 15^s	Between the western limb of the Moon [Inter occ. limb. ☾]	15° 54⅓′
9^h 0^m 5^s	and the lower head of ♊ [& inferius caput ♊]	15° 55′
9^h 0^m 50^s		15° 54⅙′
	Declination of the upper limb of the Moon [Declin. ſuper. limbi ☾]	19° 55½′
	of the lower limb [inferioris limbi]	19° 27′

5 February [DIE 5 FEBRUARIJ.]

At 9^h 57^m the Moon was in the 90th degree, *or rather tending towards it.* [H. 9 M. 57 ☾ in 90 Gradu *vel potius tendens eo.*]

28 February, afternoon [DIE 28 FEBRUARIJ, P. M.]

Time [Tempus]	Sun west [☉ occ.]	Western limb of the Moon, east [☾ occ. limb. orient.]	Altitude of the upper horn of the Moon [Alt. ſup. cornu ☾]	Altitude of the Sun by the steel instrument [Alt. ☉ per Chal.]
2^h $25^{1}/_{2}{}^m$	36° 13½′	22° 30′	43° 7⅚′	23° 7⅚′
2^h 30^m	0 37° 15′	21° 23½′	43° 28½′	22° 42⅔′
2^h 32^m	5 37° 59′	20° 42½′	43° 38⅓′	22° 26½′
			Declination [Decl.]	
2^h 33^m 40^s		upper [ſup.]	12° 30′	

Time [Tempus]	Sun west [⊙ occ.]	Western limb of the Moon, east [☾ occ. limb. orient.]	Altitude of the upper horn of the Moon [Alt. ſup. cornu ☾]	Altitude of the Sun by the steel instrument [Alt. ⊙ per Chal.]
		lower [inf.]	12° 1′	
2h 37m	5♓ 9° 9¾′	19° 28′		22° 0′
2h 39m 40s		upper [ſup.]	12° 31′	
		lower [inf.]	12° 2¼′	

1 March, afternoon [DIE 1 MARTIJ, P. M.]

Time [Tempus]	Altitude of the Sun [Alt. ⊙]	Sun west [⊙ occid.]	Western limb of the Moon, east [Occ. limb. ☾ orient.]	Dist. æquat. [Diſt. æquat.]	Declination of the Moon, upper [Decl. ☾ ſuper.]	Declination of the Moon, lower [Decl. ☾ infer.]	Altitude of the upper horn of the Moon by the revolving quadrant [Alt. ſup. cornu ☾ per Volub.]
3h 34m	4[1]5° 53⅔′	54° 15′	17° 23¼′	71° 38¼′	16° 0′	15° 28½′	
3h 40m	3[2]5° 8⅙′	55° 41′	15° 56′	71° 37′			48° 10¾′
3h 43½m	14° 48⅔′	56° 27′	15° 11⅓′	71° 38⅓′	15° 59½′	15° 28¼′	48° 21⅔′
3h 46⅚m	14° 24⅓′	57° 20′	14° 21¼′	71° 41¼′			48° 31⅚′
3h 49⅔m	14° 4′	58° 4′	13° 40½′	71° 44½′	16° 0⅙′	15° 29′	48° 39¾′
4h 16m	10° 49′	64° 43½′	6° 6½′	71° 50′			
4h 18½m	10° 20′	65° 20′	6° 30′	71° 50′			49° 48′
4h 21⅔m					16° 3½′	15° 33′	
4h 23m	0♑ 42½′		Declination of the Sun [Declinatio ⊙]	3° 36½′	with both pinnules [vtroque pinnacidio.]		

[1] In codex V, 50 is corrected to 45 [50 in 45 corr. codex V.] [2] Written beside it in the margin: »Aurif« [Adſcriptum eſt in margine: »Aurif«.]

3 March, afternoon [DIE 3 MARTIJ, P. M.]

At this time the Moon was about the 90th degree, and was observed from Venus[1] [☾ erat hoc tempore circa 90 Gradum & obſeruabatur a ♀ [1]]

Time [H. M.]	Between the western limb of the Moon and Venus [Inter occ. limb. ☾ & ♀]	Declination of the Moon [Decl. ☾]	Altitude of the upper limb of the Moon [Alt. ſup. limb. ☾]
5h 32⅓m	52° 21½′	upper [ſup.] 19° 45½′	
5h 33m corrected [corr.]		lower [inf.] 19° 13¼′	
5h 35m			52° 25′
5h 35⅚m	52° 23½′	upper [ſup.] 19° 45′ lower [inf.] 19° 13′	

Time [H. M.]	Between the western limb of the Moon and Venus [Inter occ. limb. ☾ & ♀]	Declination of the Moon [Decl. ☾]	Altitude of the upper limb of the Moon [Alt. ſup. limb. ☾]
$5^h\ 41^m$	52° 25′	upper [ſup.] *19° 45′* lower [inf.] 19° 13′	*52° 41½′*
	Azimuth of the western [*Azim. occ.*] *limb* [*limb.*] *19° 35′*		*Venus west* [♀ *occ.*] *43° 32′*

6 July, morning [DIE 6 JULIJ, MANE.]

The following were observed concerning the Moon, which was at any moment about to enter eclipse below our horizon. [Obſeruabantur ſequentia circa ☾ iam iam infra noſtrum Finitorem Eclipſin ingreßuram.]

The clock time corrected to the Sun. [Tempus Horologij ad ☉ correctum.]

At $3^h\ 10^m\ 14^s$ [3H10′ 14″] Aurifaber [?] took the altitude of the Moon's centre with the astronomical radius as about 0° 40′. [Accipiebat Aurifaber altitudinem centri ☾ per radium aſtronomicum quaſi 0° 40′.]

At $3^h\ 12^m\ 5^s$ the Sun began to rise; and when it stood half above the horizon, the lower limb of the Moon was grazing the horizon. And although, because of refraction, the Moon did not yet seem to be in true opposition, it still appeared full and darkened in no part of itself. [Incipiebat ☉ oriri, & cum medius extabat ſupra Horizontem, ſtringebat inferior limbus ☾ae Finitorem. Et quamuis ☾ propter refractionem nondum videbatur eße in vera oppoſitione, apparebat tamen adhuc plena & in nulla ſui parte offuſcata.]

8 October [DIE 8 OCTOBRIS.]

Observation of the Moon about the 90th degree. [Obſeruatio ☾ circa 90 Gradum.]

Line	Between the eastern limb of the Moon and Aldebaran [Inter orient. limb. ☾ & Aldeb.]	Declination, lower horn [Decl. inf. cornu]	Declination, upper [ſuper.]	Then the bright star in the shoulder of Orion was west [Tunc erat luc. hum. Or. occ.]
	27° 0⅙′	20° 7′	20° 39′ doubtful [dubia]	27° 5½′
	27° 1′	20° 11½′	20° 44′	28° 7′
Conversely [Viceverſa]				
	Between the eastern limb of the Moon and cor ♌ [Inter or. limb. ☾ & cor ♌]			
	53° 4½′	20° 13′	20° 43½′	29° 52′
	53° 5′	20° 15⅔′	20° 45′	31° 7′

9 October, morning [DIE 9 OCTOBRIS, MANE.]

$17^h\ 40^m$: the Moon about the 90th degree. [H. 17 M. 40 ☾ circa 90 gradum.]

Transit of the Lesser Dog through the meridian: $17^h\ 44^m$. [Tranſitus canis minoris per meridianum H. 17 M. 44.]

Distance between the bright star in the foot of Erichthonius and the eastern limb of the Moon [Diſt. inter luc. ped. Erichtonij & orient. limbum ☾]	Declination, lower [Declin. infer.]	Declination, upper [ſuper.]	Then the Lesser Dog was west [Tunc erat Canis minor occid.]
28° 12′	20° 34′		3° 46′
28° 12′		21° 8′	4° 48′
28° 18′	20° 31′	21° 6′	6° 7⅔′
28° 19′	20° 35′	21° 7′	8° 1⅙′

N.B. Here the Moon was about the greatest remoteness of the epicycles [maximam remotionem Epicyclorum]. [N. B. ☾ erat hic circa maximam remotionem Epicyclorum.]

Line	Value
Declination of the upper horn of the Moon [Declin. ſuperioris cornu ☾]	21° 5½′
of the lower horn of the Moon [inferioris cornu ☾]	20° 36′
Venus east [♀ orientalis]	48° 31′

When Venus was 47° 31′ from the meridian towards the east, the Moon was observed about the 90th degree with the zodiacal armillae, verified, and this with the place of Venus set in the first degree of ♎ exactly completed. The eastern limb of the Moon appeared at 23° 32′ ♋. [Quando ♀ abeßet a Meridiano verſus ortum 47 31, obſeruabatur ☾ circa 90 Gradum per Armillas Zodiacales verificatas, idque poſito loco ♀ in primo gradu ♎ exacte completo. Videbatur limbus ☾ orient. in 23 32 ♋.]

Line	Value
Declination of the upper horn [Declin. ſuper. cornu]	21° 6½′
of the lower [inferioris]	20° 36′

When 13½° ☊ was on the meridian and Venus was east 46° 57′, the Moon appeared in the same way at 23° 33′ ♋. [Quando in Meridiano erat 13½ ☊ & eßet ♀ orient. 46 57, videbatur ☾ eodem modo in 23 33 ♋.]

When 15° 0′ ☊ was on the meridian, Venus 44° 55′ east, [Quando in Meridiano erat 15 0 ☊, ♀ 44 55 orient.,]

Line	Value
Declination of the upper horn [Declin. ſuperioris cornu]	21° 3⅓′

Line	Value
of the lower [inferioris]	20° 36½′

10 October, morning [*DIE 10 OCTOBRIS, MANE.*]

The Moon was on the meridian, or had passed it by about ½ degree, when the Lesser Dog was west 10° 31′. [☾ *erat in Meridiano vel circa ½ gradum prætergreſſa, cum Canis minor eſſet occid. 10 31*]

Line	Value
Altitude of the upper horn of the Moon [*Altit. ſuperioris cornu* ☾]	*54° 24′*
of the lower [*inferioris*]	*53° 53′*
Declination [*Declinatio*]	*19° 49′*
	20° 20′

Afterwards the Moon was observed approaching the 90th degree and standing near the greatest remoteness of each epicycle, in the manner that follows. Everywhere, moreover, the eastern limb of the Moon was taken in the distance from Venus, and both horns of the Moon in the declination. [*Poſtea obſeruabatur* ☾ *appropinquans 90 Gradui & exiſtens iuxta remotionem maximam vtriusque epicycli, in hunc qui ſequitur modum. Accipiebatur autem vbique orientalis limbus* ☾ *in diſtantia a* ♀ *& in declinatione vtrumque cornu* ☾.]

Clock time [*Tempus Horologij*]	*Distance of Venus from the meridian towards the east, æquat.* [*Diſt.* ♀ *a Mer. verſus ort. æquat.*]	*Between Venus and the eastern limb of the Moon, by the sextant* [*Inter* ♀ *& or. limb.* ☾ *per Sext.*]	*Declination of the horn, lower* [*Decl. cornu infer.*]	*Declination of the horn, upper* [*ſuper.*]
6^h 27⅔^m	*53° 17½′*	*57° 7½′*	*19° 49½′*	*20° 20′*
6^h 32½^m	*53° 6′*	*57° 7′*	*19° 49⅓′*	*20° 19′*
6^h 36^m	*51° 5′*	*57° 6′*	*19° 49½′*	*20° 18⅔′*

[1] In codices V and K it is written beside it: »Afterwards the time of the transit of the Moon through the 90th degree was computed as 6^h 35^m, so that there was an error here in these hours« [In codd. V. et K adſcriptum eſt: »Poſtea tempus tranſitus ☾ per 90 Grad. ſupputatum eſt H. 6 M. 35, vt error hic fuerit in his horis«.]

Clock time	*Distance of Venus from the meridian towards the east, æquat.*	*Between Venus and the eastern limb of the Moon, by the sextant*	*Declination of the horn, lower*	*Declination of the horn, upper*
6^h 39^m	*50° 23′*	*57° 5′*	*19° 49′*	*20° 19′*
6^h 43½^m	*49° 18′*	*57° 3′*	*19° 49′*	*20° 18′*
6^h 46⅓^m	*48° 29′*	*57° 1′*	*19° 48⅚′*	*20° 17′*
6^h 52^m	*47° 1′*	*56° 58½′*	*19° 49⅔′*	*20° 15′*

Venus was high enough to be free of refraction, and the Moon near the meridian or beyond it. The place of Venus can be taken from observation. [♀ *erat ſatis alta, vt refractione careret, &* ☾ *iuxta Meridianum vel vltra. Poteſt* ♀ *locus ex obſeruatione accipi.*]

Clock time	*Distance of Venus from the meridian towards the east, æquat.*	*Between Venus and the eastern limb of the Moon, by the sextant*	*Declination of the horn, lower*	*Declination of the horn, upper*
$6^h\ 56^m$	46° 4′	56° 57′	19° 48⅔′	20° 14½′
$7^h\ 1½^m$	44° 36′	56° 56½′		20° 14′
$7^h\ 4^m$	43° 39′	56° 54½′		
$7^h\ 8⅓^m$	42° 54′	56° 53½′		
$7^h\ 13½^m$	41° 36½′	56° 51¼′		20° 14′
$7^h\ 17⅓^m$	40° 32′	56° 50⅙′	19° 48′	20° 14′
$7^h\ 37^m$	35° 29′	56° 41½′	19° 47⅓′	20° 12′
$7^h\ 42½^m$	33° 48½′	56° 40′	19° 47′	20° 11′
$7^h\ 45¼^m$	33° 24′	56° 38′	19° 47′	20° 11⅙′
$7^h\ 48¼^m$	32° 51′	56° 36⅓′		
$7^h\ 50^m$	32° 3′	56° 34½′	19° 46½′	20° 10½′
$7^h\ 54^m$	31° 27′	56° 33⅚′		
$7^h\ 57½^m$	30° 17′	56° 32′	19° 45½′	20° 10½′
$8^h\ 0^m$	29° 11′	56° 31⅙′	19° 46′	20° 10½′

Afterwards the Moon was no longer observed from Venus, because it was too far beyond the 90th degree. On this day the Moon near the 90th degree at $7^h\ 32^m$, *as I think.* [*Poſtea non obſeruabatur* ☾ *a* ♀ *amplius, eo quod nimium eßet extra 90 gradum.* ☾ *hoc die iuxta 90 gradum H. 7 M. 32 vt puto.*]

N.B. All these observations from Venus to the Moon were quite exact; I was present myself, and the sky was beautifully clear; base yourself on these for the Moon. But the clock is to be verified for its times from the equatorial distance of Venus. [*N. B. Hæ obſeruationes omnes a* ♀ *in* ☾ *fuerunt ſatis exactæ, ipſemet aderam, & fuit pulcra ſerenitas, funda te in his pro* ☾. *Sed horologium per ſua tempora ex diſt.* ♀ *æquatoria verificandum.*]

At about these same times, when the Moon was in the 90th degree, its zodiacal distance from Venus was observed with the zodiacal armillae, and the place of Venus was everywhere set at 24° 0′ ♍. *If, however, anything is to be added or subtracted, it can be gathered from the morning observation of Venus noted earlier*[1] *and applied to the Moon.* [*Circa hæc ipſa tempora cum* ☾ *eßet in 90 gradu, obſeruabatur eius diſtantia Zodiacalis a* ♀ *per Armillas Zodiacales, & ponebatur vbique locus* ♀ *in 24 0* ♍. *Si quid tamen addendum vel demendum ſit, id ex obſeruatione eius matutina prius annotata*[1] *colligi poteſt & lunæ applicari.*]

The eastern limb of the Moon, with the place of Venus set at 24° 0′ ♍. [*Orientalis limbus* ☾, *poſito loco* ♀ *in 24 0* ♍.]

Time [*H. M.*]	*Longitude of the eastern limb* [*Long. or. limb.*]	*Venus east* [♀ *or.*]	*Declination of the Moon, lower* [*Declinatio ☾ infer.*]	*Declination of the Moon, upper* [*ſuper.*]
$7^h\ 27^m$	27° 5′ ♋	38° 6′	19° 48′	20° 12⅔′
$7^h\ 29½^m$	27° 5′ ♋	37° 30½′	19° 48⅙′	20° 12′
	as before [*vt prius*]			
$7^h\ 32^m$	27° 6′ ♋	36° 48′	19° 47⅔′	20° 11½′
	as before [*vt prius*]			
$7^h\ 34⅓^m$	27° 7′ ♋		19° 47½′	20° 11⅔′

You may also use these observations and compare them with the preceding ones made with the sextant, provided, however, that the place of Venus is first rectified from the morning observation made at about hour 5⅔ and applied here, with regard had to the refractions and parallaxes; and from this fix the place of the eastern limb of the Moon, adding or subtracting the Moon as need be, and afterwards reducing everything to the centre. [*Poteris his etiam vti obſeruationibus & conferre cum antecedentibus per Sextantem factis, ita tamen vt locus ♀ prius rectificetur ex obſeruatione matutina iuxta horam 5⅔ facta & huc applicata, habito refractionum & parallaxium reſpectu, atque hinc limitare locum limbi ☾ orientalis, ☾ addendo vel ſubtrahendo, prout opus erit, & redigendo poſtea omnia ad centrum.*]

28 October [DIE 28 OCTOBRIS.]

The Moon near the 90th degree. N.B. The transit of the bright star of the Vulture through the meridian was at $4^h\ 40½^m$; correct the clock from this. [☾ *iuxta 90 gradum.* N.B. Tranſitus Luc. Vult. per Mer. erat H. 4 Min. 40½, hinc corrige Horologium.]

Time [Tempus H. M. S.]	Distance between the western limb of the Moon and the preceding shoulder of ♒ [Diſt. inter occ. limb. ☾ & præced. hum. ♒]	Declination, upper horn [Declinatio ſup. cornu]	Declination, lower [infer.]	Altitude of the upper horn of the Moon by the lesser quadrant [Alt. ſup. cornu ☾ per Quad. min.]	For correcting the clock, the bright star of the Vulture was then west [Pro corrigendo horologio erat tunc Lucid. Vult. occid.]
$5^h\ 36^m$	29♒ 39½′	7° 52′	8° 24′	15° 40′	14° 2′
					Scheat of Pegasus east [Scheat Peg. or.]
$5^h\ 42^m$	4♓ 35′	7° 51′	8° 21′	16° 25′	12° 32′
	Distance from the bright star in the tail of ♑, the latter of the two [Diſt. a luc. in cauda ♑, poſter. duarum]				The bright star of the Vulture west [Luc. Vult. occ.]
$5^h\ 49^m$	4♓ 11′	7° 50′	8° 20′	17° 0′	17° 23′
$5^h\ 52^m$	5♓ 12′	7° 49½′	8° 19⅓′	17° 25′	18° 14′
$5^h\ 55^m$	3♓ 13′	7° 48⅚′	8° 19′	17° 40′	18° 54′

Afterwards the same western limb of the Moon was observed from the bright star above the head of ♈, in the manner that follows. [Poſtea obſeruabatur ☾ idem lymbus occid. a lucida ſupra caput ♈ in hunc qui ſequitur modum.]

Time	Distance	Declination, upper horn	Declination, lower	Altitude of the upper horn of the Moon by the lesser quadrant	For correcting the clock
$6^h\ 2^m$ (3½ corrected [3½ corr.])	43° 29′	7° 49′	8° 18½′	18° 10′	20° 30′
$6^h\ 8^m\ 20^s$	43° 22′	7° 48½′	8° 17′	18° 40′	22° 11′

[1] See below, among the observations of Venus [Vide infra inter obſeruationes Veneris.]

It was then near 90°. [Erat tunc prope 90°.]

Time	Distance	Declination, upper horn	Declination, lower	Altitude of the upper horn of the Moon by the lesser quadrant	For correcting the clock
$6^h\ 12^m$ 45	43° 20′	7° 45½′	8° 16′	19° 0′	23° 13′
$6^h\ 16^m$ 40	43° 19½′	7° 45½′	8° 14⅚′	19° 30′	24° 15′

Afterwards the Moon was observed from the bright star in the tail of ♌. [Poſtea obſeruabatur ☾ a lucida in cauda ♌.]

Time	Distance	Declination, upper horn	Declination, lower	Altitude of the upper horn of the Moon by the lesser quadrant	For correcting the clock
$6^h\ 21^m$ 50	33° 20′	7° 45′	8° 14′	20° 0′	25° 25′
$6^h\ 24^m$ 50	33° 22½′	7° 43½′	8° 14′	20° 10′	26° 9′
$6^h\ 28^m$ 15	33° 23⅓′	7° 43′	8° 13½′	20° 30′	27° 1′
$6^h\ 31^m\ 5^s$	33° 25½′	7° 42½′	8° 12′	20° 45′	27° 41′

The Moon in the 90th degree from the ascending point of the ecliptic at $6^h\ 4^m$. [☾ in 90 gradu ab Aſcendente puncto Eclipticæ H. 6 M. 4.]

29 October, evening [DIE 29 OCTOBRIS, VESPERI.]

Here the clock was corrected by the first of the wing of Pegasus. [Horologium corrigebatur hic ad 1^{am} alæ Pegaſi.]

Time [H. M.]	Corrected time [Temp. corr.]	Between the bright star in the tail of ♌ and the western limb of the Moon [Inter luc. in cauda ♌ & occ. limb. ☾]	Declination, upper horn [Declinatio ſup. cornu]	Declination, lower [infer.]	Altitude of the upper horn [Altit. ſuper. cornu]	The first of the wing of Pegasus east, for correcting the clock [1 alæ Peg. or. pro cor. horol.]
$6^h\ 44⅚^m$		48° 10′	2° 25′	2° 55½′	19° 41⅓′	
$6^h\ 48^m$	$6^h\ 28^m$	48° 10⅓′	2° 23′	2° 54⅚′	20° 15′	20° 45′

Time [H. M.]	Corrected time [Temp. corr.]	Between the bright star in the tail of ♍ and the western limb of the Moon [Inter luc. in cauda ♍ & occ. limb. ☾]	Declination, upper horn [Declinatio ſup. cornu]	Declination, lower [infer.]	Altitude of the upper horn [Altit. ſuper. cornu]	The first of the wing of Pegasus east, for correcting the clock [1 alæ Peg. or. pro cor. horol.]
$6^h\ 52^m$	$6^h\ 32^m$	48° 11¼′	2° 21½′	2° 54′	20° 36⅔′	19° 45½′

Afterwards the Moon was observed from the bright star of ♈. [*Poſtea obſeruabatur* ☾ *a lucida* ♈.]

Time	Corrected time	Distance	Declination, upper horn	Declination, lower	Altitude of the upper horn	For correcting the clock
$6^h\ 56⅓^m$	$6^h\ 37^m$	30° 8′	2° 21′	2° 53′		18° 37′
$6^h\ 59⅓^m$		30° 6½′	2° 21′	2° 51½′		17° 56½′
$7^h\ 2½^m$		30° 6′	2° 20⅚′	2° 49⅓′	21° 43′	17° 18′
$7^h\ 6½^m$		30° 4⅔′	2° 20′	2° 49⅚′	22° 11′	16° 8′
						The bright star of the Vulture west [Luc. Vult. occ.]
$7^h\ 10½^m$	$6^h\ 49⅚^m$	30° 3′	2° 19½′	2° 48½′	22° 30′	33° 8′

The Moon was again observed from the bright star of the tail of ♍. [☾ iterum obſeruabatur a lucida caudæ ♍.]

Time	Corrected time	Distance	Declination, upper horn	Declination, lower	Altitude of the upper horn	For correcting the clock
$7^h\ 15⅚^m$	$6^h\ 55^m$	48° 25′	2° 18′	2° 47⅔′	23° 3′	34° 25′

The Moon in the 90th degree from the ascending point of the ecliptic at $6^h\ 57^m$. [☾ in 90 gradu ab Aſcendente puncto Eclipticæ H. 6 M. 57.]

With the place of the Vulture set at 26° 0′ ♍*, the Moon appeared as follows.* [*Poſito loco Vulturis in 26 0* ♍ *videbatur* ☾ *vt ſequitur.*]

Time	*Longitude of the western limb of the Moon* [*long.* ☾ *occ. limbi*]
$6^h\ 52^m$	*5° 48′*
$6^h\ 55^m$	**5° 45′*1*
$7^h\ 0^m$	*5° 52′*
$7^h\ 3½^m$	*5° 54′*

By the zodiacal armillae, approximately [en platei]. [*Per Armillas Zodiacales en platei.*]

23 December, evening [DIE 23 DECEMBRIS, VESPERI.]

At $3^h\ 20^m$ after noon on this day the place of the Moon was in the 90th degree from the horizon. [H. 3 20′ poſt merid. huius diej erat locus ☾ in 90 ab Horizonte gradu.]

(un-headed)	Declination, upper horn [Declinatio ſuper cornu]	Declination, lower [infer.]	Altitude of the upper horn of the Moon by the revolving quadrant [Alt. ſuper. cornu ☾ per Volub.]
3^h $35\frac{1}{3}^m$	0° 42′	1° 13′	
3^h $45\frac{5}{6}^m$	0° 38½′	1° 14′	28° 38′
3^h $51\frac{2}{3}^m$	0° 36⅔′	1° 11½′	29° 5′
3^h $58\frac{1}{2}^m$	0° 35½′	1° 10′	29° 39′
4^h $4\frac{1}{2}^m$	0° 34⅔′	1° 9½′	30° 7′
4^h $19\frac{1}{2}^m$		1° 9′	31° 10′

(un-headed)	(un-headed)	Between the western limb of the Moon and Aldebaran [Inter occ. limb. ☾ & Ald.]	(un-headed)
4^h $47\frac{1}{2}^m$	0° 56′	51° 51′	32° 39′
4^h $56\frac{1}{2}^m$	0° 55′	51° 51′	33° 0′
	0° 54½′		

To correct the clock: at 5^h 8^m the eye of ♉ was east 57° 40′. [Pro corrigendo Horologio, H. 5 M. 8 erat oculus ♉ orient. 57 40.]

Time	Line	Value
5^h $13\frac{1}{3}^m$	Between the western limb of the Moon and Aldebaran [Inter occ. limbum ☾ & Aldeb.]	51° 43′
	Declination of the lower limb [Declin. infer. limbi]	0° 50′
	Altitude of the Moon [Altit. ☾]	33° 31′

[1] Struck through with lines [Lineis inducta.]

Time	Line	Value
5^h 39^m	The western limb of the Moon crossed the meridian. Meridian altitude of the upper horn by the revolving quadrant [Occid. limbus ☾ meridianum tranſijt. Alt. merid. ſup. cornu per Volub.]	33° 53⅔′
	lower, by the steel instrument [infer. per Chalyb.]	33° 25′
5^h 47^m	Distance of the western limb from the eye of ♉ [Diſt. occ. limb. ab oc. ♉]	51° 28′

28 December, evening [DIE 28 DECEMBRIS, VESPERI.]

With the clock time corrected to the stars. [Tempore correcto Horologij ad ſtellas.]

At 8^h 55^m Saturn and the Moon appeared as if in one vertical circle. [H. 8 55′ Videbatur ♄ & ☾ quaſi in vno verticali.]

The clock was still running well [Horol. adhuc bene movebatur]	Between the Moon and Aldebaran [Inter ☾ & Aldeb.]	Declination, lower [Declinatio inf.]	Declination, upper [ſup.]	For the clock, the Lesser Dog east [Pro Horol. Can. min. or.]
10^h 9^m 55^s	20° 16¼′	19° 55′	20° 29′	28° 43½′

The clock was still running well [Horol. adhuc bene movebatur]	Between the Moon and Aldebaran [Inter ☾ & Aldeb.]	Declination, lower [Declinatio inf.]	Declination, upper [ſup.]	For the clock, the Lesser Dog east [Pro Horol. Can. min. or.]
10^h $12\frac{1}{3}^m$	20° 17′			28° 6′
10^h $15\frac{1}{2}^m$	20° 18′	19° 57′	20° 29′	27° 30′
10^h $18\frac{2}{3}^m$				26° 30′

Because of the lunar eclipse due in two days, the Moon was observed about the 90th degree. [Propter futuram ante biduum Eclipſin lunarem obſeruabatur ☾ circa 90 gradum.]

The times are corrected [Tempora ſunt correcta]	Distance of the western limb of the Moon from the lower head of ♊ [Diſt. occ. limb. ☾ ab inf. cap. ♊]	Declination, upper horn of the Moon [Declinatio ſup. cor. ☾]	Declination, lower [infer.]	For correcting the clock, the following shoulder of Orion west [Pro horol. corr. Seq. hum. Orio. occ.]
10^h $21\frac{1}{2}^m$	25° 14′	20° $27\frac{1}{3}$′	19° 56′	0° 47′

At 10^h $22\frac{1}{2}^m$ the Moon was crossing the meridian, having altitude [10 22½ Tranſibat ☾ per Mer. habens Alt.]

Instrument	Line	Value
by the revolving quadrant [per Volub.]	upper [ſup.]	54° $29\frac{2}{3}$′
	lower [inf.]	53° 59½′
by the steel instrument [per Chalyb.]	upper [ſup.]	54° 35′
	lower [inf.]	53° 58½′

The times are corrected	Distance of the western limb of the Moon from the lower head of ♊	Declination, upper horn of the Moon	Declination, lower	For correcting the clock, the following shoulder of Orion west
10^h $29\frac{5}{6}^m$	25° $10\frac{3}{4}$′	20° 27½′	19° 58′	2° 52′
10^h $32\frac{1}{2}^m$	25° 9′			3° 32′

N.B. By computation the Moon was in the ninetieth degree at 10^h 32^m. [N. B. Fuit ☾ in nonageſimo gradu iuxta ſupputationem H. 10 M. 32.]

Conversely [Viceverſa]

(un-headed)	Between the western limb of the Moon and Aldebaran [Inter occ. limb. ☾ & Aldeb.]	Declination [Declin.]	Declination	The following shoulder of Orion [Seq. hum. Orion.]
10^h $37\frac{5}{6}^m$	♊ 20° 29½′	20° 28′	19° 57′	4° 52′
10^h $39\frac{1}{2}^m$	♊ 20° 30′			
10^h $42\frac{3}{5}^m$	♊ 20° 31¼′	20° 28′	19° 59′	
10^h $46\frac{1}{4}^m$	♊ 20° 32½′			6° 58′

Conversely [Viceverſa]

(un-headed)	Between the western limb of the Moon and the lower head of ♊ [Inter occ. limb. ☾ & inf. cap. ♊]	Decli-nation	Decli-nation	The following shoulder of Orion
10h 49½m	25° 0½′	20° 27⅔′	19° 58½′	7° 42′
10h 52m 38s	24° 59½′			8° 33′

From these preceding observations the right ascensions, and also the longitudes and latitudes of the Moon, were found by triangular computations for the various times assigned, as follows. [Ex hiſce præcedentibus obſeruationibus per Triangulares ſupputationes inuentæ ſunt Aſcenſiones rectæ, item longitudines & latitudines ☾ ad diuerſa, quæ aßignantur, tempora, vt ſequitur.]

Time [H. M. S.]	Distance of the centre of the Moon from the lower head of ♊ [Diſt. centri ☾ ab inf. cap. ♊]	Declination of the centre of the Moon [Decl. centri ☾]	Right ascension [Aſc. R.]	Longitude of the Moon [Long. ☾]	Latitude of the Moon [Latit. ☾]
10h 21m 30s	24° 59′	20° 11′	84° 13′ 7″	24° 33′ 58″ ♊	3° 14′ south
10h 32m 0s	24° 54½′	20° 12½′	84° 17¾′	24° 38′ 24″ ♊	
	Conversely from Aldebaran [Viceverſa ab Aldebora]		From Mästlin's ephemerides [Ex Meſthl. Ephem.]	24° 55⅓′ ♊	
			From Cyprian [E Cypriano]	24° 45⅓′ ♊	2° 28½′ south
10h 38m	20° 44¾′	20° 13′	84° 24½′	24° 44¾′ ♊	3° 12⅓′ south
10h 42⅔m	20° 45¼′	20° 13½′	84° 25′ 23″	24° 45′ 37″	3° 11′ 52″ south

29 December, evening [DIE 29 DECEMBRIS, VESPERI.]

The bright shoulder of Orion was due to cross the meridian at 10h 14m. The clock was corrected to this time; reckoning from the evening correction (see the 28th of this month, among the observations of Saturn), it was running 44m 2s slower than it should. [Tranſitura erat lucidus humerus Orionis per Meridianum H. 10 M. 14. Ad hoc tempus corrigebatur horologium, quod a veſpertina correctione (vide die 28 huius menſis apud ♄ obſeruationes) numerando 44′ 2″ iuſto tardius mouebatur.]

Corrected time [Tempus correctum]

At 11h 14⅔m the Moon was crossing the meridian with its western limb, having altitude [H. 11 14⅔′ Tranſibat ☾ per Meridianum occ. limbo habens altit.]

Instrument	Line	Value
by the steel instrument [per Chalyb.]	upper [ſuper.]	55° 32½′
	lower [infer.]	55° 2′
by the revolving quadrant [per Volub.]	upper [ſuper.]	55° 30⅔′
	lower [infer.]	55° 1½′

The declination was then [Declin. tunc erat]

Line	Value
of the upper limb [ſuper. limbi]	21° 26′
of the lower limb [inferioris limbi]	20° 59′

At 11^h 40^m the Moon was in the 90th degree. [H. 11 40 Erat ☾ in 90 gradu.]
At 11^h $42⅓^m$ the declination of the Moon was [11 42⅓ Erat decl. ☾]

Line	Value
of the upper limb [ſuper. limbi]	21° 27½′
of the lower limb [inferioris limbi]	20° 55¼′

Then the altitude of the upper limb of the Moon by the steel instrument was 55° 9′. [Tunc erat altit. ſuperior. limbi ☾ per Chalyb. 55 9]

Eclipse of the Moon, 30 December [ECLIPSIS ☾ DIE 30 DECEMBRIS.]

In the evening, among clouds. [Veſperi inter nubes.]

At 6^h 5^m the shadow of the Earth had passed a little beyond the centre, roughly as in the adjacent figure. [*H. 6 M. 5 Vmbra terræ paululum erat centrum prætergreſſa, qualis ferme adiacens figura eſt.*]

Line	Value
The altitude of the upper horn of the Moon was then [Altit. ſuperioris cornu ☾ tunc erat]	20° 25′
Declination of the same upper horn [Declin. eiusdem ſuper. cornu]	21° 2½′

Diagram. A reproduced pen sketch of the Moon in eclipse, set to the right of the 6^h 5^m entry: a circle whose left part is covered by the hatched shadow, its edge an arc running down past the centre of the disc; a short vertical stroke rises above the circle at the shadow's edge, and a small dark blot sits on the edge of the shadow at the right.

- Right of the shadow's edge, upper part of the disc: ”H M” above ”6.5.” (hour and minute, 6 5)

At 6^h 12^m about two-thirds of the Moon was in the shadow, as the figure set beside it shows. [*H. 6 12′ Fuit pars lunæ quaſi ad duas tertias in vmbra, prout appoſita figura monſtrat.*]

Time	Line	Value
	The altitude of the upper horn of the Moon was then [Altit. ſuper. cornu ☾ tunc erat]	20° 35′
6^h $39\frac{5}{6}^m$	Aldebaran was east [Erat Aldeb. orient.]	30° 1′

Transit of Aldebaran across the meridian at 8^h 53^m 25^s. [Tranſitus Aldeboræ per Meridianum 8^H 53′ 25″.]

Diagram. A reproduced pen sketch of the Moon in eclipse, set to the right of the 6^h 12^m entry: the hatched shadow covers the left and greater part of the disc, bounded by a convex arc; the unshadowed part at the right is left blank.

- Right of the shadow, upper part of the disc: "M." above "12"; "H" to the left of "12"; "6" below "H"
- Below "6" and extending outside the circle at the right: a group of marks struck through with several strokes [?]

6^h 48^m. The magnitude of the eclipse appeared roughly as can be seen here. [6 48 Apparebat magnitudo Eclipſis propemodum vt hic videre eſt.]

Time	Line	Value
6^h $48\frac{1}{3}^m$	The bright foot of Orion was [Erat lucidus pes Orionis]	38° 40′

Transit of the bright foot of Orion across the meridian at 9^h 31^m 43^s. [Tranſitus luc. ped. Orionis per Mer. 9^H 31′ 43″.]

Diagram. A reproduced pen sketch of the Moon in eclipse, set to the right of the 6^h 48^m entry: the shadow, hatched and crossed by curved lines, covers nearly the whole disc, leaving an unshadowed crescent at the lower right. No labels.

Time	Line	Value
6^h 50^m	*Altitude of the lower horn of the Moon* [*Altit. infer. cornu ☾*]	*24° 55′*

Much the same as before, but a little clearer. [*Idem proxime vt prius, ſed paulo ſerenius.*]

Diagram. A reproduced pen sketch of the Moon in eclipse, set to the right of the 6^h 50^m entry: the hatched shadow covers nearly the whole disc, leaving a thin crescent at the right and lower right; a few short strokes stand at the foot of the shadow's edge. No labels.

At 6^h 59^m the Moon was still lit over about a quarter part. [*6 59 luna adhuc quaſi quarta parte illuminata.*]

Line	Value
The altitude of the lower limb was [*Erat Altit. inferioris limbi*]	*26° 10′*

Diagram. A reproduced pen sketch of the Moon in eclipse, set to the right of the 6^h 59^m entry: an open circle, the shadow's edge drawn as a curve across

its lower part with short hatching strokes standing above it; the shadowed area itself is not filled in.

- Upper part of the disc, a handwritten line of three words: [quasi quarta pars?] (”about a quarter part”)
- Below it, centre: the figure ”6”, struck through with two horizontal strokes
- Below that: ”5” followed by a small raised circle

At 7^h 4^m a little less than a quarter part was bright. [*7 4 Paulo minor quarta parte lucida.*]

Line	Value
Altitude of the lower limb of the Moon [*Altit. infer. limbi* ☾]	*26° 44′*

Diagram. A reproduced pen sketch of the Moon in eclipse, set to the right of the 7^h 4^m entry: an open circle, the shadow's edge drawn as a heavy curve across its lower part with short hatching strokes standing above it.

- Upper centre, left: a single figure ”6”
- Upper centre, right: a sign heavily struck over with several strokes [?]
- Across the middle of the disc, a handwritten phrase: ”paulo [minor?] 4^{ta} parte” (”a little less than a quarter part”)

Time	Line	Value
7^h 11^m	Altitude of the lower horn of the Moon [Altit. inferioris cornu ☾]	27° 43½′
7^h 14^m	The middle of the Moon, for the clock [Medium ☾ pro horologio]	69° 51′
	Altitude of the lower horn [Altit. infer. cornu]	28° 10′

Diagram. A reproduced pen sketch of the Moon in eclipse, set to the right of the 7^h 11^m and 7^h 14^m lines: an open circle, the shadow's edge drawn as a heavy curve across its lower part with short hatching strokes standing above it; a small mark at the middle of that curve and a small dot below it.

- Upper centre, left: ”7”
- Upper centre, right: a sign heavily struck over with several strokes [?]

At 7^h $15½^m$ the middle of the small shining part of the Moon, for the time, was 69° 46′ on the equator, east of the meridian. [7 15½ Medium lucentis particulæ ☾ pro tempore 69 46 in Æquat. ad ortum a meridie.]

Line	Value
Altitude of the lower horn [Altit. inferioris cornu]	28° 25′

The bright part a little smaller. [Paulo minor lucida pars.]

Diagram. A reproduced pen sketch of the Moon in eclipse, set to the right of the 7^h $15½^m$ entry: an open circle, the shadow's edge drawn as a heavy curve

across its lower part with short hatching strokes standing above it; in the middle of the disc two dark blots of ink.

- Upper part of the disc, a handwritten line: ”8” followed by ”paulo” and a further word [?]
- Right of the blots: a sign struck over with several strokes [?]

At about these times, roughly to the eye, the middle of the eclipse took place, so far as could be made out between denser clouds that were barely dispersing. All these observations were taken through clouds that very rarely let the light through, yet with all the care that could be managed — provided only that the clock readings[1] observed meanwhile at the transits of the fixed stars, and at the altitudes of the Moon and its equatorial distances from the meridian, are properly verified, and everything is determined in the proper way. The observation of the Moon made two days before, however, must be examined afresh. For the place of the Moon then derived by calculation from that observation does not seem to agree well enough with this motion of the Moon in the eclipse, with the verified solar[1] applied — unless perhaps both an evident error lies hidden in the time noted here from the clock, as I also suspect, and also the preceding calculation from the observation of the Moon two days before was not properly carried out; both of these must be put to the test. [Circa hæc fere tempora quaſi ad oculum fuit media Eclipſis, quantum inter nubes denſiores vix ſeſe diſſipantes diſcernere licuit, fueruntque omnes hæ obſeruationes inter nubes rariſſime transparentes habitæ, ea tamen qua fieri poterat diligentia, modo momenta horologij[1] ad fixarum tranſitus & ☾ altitudines atque a Meridiano diſtantias æquatorias interim obſeruata iuſte verificentur, atque omnia debito modo limitentur. Oportet vero obſeruationis ante biduum in ☾ factæ examinationem denuo inſtituere. Neque enim locus ☾ tunc ex calculo per obſeruationem deductus huic motui Lunæ in Eclipſi adhibito ſolari verificato ſatis quadrare videtur, niſi forte tam in tempore hic annotato ex horologio, vti etiam ſuſpicor, euidens lateat error, tum etiam antecedens calculus ex obſeruatione ☾ antebiduana non rite ſit peractus, quorum oportet periculum facere.]

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the left of the 7^{h} $31\frac{2}{3}^{m}$ entry: an open circle, the shadow's edge drawn as a curve across its lower part with short hatching strokes standing above it.

- Upper centre: ”9.”
- Right of centre: a sign struck over with several strokes [?]

Time	Line	Value
7^{h} $31\frac{2}{3}^{m}$	The middle of the shining part of the Moon on the equator [Media pars partis lucentis ☾ in Æquatore]	65° 40′
	For the ninth figure [Ad figuram nonam]	
	Altitude of the lower horn of the Moon by the revolving quadrant [Altit. infer. cornu ☾ per Volub.]	30° 44′

[1]the noun is not printed

Time	Line	Value
	Azimuth	82° 0′

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the left of the 7^{h} $36\frac{1}{3}^{m}$ and 7^{h} 38^{m} entries: an open circle, the shadow's edge drawn as a double curve across its lower middle, the band between the two curves heavily inked, with short hatching strokes above.

- Upper centre: "10"
- Right of centre: a sign struck over with several strokes [?]

Time	Line	Value
7^{h} $36\frac{1}{3}^{m}$	The middle of the small shining part of the Moon on the equator [Media pars particulæ lucentis ☾ in Æquatore]	64° 36½′
	For the tenth figure [Ad figuram decimam]	
	Altitude of the lower horn of the Moon [Altit. infer. cornu ☾]	31° 18′
7^{h} 38^{m}	The middle of the small shining part of the Moon on the equator [Media pars particulæ lucentis ☾ in Æquatore]	64° 17′
	For the same tenth figure [Ad eandem decimam figuram]	
	Altitude of the lower horn [Altit. infer. cornu]	31° 29′

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the left of the 7^{h} $44\frac{2}{3}^{m}$ entry: an open circle, the shadow's edge drawn as a heavy curve across its middle, rising to the left, with short hatching strokes above it and a lightly stippled area below it at the right; a further stippled area at the upper right edge.

- Upper left of centre: "11"
- Right of centre: a sign struck over with several strokes [?]

Time	Line	Value
7^{h} $44\frac{2}{3}^{m}$	The middle of the small shining part of the Moon on the equator [Media pars particulæ lucentis ☾ in Æquatore]	62° 29′
	For the eleventh figure [Ad vndecimam figuram]	

The Moon had recovered about half its light. [Luna quaſi dimidia recepit lumen.]

[1] Written in the margin in the same hand (which is that of Johannes Aurifaber): "These should not be entered in the fair copy unless examined." [Adſcriptum eſt in margine eadem manu (quæ eſt Johannis Aurifabri): »Hæc non debent inſcribi ad mundum niſi examinata«.]

Time	Line	Value
7^{h} $49\frac{1}{2}^{m}$	The middle of the small shining part on the equator, east of the meridian [Media pars particulæ lucentis in æquatore ad ortum a meridie]	61° 18′
	For the 12th figure [Ad 12am figuram]	

Time	Line	Value

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the upper right, beside the 7^h $49½^m$ entry: a circle crossed in its upper part by a heavy curve running from the upper left down to the right edge, with hatching strokes above the curve.

- Left of centre, below the curve: "12"
- Lower right: a sign struck over with several strokes [?]

Time	Line	Value
8^h 0^m	The middle of the shining part of the Moon on the equator [Medium partis ☾ lucentis in Æquatore] For the 13th figure [Ad 13am figuram]	58° 31′

Here the Moon seemed lit again to about ⅔. [Hic videbatur ☾ quaſi ad ⅔ iterum illuminata.]

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the left of the 8^h 0^m entry: a circle crossed in its upper part by a heavy curve, with hatching strokes above it.

- Left of centre: "13"
- Centre: a sign struck over with several strokes [?]

Time	Line	Value
8^h $7½^m$	The middle of the shining part of the Moon on the equator [Medium partis ☾ lucentis in Æquatore] For the 14th figure [Ad 14am figuram]	56° 55′

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the right of the 8^h $7½^m$ entry: a circle crossed near the top by a lighter curve, with short strokes standing above it.

- Centre: "14"
- Below centre: a sign struck over with several strokes [?]

Time	Line	Value
8^h $14⅓^m$	The middle of the shining part on the equator [Medium partis lucentis in Æquat.] For the 15th figure [Ad 15am fig.]	55° 6′

About a sixth part still remained darkened. [Reſtabat adhuc quaſi ſexta pars obſcurata.]

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the left of the 8^h $14⅓^m$ entry: a circle crossed at the upper right by a thin single curve, with no hatching.

- Left of centre: ”15”
- Right of centre: a sign struck over with several strokes, smudged [?]

Time	Line	Value
8^h 19^m	Equatorial distance of the eastern limb [Dist. æquat. orientalis limbi] For the 16th figure [Ad 16am figuram]	54° 10′

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the right of the 8^h 19^m entry: a thin curve cuts off a small segment at the upper right of the circle; a small stippled patch stands on the right edge.

- Upper left of centre: ”1” followed by a looped sort with a long rightward tail [?]
- Below centre: a sign struck over with several strokes [?]

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the left of the 8^h $22½^m$ and 8^h 26^m entries: a thin curve cuts off a small segment at the upper right of the circle, with a short doubled stroke along it.

- Upper centre: a sign struck over with several strokes [?]
- Left of centre, below it: ”17”

Time	Line	Value
8^h $22½^m$	Equatorial distance of the eastern limb of the Moon [Dist. æquat. orient. limbi ☾] For the 17th figure [Ad 17 fig.]	53° 16′
8^h 26^m	Equatorial distance of the eastern limb of the Moon [Dist. æquat. orient. limbi ☾] For figure 18 [Ad fig. 18]	52° 3½′

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the right of the 8^h 26^m and 8^h $26⅔^m$ entries: an open circle with a short doubled stroke on its upper right edge.

- Centre: ”1 8”
- Lower right: a sign struck over with several strokes [?]

Time	Line	Value
8^h $26⅔^m$	The following shoulder of Orion, east [Humerus Orionis seq. orient.]	23° 4′,

Doubtful, because a beam was in the way. [dubia, quia trabs erat impedimento.]

Time	Line	Value
8^h $27½^m$	Distance of the eastern limb of the Moon on the equator [Dist. orient. limbi ☾ in æquat.] For figure 19 [Ad fig. 19]	52° 0′
8^h $29½^m$; 8^h 39^m 36^s corrected [8 29½ / 8 39 36 corr.]	The following shoulder of Orion, east [Hum. sequens Orionis orient.]	22° 31′

Diagram. A reproduced pen sketch of the Moon in eclipse, set at the left of the 8^h 27½^m entry and the lines below it: an open circle with a short doubled stroke on its upper right edge and a small stroke on its lower right edge.

- Upper left of centre: ”1” followed by a looped sort resembling a ”9” with its stem curved back [?]
- Right of centre: a sign struck over with several strokes [?]

Azimuth 26° 36′ of some star in Orion. It is thought to be the bright shoulder of Orion, if it was not Saturn. Transit across the meridian at 10^h 9^m 40^s. [Azimuth 26° 36′ ſtellæ alicuius in Orione. Putatur eße lucidus humerus Orionis, ſi non fuit ♄. H. 10 9′ 40″ tranſitus per Merid.]

Time	Line	Value
8^h 31⅔^m	About this time the whole Moon appeared round and recovered its light. *Yet not completely, as it appeared to me.* [Circa hoc tempus tota ☾ rotunda videbatur & recepit lumen. *Attamen non prorſus, vt mihi apparuit.*]	
	For the 20th figure [Ad fig. 20am.]	
	Distance of the eastern limb of the Moon on the equator [Diſtantia orient. limbi ☾ in æquat.]	50° 55′

Diagram. A reproduced pen sketch of the Moon, set at the right of the 8^h 31⅔^m entry: an open circle with no shadow drawn, a short heavier stroke on its lower right edge.

- Right of centre: ”20”, preceded by a dot

At 8^h 34^m, after a fresh trial, the Moon appeared exactly round. *A truer examination.* [H. 8 34 Denuo facto experimento exquiſite rotunda videbatur ☾. *Verior examinatio.*]

Time	Line	Value
8^h 34⅔^m; *8^h 46^m 56^s corrected* [H. 8 34⅔ / *8 46 56 corr.*]	The following shoulder of Orion, east [Humerus ſequens Orionis orient.]. *Take it to be the bright shoulder of Orion. For the clock.* [*Puta lucidum humerum Orionis. Pro horologio.*]	20° 41′

At 8^h 36^m there was no eclipse of the Moon at all for any of those watching, but it appeared wholly round. [*8 36 Prorſus nulla omnibus aſpicientibus fuit ☾ eclipſatio, ſed tota rotunda apparuit.*]

Time	Line	Value
8^h 42⅙^m; 8^h 53^m 47^s corrected [*8 42⅙ / 8 53 47 corr.*]	*The bright foot of Orion was east* [*Lucidus pes Orionis fuit orient.*]	*9° 29′*
	Transit across the meridian at 9^h 31^m [Tranſitus per merid. 9^H 31′.]	
8^h 43^m, corrected 8^h 54^m [*8 43*, correcte 8^H 54′,]	*The bright shoulder of Orion, east* [*Lucidus humerus Orionis orient.*]	*18° 58′*
8^h 59^m · 9^h 10⅔^m [8 59 9 10⅔]	The bright foot of Orion [Lucidus pes Orionis]	5° 16′
9^h 1⅓^m · 9^h 12⅚^m [9 1⅓ 9 12⅚]		4° 42′

Time	Line	Value
9^h 9½^m	The middle of the Moon, in equatorial distance, east [Medium ☾ in æquatoria diſtantia orient.]	41° 10′
	for verifying the time [pro tempore verificando.]	
	At the same instant, altitude of the upper limb [Eodem inſtanti Altit. limbi ſuperioris]	43° 51½′

N.B. The clock had run on from noon, and had not been corrected in the meantime, but only then. [*N.B. Horologium a Meridie proceßit, nec interea, ſed tunc ſaltem correctum.*]

Towards the end of this eclipse the clouds here were more transparent, so much so that the Moon had recovered its whole light when the following shoulder of Orion stood 21° from the meridian towards the east. From this, verify the other times — comparing each of them, however, but relying rather on this one. [*Circa finem huius Eclipſis nubes hic fuere transparentiores, adeo vt totum lumen recuperarit luna, quando ſequens Orionis humerus abfuit a Meridiano partibus 21 verſus ortum, hinc tempora cætera verifica, collatis tamen ſingulis, potius huic fidendo.*]

Time	Line	Value
9^h 14½^m (corrected 9^h 26^m 36^s) [H. 9 14½ (Corr. 9 26′ 36″)]	The bright shoulder of Orion, east [Lucidus humerus Orionis orient.]	10° 46′
9^h 15⅔^m (corrected 9^h 27^m 54^s) [9 15⅔ (Corr. 9 27 54)]		10° 26½′ better [melior]

Transit[1] of the bright shoulder of Orion across the meridian at 10^h 10^m. It was therefore 8^h 46½^m when the star stood 21° from the meridian towards the east, adding ½ for the correction of the circle. [Tranſitus[1] lucidi humeri Orionis per Merid. H. 10 10′. Erat igitur H. 8 46½′ cum abeßet a merid. verſus ortum 21°, addendo ½ pro correctione circuli.]

Note: the end of this eclipse was observed, according to the assistant, at 8^h 42⅔^m corrected time; according to my own observation at 8^h 45^m; the mean is 8^h 44^m — use this. [*Nota finis huius deliquij iuxta aßiſtentem obſeruata fuit in tempore correcto 8^H 42⅔M, iuxta propriam animadverſionem 8^H 45M, Medium 8 44, hoc vtere.*]

Eclipse of the Moon, in the year 1590, on 30 December, according to various reckonings. [*Eclipſis ☾ Anno 1590. Die 30 Decembris, iuxta varias rationes.*]

	Alfonso X [*Alphonſi*]	*Peurbach* [*Purbachij*]	*Copernicus* [*Copernici*]	*Mästlin* [*Mæſtlini*]	*Ours* [*Noſtras*]
Beginning [*Initium*]	6^h 51^m	5^h 54^m	4^h 53^m	5^h 14^m	6^h 25^m
Middle [*Medium*]	8^h 28^m	7^h 30^m	6^h 32^m	6^h 56^m	8^h 0^m
End [*Finis*]	10^h 5^m	9^h 6^m	8^h 11^m	8^h 38^m	9^h 40^m
Half-duration [*Dimid. durat.*]	1^h 37^m	1^h 36^m	1^h 39^m	1^h 42^m	*beginning* 1^h 35^m; *end* 1^h 40^m [*in. 1 35 / fin. 1 40*]
Total duration [*Tota durat.*]	3^h 14^m	3^h 12^m	3^h 18^m	3^h 24^m	3^h 15^m

	Alfonso X [*Alphonſi*]	*Peurbach* [*Purbachij*]	*Copernicus* [*Copernici*]	*Mästlin* [*Mæſtlini*]	*Ours* [*Noſtras*]
Digits eclipsed [*Digit. Eclip.*]	*10 5*	*10 1*	*9 38*	*10 39*	*9 50*
Places of the luminaries: ☉ [*Loca luminarium* ☉]	*19° 29′* ♍	*19° 27½′* ♍	*18° 37′ 22″* ♍		*19° 11½′*
Places of the luminaries: ☾ [*Loca luminarium* ☾]	*19° 29′* ♋	*19° 27′* ♋	*18° 37′ 22″* ♋		*19° 11½′*

All reduced to our meridian, at longitude 36° 45′. The equation of time, if it were to be applied, is imperceptible. [*Omnia ad noſtrum Meridianum redacta in long. P. 36 M. 45. Æquatio temporis ſi adhibenda fuerit, eſt inſenſibilis.*]

[1] From here as far as the words "hoc vtere", from codices V. and K. only. [Hinc usque ad verba »hoc vtere«, e ſolis codd. V. et K.]

Investigation of the times for the individual sightings, from the observations in the lunar eclipse of the year 90 [Inquiſitio temporum ad ſingulas animadverſiones ex obſeruationibus in Eclipſi Lunari A° 90]

30 December [DIE 30 DECEMBRIS.]

Number of the observation [Obſeruationum numerus]	Time for fixing the places of the Moon [Tempus pro locis ☾æ limitandis]	True longitude of the Moon, ♋ [Longitudo vera ☾æ ♋]	Parallax of longitude [Parall. long.]	Apparent longitude of the Moon, ♋ [Longitudo ☾æ viſa ♋]	Parallax of latitude [Paral. lax. lat.]	True latitude of the Moon, south [Latitudo ☾æ vera M.]	Apparent latitude of the Moon [Latitudo ☾ viſa]	Observed altitude of the Moon, upper horn [Altitudo ☾ obſer. cornu ſup.]	Equatorial distance of the Moon, east [Diſtantia ☾ æquat. orient.]	Right ascension of the midheaven, from the globe [Aſc. recta M.C. ex globo]	Corresponding time [Tempus reſpondens]	Time from the fixed stars, for each observation [Tempus e fixis ad ſing. obſ.]	Time on the clock [Tempus in Hor.]	Verified time [Tempus verificatum]
I	$6^h\ 20^m$	18° 43′ 32″		19° 15′ 45″		0° 30′	1° 15′	20° 25′		26° 25′	$6^h\ 22\frac{2}{3}^m$	14^m	$6^h\ 5^m$	
II	$6^h\ 26^m$	18° 47′ 32″		19° 19′ 45″		0° 30′	1° 15′	20° 35′		26° 52′	$6^h\ 24\frac{1}{3}^m$	21^m	$6^h\ 12^m$	
III	$7^h\ 3^m$	19° 8′ 32″		19° 40′ 44″		0° 30′	1° 14′	lower [inf.]				$6^h\ 57^m$	$6^h\ 48^m$	
IV	$7^h\ 5^m$	19° 9′ 32″		19° 41′ 44″		0° 30′	1° 14′	24° 55′		35° 59′	$7^h\ 1^m$	$6^h\ 59\frac{1}{4}^m$	$6^h\ 50^m$	
V	$7^h\ 12^m$	19° 12′ 31″		19° 44′ 44″		0° 30′	1° 14′	26° 10′		38° 14½′	$7^h\ 10^m$	$7^h\ 8\frac{1}{3}^m$	$6^h\ 59^m$	
VI	$7^h\ 16^m$	19° 14′ 31″		19° 45′ 43″		0° 30′	1° 13′					$7^h\ 13\frac{1}{2}^m$	$7^h\ 4^m$	
VII	$7^h\ 24^m$	19° 18′ 31″		19° 49′ 43″		0° 30′	1° 13′	27° 43′		41° 7½′	$7^h\ 21\frac{1}{2}^m$	$20\frac{1}{2}^m$	$7^h\ 11^m$	
VIII	$7^h\ 28^m$	19° 20′30″		19° 51′ 43″		0° 30′	1° 12′	28° 25′		42° 20½′	$7^h\ 26\frac{1}{3}^m$	25^m	$7^h\ 15^m$	
IX	$7^h\ 44^m$	19° 28′30″		19° 58′ 42″		0° 30′	1° 12′	30° 44′		46° 30′	$7^h\ 43^m$	$7^h\ 41\frac{1}{4}^m$	$7^h\ 31\frac{2}{3}^m$	
X	$7^h\ 48^m$	19° 30′30″		20° 0′ 42″		0° 30′	1° 12′	31° 18′		47° 35′	$7^h\ 47\frac{1}{3}^m$	46^m	$7^h\ 36\frac{1}{3}^m$	
XI	$7^h\ 56^m$	19° 40′29″		20° 10′42″		0° 30′	1° 11′	31° 29′		48° 7′	$7^h\ 54^m$	$7^h\ 54\frac{1}{3}^m$	$7^h\ 38^m$	

Number of the observation [Obſervationum numerus]	Time for fixing the places of the Moon [Tempus pro loco ☾ æ limitandis]	True longitude of the Moon, ♋ [Longitudo vera ☾ æ ♋]	Parallax of longitude [Parall. long.]	Apparent longitude of the Moon, ♋ [Longitudo viſa ☾ æ ♋]	Parallax of latitude [Paral. lat.]	True latitude of the Moon, south [Latitudo vera ☾ æ M.]	Apparent latitude of the Moon [Latitudo viſa ☾]	Observed altitude of the Moon, upper horn [Altitudo ☾ obſer. cornu ſup.]	Equatorial distance of the Moon, east [Diſtantia ☾ æquat. orient.]	Right ascension of the mid-heaven, from the globe [Aſc. recta M.C. ex globo]	Corresponding time [Tempus reſpondens]	Time from the fixed stars, for each observation [Tempus e fixis ad ſing. obſ.]	Time on the clock [Tempus in Hor.]	Verified time [Tempus verificatum]
									illuminated part [pars illum.]	right ascension of the Moon [Aſc. R. ☾]				
XII	$8^h\ 2^m$	19° 43′29″		20° 12′42″		0° 30′	1° 11′		61° 18′	111° 47′	$7^h\ 59^m$	$7^h\ 59\frac{1}{3}^m$	$7^h\ 49\frac{1}{2}^m$	
XIII	$8^h\ 12^m$	19° 48′28″		20° 17′41″		0° 30′	1° 11′		58° 31′	111° 58½′	$8^h\ 10\frac{5}{6}^m$	$9\frac{5}{6}^m$	$8^h\ 0^m$	
XIV	$8^h\ 20^m$	19° 52′28″		20° 20′41″		0° 30′	1° 11′		56° 55′	112° 0′	$8^h\ 17\frac{1}{3}^m$	$17\frac{1}{3}^m$	$8^h\ 7\frac{1}{2}^m$	
XV	$8^h\ 26^m$	19° 56′28″		20° 24′41″		0° 30′	1° 11′		55° 6′	112° 3′	$8^h\ 24\frac{1}{2}^m$	$24\frac{1}{3}^m$	$8^h\ 14\frac{1}{3}^m$	
									eastern limb [or. limb.]					
XVI	$8^h\ 32^m$	20° 0′ 27″		20° 28′41″		0° 30′	1° 11′		54° 10′	112° 18′	$8^h\ 30^m$	$8^h\ 29^m$	$8^h\ 19^m$	
XVII	$8^h\ 35^m$	20° 1′ 27″		20° 28′41″		0° 30′	1° 11′		53° 16′	112° 18′	$8^h\ 33^m$	$8^h\ 32\frac{1}{2}^m$	$8^h\ 22\frac{1}{2}^m$	
XVIII	$8^h\ 38^m$	20° 2′ 26″		20° 29′40″		0° 30′	1° 10′		52° 3½′	112° 21′	$8^h\ 38^m$	$8^h\ 36\frac{1}{6}^m$	$8^h\ 26^m$	
XIX	$8^h\ 40^m$	20° 3′ 26″		20° 29′40″		0° 30′	1° 10′		52° 0′	112° 20½′	$8^h\ 38\frac{1}{3}^m$	$37\frac{2}{3}^m$	$8^h\ 27\frac{1}{2}^m$	
XX	$8^h\ 45^m$	20° 5′ 25″		20° 30′40″		0° 30′	1° 10′		50° 55′	112° 23′	$8^h\ 43^m$	$8^h\ 42^m$	$8^h\ 31\frac{2}{3}^m$	
									centre [Centrum]					
	$9^h\ 20^m$	20° 25′20″		20° 45′35″		0° 30′	1° 5′		41° 10′	112° 26′	$9^h\ 22^m$	$9^h\ 21^m$	$9^h\ 9\frac{1}{2}^m$	

From this the true times are to be derived. [Hinc vera tempora ſunt elicienda.]

At $8^h\ 46^m$, right ascension of the Sun 290° 49⅓′. N.B. Account must be taken of that half-minute of time, which is to be added everywhere in the equatorial distances, in the observations both of the Moon and of the fixed stars made with that circle.[1] [H. 8 M. 46 Aſcenſ. R. ☉lis 290 49⅓. N.B. Habenda eſt ratio dimidij iſtius minuti temporis addendi vbique in diſtantiis æquatoriis tum obſeruationibus ☾ tum fixarum per illum circulum factis[1].]

[1] These last words from codices V. and K. [Hæc ultima verba e codd. V. et K.]

Places of the Moon [LOCA LUNÆ.]

For the place of the Moon, 4 February[1] [Pro loco ☾ DIE 4 FEBRUARIJ[1].]

Time	Line	Value
$8^h\ 50^m$ [H. 8 M. 50]	Distance of the centre of the Moon from Aldebaran [Diſt. centri ☾ ab Aldeb.]	31° 35′
	from the lower one of ♊ [inf. ♊]	15° 43′
	Declination of the Moon [Declin. ☾]	19° 37′
	Angular difference of ascension from Aldebaran [Ang. diff. aſc. ab Aldeb.]	32° 55⅓′
	from the lower head of ♊ [inf. cap. ♊]	13° 56′
	Right ascension: Aldebaran [Aſc. R. Aldeb.]	63° 7¼′
	the lower head of ♊ [inf. cap. ♊]	110° 1¾′
	From this, set the right ascension of the Moon [Hinc pone Aſc. R. ☾]	96° 2½′
	keeping to Aldebaran, because it was better placed with respect to the Moon. [adhærendo Ald. quod illa melius cum ☾ diſpoſita erat.]	
	Resp. longitude [Reſp. Longitudo]	5° 42′ ♋
	Subtract for the latitude [Subtrahe pro latit.]	6¾′
	Set the place of the Moon [Pone locum ☾]	5° 35′ ♋

4 February[2] [DIE 4 FEBRUARIJ[2].]

Time	Line	Value	Latitude and longitude
$9^h\ 0^m\ 50^s$ [H. 9 0′ 50″]	Between the western limb of the Moon and the lower head of ♊ [Inter occid. limb. ☾ & inf. cap. ♊]	15° 54′ 10″	
	Declination of the upper limb 19° 57′, of the lower [Decl. ſup. limbi 19 57, inferioris]	19° 25½′	
	Hence the declination of the centre 19° 41′ north [Hinc Decl. centri 19 41 B.]		
	Angular difference of ascension 13° 52′, right ascension of the Moon 96° 11′, [Ang. diff. aſc. 13 52, Aſc. R. ☾ 96°11′,]		Latitude 3° 40′ 48″ south [Lat. 3°40′48″ M]
			Longitude 5° 50′ ♋ [Long. 5 50 ♋]
$8^h\ 51^m\ 30^s$ [8 51 30]	Between the western limb of the Moon and the eye of ♉ [Inter occ. limb. ☾ & oculum ♉]	31° 21′ 45″	
	Central distance [Diſtantia centralis]	31° 37′ 45″	
	Declination of the centre of the Moon 19° 38′ north [Decl. centri ☾ 19 38 B.]		
	Angular difference 32° 58′, right ascension of the Moon 96° 5′, [Ang. diff. 32 58, Aſc. R. ☾ 96°5′,]		Latitude 3° 46′ 15″ south [Lat. 3 46 15 M.]
			Longitude 5° 45′ 30″ ♋ [Long. 5 45 30 ♋]
$8^h\ 28^m\ 10^s$ [8 28 10]	Central distance 31° 29′ 20″, declination as before. [Diſtantia centr. 31°29′20″, Decl. vt prius.]		

Time	Line	Value	Latitude and longitude
	Angular difference 32° 50′, right ascension of the Moon 95° 57′ [Ang. diff. 32 50, Aſc. R. ☾ 95°57′]		Latitude 3° 46′ 30″ south [Lat. 3 46 30 M.] Longitude 5° 37′ ♋ [Long. 5 37 ♋]

For checking the time. [Pro examine temporis.]

Line	Value	Line	Value
		Sun at the given time [☉ ad d. t.]	26° 2′ ♒
Right ascension of the Moon [Aſc. R. ☾]	95° 57′	its right ascension [eius Aſc. R.]	328° 17′ 51″
Distance of the Moon from the meridian [Diſt. ☾ a Mer.]	2° 3′ towards the east [2 3 v. ort.]	Right ascension of the time [Aſc. R. temp.]	127° 2′ 30″
Right ascension of the midheaven [Aſc. R. M. C.]	93° 54′	Right ascension of the midheaven [Aſc. R. M. C.]	95° 20′ 21″

1° 26′, which is equivalent to 4^m, by which the clock was short. [1 26 quod æquivalet 4′, quibus horol. deficiebat.]

1 March[1] [DIE 1 MARTIJ[1].]

The Moon near the nonagesimal at 4^h 0^m. [☾ iuxta nonageſimum H. 4 0′.]

Time	Line	Value
3^h $52¾^m$ [3 52¾′]	[D]istance of the centre of the Moon from the Sun 72° 0′ 0″. True longitude of the Sun [Diſt. centri ☾ a ☉ 72°0′0″. Vera long. ☉]	♓ 20° 53½′
	Altitude of the Sun 14°, refraction 8′ 0″, parallax 3′ 0″; the remainder of the refraction, 5′, added in the altitude circle; resp. in longitude [Alt. ☉ g. 14, refr. 8′0″, parall. 3′0″, relictum ex refractione 5′ add. in circ. alt., reſp. in long]	4′
	Apparent longitude of the Sun [Viſa long. ☉]	♓ 20° 57½′
	Right ascension of the Sun 351° 42′, therefore right ascension of the Moon 63° 42′ 0″, [Aſc. R. ☉ 351°42′, ergo Aſc. R. ☾ 63 42 0,]	Declination 15° 44½′ north [Decl. 15 44½ B.] Resp. longitude 4° 38′ 20″ ♊ [Reſp. Longit. 4 38 20 ♊] Latitude 5° 29¼′ south [Lat. 5 29¼ M.]
	True longitude of the Moon in its own circle, arc of inclination 5′ 20″ subtracted [Vera long. ☾ in proprio circulo, arcus incl. 5′20 ſubt.]	4° 33′ 0″ ♊

These have been carefully examined, so that you may rely on them. [Hæc diligenter examinata ſunt, vt fidere poßis.]

[1] From codices V. and K. [E codd. V. et K.] [2] From codex M. [E codice M.]

3 March[1] [DIE 3 MARTIJ[1].]

Computation for the apparent place of the Moon from the observations, namely when it was at the nonagesimal degree, at 6^h 34^m. [Supputatio pro apparente loco ☾ ex obſeruationibus, cum videlicet apud nonageſimum gradum eßet, H. 6 M. 34.]

Time	Line	Value	Line	Value
5^h 33^m [H. 5 M. 33]	Distance of the centre of the Sun from Venus 52° 37′, the semidiameter taken as 15½′ [Diſt. centri ☉ a ♀ 52 37, aßumta ſemidiam. 15½.]			
	Declination of Venus, north [Decl. B. ♀]	17° 32′	Declination of the centre of the Moon [Decl. centri ☾]	19° 29′
	Right ascension of Venus [Aſc. R. ♀]	35° 22′ 3[illegible]″	Reſp. longitude of the Moon [Reſp. Long. ☾]	1° 1′ 40″ ♋
	Right ascension of the Moon [Aſc. R. ☾]	91° 4′ 12″	Latitude [Lat.]	4° 2′ 0″ south [4 2 0 M.]

8 October[2] [DIE 8 OCTOBRIS[2].]

Time	Line	Value	Latitude and longitude
6^h 2^m 30^s a.m. [H. 6 2′30″ A. M.]	when the bright shoulder of Orion was in the west [cum luc. humerus Orionis eßet occid.]	29° 52′	
	Declination of the centre of the Sun 20° 28′ 15″, central distance from cor ♌ [Decl. centri ☉ 20 28 15, Diſt. centralis a corde ♌]	53° 19′ 45″	
	Angular difference of ascension 55° 37′, declination of cor ♌ 13° 56′ 21″. [Ang. diff. aſc. 55 37, Decl. cordis ♌ 13 56 21.]		
	Right ascension of the Moon [Aſc. R. ☾]	91° 0′ 15″	Latitude 3° 3′ south [Lat. 3° 3′ M.]
			Longitude 0° 57′ ♋ [Long. 0 57 ♋]
	The same day, when the bright shoulder of Orion was in the west, 31° 7′ [Eodem die, cum luc. hum. Orionis eßet occ. 31 7]		
	Declination of the centre of the Moon 20° 30′ 20″, central distance 53° 20′ 15″ [Decl. centri ☾ 20 30 20, Diſt. centr. 53 20 15]		
	Angular difference of ascension 55° 40′, right ascension of the Moon 90° 56′ 15″, [Ang. diff. aſc. 55 40, Aſc. R. ☾ 90 56 15,]		Latitude 3° 1′ south [Lat. 3 1 M.]

Time	Line	Value	Latitude and longitude
			Longitude 0° 52′ 45″ ♋ [Long. 0 52 45 ♋]

9 October, morning[1] [DIE 9 OCTOBRIS, MANE[1].]

Time	Line	Value	Latitude and longitude
5^h 59½^m [H. 5 59½′]	Distance of the centre of the Moon from the bright foot of Erichthonius [Dist. centri ☾ a luc. pede Erichtonij]	27° 57′	
	Declination of the centre of the Moon, north, 20° 53′; declination of the bright foot [Decl. centri ☾ B. 20 53, Decl. luc. pedis]	28° 10′	
	Right ascension of the bright foot 75° 7′, right ascension of the Moon [Asc. R. luc. pedis 75 7, Asc. R. ☾]	104° 52½′	Longitude 13° 53′ 0″ ♋ [Long. 13 53 0 ♋] Latitude 1° 55′ 25″ south [Lat. 1 55 25 M.]

Line	Value	Line
9 October, 6^h [9 Oct. H. 6]	13° 53′ ♋	Rising: 16° ♌[3] [Oritur 16 ♌[3]]
10 October, 7^h [10 Oct. H. 7]	26° 56′ ♋	Rising: 27° ♌ [Oritur 27 ♌]
Of 25 hours [Horarum 25]	13° 3′,	the $\frac{1}{25}$ part 31′ 19″ [pars $\frac{1}{25}$ 31′19″]
Daily motion [Diurnus]	12° 31′ 41″	from the fixed stars [a fixis]
Subtract the daily motion of the Sun [Aufer diurnum ☉]	1° 0′ 0″,	Daily motion of the Moon from the Sun 11° 31′ 41″. [Diurnus ☾ a ☉ 11°31′41″.]

The Moon above 270 in anomaly, and in quadrature. Corresponding hourly motion: 28′ 49″. [Luna ſupra 270 Anomalia & in quadratura. Reſpondet Horarius 28′ 49″.]

10 October, a.m. [DIE 10 OCTOBRIS, A. M.]

Time	Line	Value	Latitude and longitude
7^h 0^m[1] [H. 7 M. 0[1]]	Between the eastern limb of the Moon and Venus 56° 57′. The diameter of the Moon is taken as 15′. [Inter orient. limb. ☾ & ♀ 56 57. Diameter ☾ aßumitur 15′.]		
	Distance of the centre of the Moon from Venus 57° 12′, declination of the centre lim. 20° 2′ north [Dist. centri ☾ a ♀ 57 12, Declin. centri lim. 20 2 B.]		
	Right ascension of Venus 175° 11⅓′, declination of Venus 3° 44′ north [Asc. R. ♀ 175 11⅓, Declin. ♀ 3 44 B.]		

Time	Line	Value	Latitude and longitude
	Therefore right ascension of the centre of the Moon 118° 56′, resp. [Ergo Aſc. R. centri ☾ 118 56, reſp.]		Longitude 26° 55′ 53″ ♋ [Long. 26 55 53 ♋] Latitude 0° 49½′ south [Lat. 0 49½ M.]
$6^h\ 31^m\ 40^s$[4] [H. 6 31′40″[4]]	When Venus was 53° 17′ 30″ from the meridian towards the east [Cum ♀ a mer. verſus ort. diſtaret 53°17′30″]		
	Central distance from Venus 57° 22′ 45″, declination of the centre of the Moon 20° 4¾′ S. [Diſt. centralis a ♀ 57 22 45, Decl. centri ☾ 20 4¾ S.]		
	The daily motion of Venus on this day in Magini is 73′. Earlier, however, at $5^h\ 48^m\ 10^s$ [♀ diurnus hoc die apud Maginum eſt 73′. Prius autem hora 5 48′ 10″]		
	the place of Venus was found in 23° 0′ 40″[5] ♍. Therefore, for the difference of time [inuentus eſt locus ♀ in 23°0′40″[5] ♍. Pro differentia igitur temporis]		
	$43^m\ 30^s$, with 2′ 12″ added to the place of Venus, there comes out the place of Venus at the time of [43′30″ additis ad locum ♀ 2′12″ prodit locus ♀ ad tempus obſerua-]		
	observation, 23° 2′ 52″[5] ♍, to which corresponds [tionis 23°2′52″[5] ♍, cui reſpondet]		
	right ascension of Venus 175° 9′ 16″ with declination 3° 44′ 28″ north. [Aſc. R. ♀ 175°9′16″ cum Decl. 3°44′28″ B.]		
	Angular difference of ascension 56° 32′ 40″, right ascension of the Moon 118° 36′ 36″, [Ang. diff. aſc. 56 32 40, Aſc. R. ☾ 118 36 36,]		Latitude 0° 49⅕′ south [Lat. 0°49⅕′ M.] Longitude 26° 43′ 48″ ♋ [Long. 26 43 48 ♋]

[1] From codices V. and K. [E codd. V. et K.] [2] From codex M. [E cod. M.] [3] In another hand. Missing in codex V. [Alia manu. Deſunt in cod. V.] [4] What follows is from codex M. [Quæ ſequuntur e codice M.] [5] So in codex M, but it should be 24°. The right ascension and declination are correct. [Sic in codice M, ſed debet eße 24°. Aſc. R. et Decl. recte ſe habent.]

Time	Line	Value	Latitude and longitude
$7^h\ 5^m$, corrected [H.7 5′corr.]	Distance of centre 57° 11′ 40″, declination of the centre 19° 58′, [Diſt. cent. 57 11 40, Decl. centri 19 58,]		
	Right ascension of Venus 175° 10′ 35″, declination of Venus 3° 44′ north. [Aſc. R ♀ 175 10 35, Decl. ♀ 3°44′ B.]		

Time	Line	Value	Latitude and longitude
	Angular difference 56° 20′ 50″, right ascension of the Moon 118° 49′ 45″ [Ang. diff. 56 20 50, Aſc. R. ☾ 118 49 45]		Latitude 0° 50′ 37″ south [Lat. 0°50′37″ M.]
			Longitude 26° 56′ 39″ ♋ [Long. 26 56 39 ♋]
8h 4m [H. 8 4′]	Distance of centre 56° 46′, declination of the centre 19° 58′ 15″, [Diſt. cent. 56°46′, Decl. centri 19°58′15″,]		
	Right ascension of Venus 175° 13′ 21″, declination 3° 42′ 50″ north, [Aſc. R. ♀ 175 13 21, Decl. 3 42 50 B,]		
	Angular difference 55° 54′ 20″, right ascension of the Moon 119° 19′ [Ang. diff. 55 54 20, Aſc. R. ☾ 119 19]		Latitude 0° 48′ south [Lat. 0°48′ M.]
			Longitude 27° 24′ ♋ [Long. 27 24 ♋]

28 October[1] [DIE 28 OCTOBRIS[1].]

Near the nonagesimal degree. [Circa nonageſimum gradum.]

Time	Line	Value	Latitude and longitude
5h 57m [H. 5 57′]	Distance of the centre of the Moon from the bright star of the tail of ♍ [Diſt. centri ☾ a lucida caudæ ♍]	33° 29′	
	Declination of the centre of the Moon 8° 5′ south, declination of the tail of ♍ [Decl. centri ☾ 8°5′M., Decl. caudæ ♍]	17° 53½′	
	Right ascension of the tail of ♍ [Aſcenſio Recta caudæ ♍]	321° 6′ 30″	
	Angular difference of ascension [Angulus diff. aſcenſ.]	32° 55′ 32″	
	Therefore right ascension of the Moon [Ergo Aſcenſio Recta ☾]	354° 2′ 0″	
6h 3m [6 3]	Distance of the centre of the Moon from the bright star of ♈ [Diſt. centri ☾ a lucida ♈]	43° 9′	
	Declination of the centre of the Moon 8° 4′ south, declination of the bright star of ♈ [Decl. centri ☾ 8°4′ M., Decl. luc. ♈]	21° 30′ north [21 30 B.]	
	Right ascension of the bright star of ♈ [Aſcenſio Recta lucidæ ♈]	26° 4′ 30″	
	Angular difference of ascension [Angulus diff. aſcenſ.]	32° 1′ 33″	
	Therefore right ascension of the Moon [Ergo Aſcenſio Recta ☾]	354° 3′ 0″	
6h complete [H.6 com-pleto]	Right ascension of the Moon 354° 2½′ [Aſcenſio R. ☾ 354°2½′]		Resp. longitude 21° 19′ 23″ ♓ [Reſp. Longit. 21°19′23″ ♓]
	Declination south 8° 4½′ [Declinatio M. 8 4½]		Latitude 5° 2′ 6″ south [Latit. 5 2 6 M.]

29 October [DIE 29 OCTOBRIS.]

Time	Line	Value	Latitude and longitude
$6^h\ 32^{m1}$ [H. 6 M. 32[1]]	Distance of the centre of the Moon from the tail of ♍ [Dist. centri ☾ a cauda ♍]	48° 27′	
	Declination of the centre of the Moon 2° 37′ 45″ south, [Decl. centri ☾ 2°37′45″ M.,]		
	Angular difference of ascension [Ang. diff. ascens.]	46° 55′ 50″	
	Right ascension of the Moon [Ascensio Recta ☾]	8° 2′ 20″	
$6^h\ 37^{m1}$ [6 37[1]]	Distance of the centre of the Moon from the bright star of ♈ [Dist. centri ☾ a lucida ♈]	29° 52′	
	Declination of the centre of the Moon 2° 37′, angular difference of ascension [Decl. centri ☾ 2°37′, Ang. diff. Ascens.]	18° 0′ 22″	
	Right ascension of the Moon [Ascensio Recta ☾]	8° 4′ 8″	
$6^h\ 34½^{m1}$ [6 34½[1]]	Right ascension, fixed, 8° 3′ 10″ [Asc. R. limitata 8° 3′10″]		Resp. longitude 6° 20′ 0″ ♈ [Resp. Longit. 6°20′ 0″ ♈]
	Declination south 2° 37′ 20″ [Declin. M. 2 37 20]		Latitude 5° 36′ 48″ south [Latit. 5 36 48 M.]
	Parallax of altitude 59′, resp. parallax of longitude 4′. The Moon was 22 M. from the 90th degree. [Parallaxis altit. 59′, resp. par. long. 4′. Erat ☾ a 90 grad. 22 M.]		
$6^h\ 32^m$, corrected[2] [H.6 32correcta[2].]	Distance of the centre of the Moon from the tail of ♍ [Dist. centri ☾ a cauda ♍]	48° 27′ 30″	
	Declination of the centre 2° 37′ 45″ south, equatorial distance [Decl. centri 2°37′45″ M., Dist. æquat.]	46° 56′ 20″	
	Right ascension of the Moon 8° 3′ 50″ [Ascensio R. ☾ 8 3 50]		Latitude 5° 37′ 25″ south [Latit. 5°37′25″ M.] Longitude 6° 21′ 35″ ♈ [Longit. 6 21 35 ♈]
$6^h\ 50^m$ [6 50]	Distance of the centre of the Moon from the bright star of ♈ [Dist. centri ☾ a luc. ♈]	29° 48′ 30″	
corrected [corr.]	Declination of the centre 2° 34′, difference of ascension [Decl. centri 2°34′, Diff. ascens.]	17° 58′ 51″	
	Right ascension of the Moon 8° 5′ 39″ [Ascensio R. ☾ 8 5 39]		Latitude 5° 34′ 48″ south [Latit. 5 34 48 M.] Longitude 6° 27′ 18″ ♈ [Longit. 6 27 18 ♈]
$6^h\ 55^m$ [6 55]	Central distance from the bright star of the tail of ♍ [Dist. centralis a luc. caudæ ♍]	48° 39′ 50″	
corrected [corr.]	Declination of the centre 2° 32′ 50″, equatorial distance [Decl. centri 2°32′50″, Dist. æquat.]	47° 7′ 49″	
	Right ascension of the Moon 8° 15′ 19″ [Ascensio R. ☾ 8 15 19]		Latitude 5° 34′ south [Latit. 5 34 M.]

Time	Line	Value	Latitude and longitude
			Longitude 6° 26′ ♈ [Longit. 6 26 ♈]

[1] From codices V. and K. [E codd. V. et K.] [2] From codex M. [E cod. M.]

23 December, evening[1] [DIE 23 DECEMBRIS, VESPERI[1].]

For correcting the clock. At 5^h 8^m the eye of ♉ was east 57° 40′. [Pro corrigendo Horologio. H. 5 8′ erat oculus ♉ orient. 57°40′]

Line	Value	Line	Value
Right ascension of the eye of ♉ at the given time [Aſc. R. oculi ♉ ad d. t.]	63° 7′ 51″	Place of the Sun [Locus ☉]	11° 54′ 57″ ♑
Distance from the meridian towards the east [Diſt. a mer. verſ. ort.]	57° 40′	Its right ascension [Eius Aſc. R.]	282° 57′ 41″
Right ascension of the midheaven from Aldebaran [Aſc. R. M. C. ex Aldeb.]	5° 27′ 51″	Right ascension of the time [Aſc. R. temp.]	77° 0′ 0″
		Right ascension of the midheaven [Aſc. R. M. C.]	359° 57′ 41″

The difference to be converted into time, 5° 30′ 10″, corresponds to 22^m of time, by which the clock was running slow. [Differentia in T. mutand. 5°30′10″, quæ reſpondent 22′ horarijs quibus horologium tardius mouebatur.]

Time	Line	Value	Latitude and longitude
4^h 47^m 30^s, or 5^h 9^m 30^s corrected [H. 4 47′30″ vel 5 9′30″ corr.]			
	Distance of the centre of the Moon from Aldebaran [Diſt. cent. ☾ ab Aldeb.]	51° 35′	
	Declination of the centre 0° 40′ south, equatorial distance [Decl. centri 0°40′ M., Diſt. æquat.]	49° 34′ 27″	
	Declination of the eye of ♉ 15° 36′ 30″ north, right ascension of the Moon [Decl. oc. ♉ 15 36 30″ B, Aſc. R. ☾]	13° 33′ 33″,	Latitude 5° 59′ south [Latit. 5°59′ M.] Longitude 12° 12′ 30″ ♈ [Longit. 12 12 30 ♈]
4^h $56½^m$, 5^h 18^m 30^s corrected [4 56½, H. 5 18′30″ corr.]	Distance of the centre [Diſt. cent.]	51° 35′	
	Declination of the centre 0° 38′ 45″, Diff. æquat. [Decl. centri 0°38′45″, Diff. æquat.]	49° 35′,	Latitude 5° 57′ 50″ south [Latit. 5 57 50 M.]

Time	Line	Value	Latitude and longitude
	Right ascension of the Moon [Aſc. R. ☾]	13° 33′,	Longitude 12° 13′ ♈ [Longit. 12 13 ♈]

28 December[2] [DIE 28 DECEMBRIS[2].]

For correcting the clock. At 10^h 9^m 55^s the distance of the Lesser Dog from the meridian towards the east was 28° 43′ 30″. [Pro corrigendo Horologio. H. 10 9′ 55″ diſt. Can. min. a mer. v. ort. 28°43′30″]

Line	Value	Line	Value
		Place of the Sun 17° 14′ 32″ ♍, [Locus ☉ 17°14′32″ ♍,]	
Right ascension of the Lesser Dog at the given time [Can. min. Aſc. R. ad d. t.]	109° 29′	Right ascension [Aſc. R.]	288° 42′ 4″
Its distance from the meridian [Diſt. eius a mer.]	28° 43′ 30″	Right ascension of the time [Aſc. R. temp.]	152° 43′ 45″
Right ascension from the Dog [Aſc. R. ex Cane]	80° 45′ 30″	Right ascension of the midheaven from the Sun [Aſc. R. M. C. ex ſole]	81° 25′ 49″

The difference to be converted into time, 40′ 19″, corresponds to 2^m 41^s, by which the clock was running fast. [Diff. in T. mutanda 40′ 19″ quæ reſpondent 2′ 41″, quibus horologium celerius ibat.]

Time	Line	Value	Latitude and longitude
10^h 21^m 30^s [H. 10 21′30″]	Distance of the centre of the Moon from the lower head of ♊ [Diſt. centri ☾ a cap. inf. ♊]	24° 58′ 20″	
	Declination of the centre 20° 11′ 40″, declination of the lower head of ♊ [Decl. centri 20 11 40, Decl. inf. cap. ♊]	28° 56′ 12″ north [28 56 12 B.]	
	Equatorial distance 25° 47′ 55″, right ascension of the Moon [Diſt. æq. 25 47 55, Aſc. R. ☾]	84° 15′ 41″,	Latitude 3° 13′ 21″ south [Latit. 3°13′21″ M.]
			Longitude 24° 36′ ♊ [Longit. 24 36 ♊]
10^h 29^m 50^s [10 29 50]	Distance of the centre 24° 56′, declination of the centre [Diſt. centri 24°56′, Decl. centri]	20° 12′ 45″	
	Equatorial distance 25° 45′ 41″, right ascension of the Moon [Diſt. æquat. 25 45 41, Aſc. R. ☾]	84° 17′ 55″,	Latitude 3° 12′ 25″ south [Latit. 3 12 25 M.]
			Longitude 24° 38′ 35″ ♊ [Longit. 24 38 35 ♊]
10^h 37^m 50^s [10 37 50]	Conversely, distance of the centre from Aldebaran [Vice verſa, Diſt. centri ab Ald.]	20° 45′	
	Declination of the centre 20° 12′ 30″, equatorial distance [Decl. centri 20 12 30, Diſt. æquat.]	21° 17′	

Time	Line	Value	Latitude and longitude
	Right ascension of the Moon [Aſc. R. ☾]	84° 24′ 57″,	Latitude 3° 9′ 27″ south [Latit. 3 9 27 M.]
			Longitude 24° 44′ ♊ [Longit. 24 44 ♊]
10h 42m 36s [10 42 36]	The same distance 20° 45′ 45″, Decl. c. [Diſt. ead. 20 45 45, Decl. c.]	20° 13′ 30″	
	Equatorial distance 21° 18′ 12″, right ascension [Diſt. æquat. 21 18 12, Aſc. R.]	84° 26′,	Latitude 3° 12′ south [Latit. 3 12 M.]
			Longitude 24° 46′ ♊ [Longit. 24 46 ♊]
10h 49m 30s [10 49 30]	Conversely. Distance of the centre from the lower head of ♊ [Vice verſa. Diſt. centri ab inf. cap. ♊]	24° 45′ 45″	
	Declination of the centre 20° 13′ 15″, equatorial distance [Decl. centri 20 13 15, Diſt. æq.]	25° 34′	
	Right ascension of the Moon [Aſc. R. ☾]	84° 29′ 36″,	Latitude 3° 12′ 18″ south [Latit. 3 12 18 M.]
			Longitude 24° 49′ 30″ ♊ [Longit. 24 49 30 ♊]

[1] From codex M. [E codice M.] [2] From codex M. Compare above, p. 20. [E codice M. cf. ſupra p. 20.]

Observations of Saturn [OBSERUATIONES SATURNI.]

19 January [DIE 19 JANUARIJ.]

In the evening the diameter of Saturn was observed with the largest armillae. [Veſperi obſeruabatur ♄ Diameter per maximas Armillas.]

Line	Value
with both pinnules [vtroque pinn.]	2⅓′
Repeated [Repetita]	2¾′
	2½′

20 January [DIE 20 JANUARIJ.]

In the evening Aurifaber observed the diameter of Saturn as follows[1]. [Veſperi obſeruabat Aurifaber Diametrum ♄ vt ſequitur[1].]

Line	Value
	2′ 30″
	2′ 15″
repeated with one pinnule [repetita vno pinnacidio.]	2¼′

23 January [DIE 23 JANUARIJ.]

The diameter of Saturn was observed again. [Obſeruabatur iterum Diameter ♄.]

Line	Value
With the revolving quadrant near the meridian [*Per Quadrantem Volub. iuxta Meridianum*]	2½′ doubtful [2½′ dubia]
With the other steel quadrant [*Per alterum Chalybeum Quadrantem*]	2⅙′
With the equatorial armillae [Per Armillas Æquatorias]	2⅓′
Repeated [Repetita]	2⅙′
Put Saturn at the mean distance [*Pone ♄ in Media diſt.*]	*2′ 15″*

23 January [DIE 23 JANUARIJ.]

Around the seventh hour Saturn crossed the meridian, having an altitude [Circa horam ſeptimam tranſiuit ♄ per Meridianum, habens altitudinem]

Time	Line	Value
	by the steel instrument [per Chalyb.]	54° 8′
	by the revolving quadrant [per Volub.]	54° 8⅓′
$9^h\ 19^m\ 51^s$ [H. 9 19′51″]	The lowest foot of ♊ was [Erat infimus pes ♊]	
	from the meridian towards the west [a meridie ad occaſum]	3° 4½′

From this the clock can be checked. [Hinc poteſt verificari Horologium.]

Time	Line	Value
	Distance of Saturn then from the bright foot of ♊ [Diſt. tunc ♄ a lucido pede ♊]	26° 21′
$9^h\ 25^m\ 7^s$ [9 25 7]	Distance of Saturn from the bright foot of ♊ [Diſt. ♄ a luc. pede ♊]	26° 21′
	Observation of Saturn, conversely [Obſeruatio ♄ viceverſa]	
$9^h\ 27^m\ 34^s$ [9 27 34]	Distance between Saturn and [Diſt. inter ♄ &]	
	the bright star of the Pleiades [lucidam Pleiadum]	14° 19¾′
	The same distance [Eadem diſtantia]	14° 19¾′
	The Lesser Dog, east [Canis minor orient.]	8° 2′

According to the correction from the lowest foot of ♊, $11^h\ 17^m\ 46^s$. But as regards the Lesser Dog, the time here would be about $10^h\ 28^m 2$. [Ad correctionem infimi pedis ♊ 11^H 17′46″. Sed quoad Canem minorem eßet hic tempus H. 10 M. 28 fere².]

4 February, evening [DIE 4 FEBRUARIJ, VESPERI.]

The times given are corrected. [Tempora aßignata ſunt correcta]

Time	Line	Value
7^h $34\frac{5}{6}^m$ [H. 7 34⅚′]	Between Saturn and the bright star of ♈ [Inter ♄ & lucid. ♈]	37° 13′
7^h $36\frac{1}{3}^m$ [7 36⅓]		37° 13′
7^h $37\frac{5}{6}^m$ [7 37⅚]		37° 13¼′
7^h 43^m [7 43]	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	40° 47½′
7^h $45\frac{5}{6}^m$ [7 45⅚]	Repeated [Repetita]	40° 48′
7^h $47\frac{1}{6}^m$ [7 47⅙]		40° 48′
7^h $49\frac{1}{2}^m$ [7 49½]	Declination of Saturn [Declin. ♄]	20° 9′

Saturn was near the meridian here when it was observed. [Erat ♄ hic circa Meridianum cum obſeruaretur.]

8 February [DIE 8 FEBRUARIJ.]

Time	Line	Value
7^h $48\frac{1}{2}^m$ [H. 7 48½′]	Between Saturn and the bright star of ♈ [Inter ♄ & lucid. ♈]	37° 18¾′
7^h 50^m 25^s [7 50 25″]	The same distance repeated [Eadem diſt. repet.]	37° 19¼′
	The declination of Saturn was then [Decl. ♄ tunc erat]	20° 9′
	by the other [altero]	20° 8½′ north [20 8½ B.]
7^h $52\frac{5}{6}^m$ [7 52⅚]	The same distance repeated [Eadem diſt. repet.]	37° 18⅔′
	Conversely [Viceverſa]	
7^h 56^m 15^s [7 56 15]	Between Saturn and the lower [Inter ♄ & infer.]	40° 46′
8^h $1\frac{1}{6}^m$ [8 1⅙]	head of ♊ [caput ♊]	40° 45½′
8^h $3\frac{1}{3}^m$ [8 3⅓]	Declination of Saturn [Declin. ♄]	20° 8⅚′
	alt.	20° 8½′
8^h $7\frac{1}{3}^m$ [8 7⅓]	Between Saturn and [Inter ♄ &]	
	the lower head of ♊ [inf. caput ♊]	40° 44½′
8^h $9\frac{1}{6}^m$ [8 9⅙]	The same distance repeated [Eadem diſt. repet.]	40° 44½′

The brightness of the Moon hindered precision. [☾ ſplendor impediebat præciſionem.]

12 February, evening [DIE 12 FEBRUARIJ, VESPERI.]

Time	Line	Value
	Meridian altitude of Saturn [Altit. meridiana ♄]	
	by the revolving quadrant [per Volub.]	54° 16′
	by the steel instrument [per Chalyb.]	54° 15⅙′
8^h 32^m 55^s [8^H32′55″]	Between Saturn and the bright star of ♈ [Inter ♄ & lucid. ♈]	37° 23½′
8^h $35\frac{5}{6}^m$ [8 35⅚]		37° 23′
8^h $38\frac{1}{6}^m$ [8 38⅙]		37° 23⅚′
8^h 42^m [8 42]	Between Saturn and the lower [Inter ♄ & inf.]	40° 39′ doubtful [40 39dub.]

Time	Line	Value
8^h 45⅙^m [8 45⅙]	head of ♊ [cap. ♊]	40° 38′
8^h 46⅔^m [8 46⅔]		40° 38′
8^h 49⅚^m [8 49⅚]		40° 37¾′
	The declination of Saturn was then [Tunc erat declin. ♄]	20° 10⅚′
	alt.	20° 10¾′

[1] Written in addition in codices V. and K.: "with the largest armillae". [Adſcriptum eſt in codd. V. et K: »per maximas Armillas«.] [2] We cannot understand this annotation. The interval of time between 9^h 19^m 51^s and 9^h 27^m 34^s should be about ten minutes, because the former star is 31 Geminorum. [Hanc annotationem intelligere non poßumus. Intervallum temporis inter H. 9 19′51″ et 9 27 34 debet eße circiter decem minutorum, quia prior ſtella eſt 31 Geminorum.]

For the longitude and latitude of Saturn. [Pro longitudine & latitudine ♄.]

In the year 1590, on 23 January, at 9^h 19^m 51^s in the evening, Saturn was at [Anno 1590 die 23 Januarij H. 9 M. 19 S. 51 veſperi fuit ♄]

Line	Value
Longitude [Longitudo]	7° 24′ 55″ ♊
Latitude [Latitudo]	1° 35′ 23″ south [1 35 23 M.]
Tychonic calculation. [Tychonicus calculus.]	

For the same time, the calculation [Ad idem tempus Calculus]

Line	Mästlin's [Mæſthlinianus]	Prutenic, of Stadius [Prutenicus Stadianus]	Alphonsine [Alphonſinus]
Longitude [Long.]	7° 8′ 37″	7° 8′ 0″	10° 7′ 37″
Latitude [Lat.]	2° 17′ 59″	2° 18′ 59″	1° 42′ 37″

Calculation[1] for the place of Saturn from the observations. On 4 February. [Calculus[1] pro loco ♄ ex obſeruationibus. Die 4 Februarij.]

Time	Line	Value
$7⅔^h$ [H. 7⅔]	Distance of Saturn from the bright star of ♈ [Diſt. ♄ a luc. ♈]	37° 13′
	Declination of Saturn [Decl. ♄]	20° 8′ north [20 8 B.]
	Resp. right ascension of Saturn [Reſp. Aſcenſio R. ♄]	65° 57′ 57″
	About the same time, distance of Saturn [Circa idem tempus diſt. ♄]	
	from the lower head of ♊ [ab inf. cap. ♊]	40° 48′
	Hence the right ascension of Saturn [Hinc Aſc. R. ♄]	65° 58′ 28″
	Right ascension *limitata* [Aſc. R. limitata]	65° 58′ 12″

Time	Line	Value
	Resp. longitude [Reſp. Longitudo]	7° 30′ 50″ ♊

In the same year '90, on 8 February, at 7^h 50^m 25^s in the evening, [Eodem Anno 90 die 8 Februarij. H. 7 50′25″ Veſperi fuit]

Line	Value	Source
Saturn: longitude [♄ Long.]	7° 35′ 26″ ♊	From the Tychonic [Ex Tychonicis]
Latitude [Lat.]	1° 31′ 17″ south [1 31 17 M.]	observations. [obſeruationib.]

For the same time, the calculation [Ad idem tempus Calculus]

Line	Mästlin's [Mæſthlinianus]	Prutenic [Prutenicus]	Alphonsine [Alphonſinus]
Longitude [Long.]	7° 13′ 20″	7° 16′ 20″	10° 6′ 19″
Latitude [Lat.]	2° 9′ 0″	2° 22′ 12″	1° 36′ 0″

In the same year 1590, on 12 February, at 8^h 39^m in the evening, [Eodem anno 1590 12 Februarij. H. 8 M. 39 Veſperi fuit]

Line	Value	Source
Saturn: longitude [♄ Long.]	7° 39′ 39″ ♊	From the Tychonic [Ex Tychonicis]
Latitude [Lat.]	1° 30′ 11″ south [1 30 11 M.]	observations. [obſeruationib.]

For the same time, the calculation [Ad idem tempus Calculus]

Line	Mästlin's [Mæſthlinianus]	Prutenic [Prutenicus]	Alphonsine [Alphonſinus]
Longitude [Long.]	7° 18′ 43″	7° 20′ 21″	10° 10′ 21″
Latitude [Lat.]	2° 7′ 30″	2° 7′ 30″	1° 34′ 39″

19 July, morning [DIE 19 JULIJ, MANE.]

Saturn was observed as follows. [Obſeruabatur ♄ vt ſequitur.]

Altitude of Saturn [Altit. ♄]	Altitude of Aldebaran [Altit. Aldeb.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Bright star of the Vulture, west [Luc. Vult. occ.]
13° 26′	19° 26½′	20° 25′	50° 51′
13° 55½′	Shortly after [Paulo poſt]	20° 25′	
14° 26⅙′			53° 41′
	Declination of Saturn [Decl. ♄]	Between Saturn and Capella [Inter ♄ & Capellam]	
15° 42′	22° 13′ vtr. [22 13vtr.]	25° 19⅔′	55° 50′
	22° 13⅙′	25° 19⅚′	56° 45′

Altitude of Saturn [Altit. ♄]	Altitude of Aldebaran [Altit. Aldeb.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Bright star of the Vulture, west [Luc. Vult. occ.]
	22° 13⅓′ alt. [22 13⅓alt.]		

Place of Saturn for 19 July. [Locus ♄ ad diem 19 Julij.]
At 2^h 23^m 50^s in the morning [H. 2 M. 23 50″ Mane]

Source	Line	Value
From our observation [ex obſeruatione noſtra]	Longitude [Long.]	24° 2′ 35″ ♊
	Latitude [Latit.]	1° 10′ 58″ south [1 10 58 M.]
According to Mästlin, for the same time [Iuxta Mæſthlinum ad idem tempus]	Longitude [Long.]	24° 11′ 3″ ♊
	Latitude [Lat.]	1° 37′ 17″ south [1 37 17 M.]
From Cyprian's calculation [Ex Cypriano calculo]	Longitude [Long.]	26° 48′ 8″ ♊
	Latitude [Lat.]	1° 6′ 20″ south [1 6 20 M.]

24 July, morning [DIE 24 JULIJ, MANE.]

The clock was corrected by 1 of the wing of Pegasus. [Horologium corrigebatur ad 1 alæ Pegaſi.]

Time	Line	Value
1^h 46½^m [H. 1 46½′]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	20° 58⅚′ not valid [20 58⅚non valet]
	Altitude of Saturn by the revolving quadrant [Altit. ♄ per Volub.]	10° 21½′
1^h 54½^m [1 54½]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	20° 56½′
1^h 55⅙^m [1 55⅙]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	20° 58⅚′ not valid [20 58⅚non valet]
	Altitude of Saturn by the revolving quadrant [Altit. ♄ per Volub.]	11° 36′
2^h 0⅔^m [2 0⅔]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	20° 56⅔′
	Declination of Saturn, with one [Declin. ♄ vno]	22° 17⅚′
	alt.	22° 18′

Saturn was here nearly in conjunction with Venus. [♄ erat hic fere in ♂ cum ♀.]

Time	Line	Value
2^h 6^m [2 6]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	20° 56⅔′

Time	Line	Value
	Declination of Saturn, [Declin. ♄,]	
	with one pinnule, twice [vno pinn. bis]	22° 17⅚′
	Altitude of Saturn [Altit. ♄]	13° 0′
2^h $14⅓^m$ [2 14⅓]	Between Saturn and the upper head of ♊ [Inter ♄ & ſup. cap. ♊]	22° 45½′
	Altitude of Saturn [Altit. ♄]	14° 13′
	Declination of Saturn, with one [Declin. ♄ vno]	22° 17⅙′
	pinnule [pinnac.]	22° 17⅚′

The altitude of the upper head of ♊ was then about 12° 0′. [Tunc erat Altit. ſuper. cap. ♊ circiter 12 0.]

Time	Line	Value
2^h $21½^m$ [2 21½]	Between the upper head of ♊ and Saturn [Inter ſup. cap. ♊ & ♄]	22° 46′
	Declination of the upper head of ♊ [Decl. ſuper. cap. ♊]	32° 45′
2^h 30^m [2 30]	Between the upper head of ♊ and Saturn [Inter ſup. cap. ♊ & ♄]	22° 45′
	Altitude of Saturn [Altit. ♄]	16½° [16½]
	Altitude of the upper head of ♊ [Altit. cap. ſup. ♊]	14° nearly [14 fere]
	Declination of Saturn [Declin. ♄]	22° 16½′
		22° 14′ 0″

It could not be observed precisely because of the dawn. [Non potuit propter Auroram præciſe obſeruari.]

Around the third hour, the declination of Saturn 22° 12½′, 22° 13′. [Circa tertiam horam ♄ Decl. 22 12½ / 22 13]

Perhaps this declination is the better one, and the others are erroneous because of refraction. The pinnules of the armillae did not agree with one another in this observation [Fortaße hæc declinatio melior eſt, et ceteræ erroneæ propter refractionem. Pinnacidia Armillarum in hac obſeruatione non conſentiebant inter]

[1] From codices V. and K. [E codd. V. et K.]

[ſe.] The same morning, when the clock showed 5^h $56½^m$, the Sun was east 89° 5′, that is, 3^m 40^s past the sixth hour. [Eodem mane, cum Horologium indicabat $5^H56½'$, erat ☉ orient. 89°5′, id eſt 3′40″ vltra horam ſextam.]

4 August [DIE 4 AUGUSTI.]

Declination of Saturn [Declin. ♄]	Declination of Saturn (second value)	Between the eye of ♉ and Saturn [Inter ocul. ♉ & ♄]	Altitude of Saturn [Alt. ♄]	Eye of ♉, east [Oculus ♉ orient.]
22° 16½′	22° 19′	22° 2⅓′	24° 12′	57° 22½′
22° 15⅓′	22° 18⅓′	22° 2½′		55° 55⅙′

Declination of Saturn [Declin. ♄]	Declination of Saturn (second value)	Between the eye of ♉ and Saturn [Inter ocul. ♉ & ♄]	Altitude of Saturn [Alt. ♄]	Eye of ♉, east [Oculus ♉ orient.]
		Between Saturn and the upper head of ♊ [Inter ♄ & ſuper. cap. ♊]		
22° 15½′	22° 18½′	21° 48′		54° 20½′
With the clock verified, 3^h 2⅓^m in the morning [Horologio verificato H. 3 M. 2⅓ matut.]				
22° 14½′	22° 18′	21° 48′		52° 55′

Computation of the place of Saturn for 4 August, at 3^h 2⅓^m a.m. [Supputatio loci ♄ ad diem 4 Auguſti H. 3 M. 2⅓ A. M.]

Source	Line	Value
From our observation [Ex obſeruatione noſtra]	Longitude [Long.]	25° 42′ ♊
	Latitude [Latit.]	1° 9⅚′ south [1 9⅚ M.]
From Mästlin [Ex Mæſthlino]	Longitude [Long.]	25° 57¾′ ♊
	Latitude [Latit.]	1° 42′ south [1 42 M.]

30 August, evening [DIE 30 AUGUSTI, VESPERI.]

Time	Line	Value
12^h 16⅔^m [H. 12 16⅔′]	Between Saturn and the upper head of ♊ [Inter ♄ & ſup. cap. ♊]	20° 7′
	Declination of Saturn [Declinatio ♄]	22° 21½′
		22° 19⅚′
	Altitude of Saturn [Altit. ♄]	15° 35′
	For correcting the clock [Pro corrigendo horologio]	
	the bright star of the Vulture, west [Lucida Vult. occid.]	52° 20′

The upper head of ♊ was then at nearly the same altitude as Saturn. [Erat tunc ſuperius caput ♊ in conſimili fere altitudine cum ♄.]

Time	Line	Value
12^h 20⅚^m [H. 12 20⅚]	Between Saturn and the upper head of ♊ [Inter ♄ & ſup. cap. ♊]	20° 7⅓′
12^h 27^m [12 27]	Between Saturn and the upper head of ♊ [Inter ♄ & ſup. cap. ♊]	20° 8′
Clock [Horol.]		
verified [verif.]	Declination of Saturn [Declin. ♄]	22° 21′
12^h 30^m [12 30]		22° 18′
12^h 29⅚^m [12 29⅚]	Between Saturn and the upper head of ♊ [Inter ♄ & ſup. cap. ♊]	20° 8$\frac{1}{12}$′ [20 8 1/12]
	Altitude of Saturn [Altit. ♄]	17° 10′

Time	Line	Value
$12^h\ 35^m$ [12 35]	Declination of Saturn [Declin. ♄]	22° 20⅚′ 22° 17⅚′

Place of Saturn for 30 August, at $12^h\ 30^m$. [Locus ♄ ad diem 30 Auguſti H. 12 M. 30.]

Line	From our observation[1] [Ex obſeruatione noſtra[1]]	From Mästlin's calculation [Ex calculo Mæſthliniano]	From the Alphonsine calculation [Ex calculo Alphonſino]
Longi-tude [Long.]	27° 41⅚′ ♊	27° 55½′ ♊	0° 40½′ ♋
Latitude [Lat.]	1° 10⅓′ south [1 10⅓M.]	1° 49′ south [1 49 M.]	1° 13′ south [1 13 M.]

1 September[2] [DIE 1 SEPTEMBRIS[2].]

Time	Line	Value
$4^h\ 2^m$ or $16^h\ 2^m$ [H. 4 M. 2 vel 16 2.]	Between Saturn and [Inter ♄ &]	
	the upper head of ♊ [ſuperius caput ♊]	20° 5′
	Aldebaran was then east [Tunc erat Aldeb. orient.]	13° 17′
$5^h\ 0^m$ [5 0]	Saturn was distant from the upper head of ♊ [Diſtabat ♄ a ſup. cap. ♊]	20° 4′
	The declination of Saturn was then [Decl. ♄ tunc erat]	22° 19⅓′
	alt.	22° 18′
	Conversely [Viceverſa]	
$5^h\ 8⅚^m$ [5 8⅚]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	24° 7⅚′ among clouds [24 7⅚ inter nubes]
	Declination of Saturn [Declin. ♄]	22° 20′
		22° 18′
$5^h\ 10½^m$ [5 10½]	The same distance repeated [Eadem diſt. repetita]	24° 6½′

Saturn was raised high enough here that refraction was no hindrance. [♄ erat hic ſatis alte eleuatus, ita vt refractio non fuerit impedimento.]

Place of Saturn [Locus ♄]

2 September, morning[3] [DIE 2 SEPTEMBRIS, MANE[3].]

Time	Line	Value
4^h [H. 4]	Right ascension of Saturn from the upper head of ♊ [Aſc. R. ♄ a ſup. cap. ♊]	87° 38′ 0″

Time	Line	Value
4^h 8^m [H. 4 M. 8]	from Aldebaran [ab Aldebora]	87° 40′ 40″

These observations were made among clouds, and therefore agree less well. With the observations *limitatis*, however, the resp. right ascension at exactly 4 o'clock is [Hæ obſeruationes factæ ſunt inter nubes, ideoque minus conſentiunt. Limitatis autem obſeruationibus reſp. Aſcenſio Recta Hora exacte 4]

Line	Value
	87° 39′ 30″
Declination north [Decl. B.]	22° 18′ 30″
Longitude [Longitudo]	27° 49⅚′ ♊
Latitude [Latitudo]	1° 11⅚′ south [1 11⅚ M.]

Put the declination at 22° 19⅓′, and the latitude comes out 1° 11′ south. [Pone declinationem 22°19⅓′ & prouenit latitudo 1°11′ M.]

7 September, evening [DIE 7 SEPTEMBRIS, VESPERI.]

Altitude of Saturn [Alt. ♄]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Declin. ♄]	Declination of Saturn (second value)	The bright star of the Vulture was then west [Tunc erat luc. Vult. occid.]
13° 31′	24° 22½′	22° 21½′	22° 20′	56° 1′
15° 5′	24° 22⅓′			59° 0½′
Con-versely [Vicev-erſa]				
	Between Saturn and the upper head of ♊ [Inter ♄ & cap. ſup. ♊]			Mouth of Pegasus, west [Os Peg. occid.]
20° 45′	19° 46⅔′	22° 21½′	22° 20⅓′	31° 55′

Around this time Saturn and the upper head of ♊ were at nearly the same altitude. [Circa hoc tempus erant ♄ & ſuperius caput ♊ in conſimili fere altitudine.]

Altitude of Saturn	Between Saturn and the upper head of ♊	Declination of Saturn	Declination of Saturn (second value)	Mouth of Pegasus, west
	19° 46⅔′			33° 37′

[1] Written in addition: "From our table vet. supput." [Adſcriptum eſt: »Ex tabula noſtra vet. ſupput.«.] [2] Written in addition, but struck through with lines: "In the morning, as I think". Codex V. has: "P. M. N." [Adſcriptum

eſt, ſed lineis inductum: »Mane vt puto«. Codex V. habet: »P. M. N.«] [3] From codices V. and K. [E codd. V. & K.]

On the same day, 7 September, at $11^h\ 47⅓^m$ in the evening [Eodem die 7 Sept. H. veſpertina 11 47⅓]

Line	Value
Right ascension of Saturn [Aſcenſio Recta ♄]	87° 58′ 10″
Declination north [Declinatio B.]	22° 19′ 30″
Resp. longitude [Reſp. Longitudo]	28° 7′ 10″ ♊
Latitude [Latitudo]	1° 10′ 47″ south [1 10 47 M.]

Line	From Cyprian [E Cypriano]	From Mästlin [Ex Mæſthlino]
Longitude [Longit.]	1° 4′ 30″ ♋	28° 19′ ♊
Latitude [Latit.]	1° 15′ south [1 15 M.]	1° 11′ 20″ south [1 11 20″M.]

6 October, morning [DIE 6 OCTOBRIS, MANE.]

Line	Value
Between the bright star of ♈ and Saturn [Inter lucidam ♈ & ♄]	20° 28′
The bright star of ♈ was then west [Tunc erat lucid. ♈ occid.]	62° 35′
Between the bright star of ♈ and Saturn [Inter lucid. ♈ & ♄]	20° 29′
The bright star of ♈ was then west [Tunc erat lucid. ♈ occid.]	62° 50½′
Declination of Saturn [Declin. ♄]	22° 12½′
	22° 13′
The bright star of ♈ was then west [Tunc erat lucid. ♈ occid.]	70° 50′

26 November, evening [DIE 26 NOUEMBRIS, VESPERI.]

The clock was corrected at $7^h\ 0^m\ 22^s$ to the transit of the end of the wing of Pegasus through the meridian. On the equator, however, about 3 minutes still remained before the said transit. [Horologium corrigebatur H. 7 M. 0 Secund. 22 ad tranſitum extremæ alæ Pegaſi per Meridianum. In æquatore autem ante dictum tranſitum reſtabant adhuc quaſi 3 minuta.]

Saturn was observed as follows. [Obſeruabatur ♄ vt ſequitur.]

Time [Tempus]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination of Saturn [Declinatio ♄]	Declination of Saturn (second value)	End of the wing of Pegasus, west [Extr. alæ Pegaſi occ.]
$8^h\ 27⅓^m$ [8 27⅓]	22° 19′	22° 15′	22° 16′	22° 52½′
$8^h\ 36^m$ [8 36]	22° 19′	22° 15′	22° 15½′	26° 6⅓′
$8^h\ 40½^m$ [8 40½]	22° 19′			26° 18½′

Time [Tempus]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination of Saturn [Declinatio ♄]	Declination of Saturn (second value)	End of the wing of Pegasus, west [Extr. alæ Pegaſi occ.]
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			
$8^h\ 47^m\ 25^s$ [8 47 25]	22° 53′	22° 15⅙′	22° 15⅔′	28° 5⅔′
$8^h\ 54½^m$ [8 54½]	22° 53⅓′			29° 59′
$8^h\ 59⅓^m$ [8 59⅓]	22° 53′ 25″	22° 15½′	22° 16′	

27 November, evening [DIE 27 NOUEMBRIS, VESPERI.]

Line	Value
Saturn from Aldebaran [♄ ab Aldeb.]	22° 14½′
Declination [Decl.]	22° 17⅔′
Northern tail of Cetus, west [Cauda Ceti Borea occ.]	12½° [12½]

4 December, evening [DIE 4 DECEMBRIS, VESPERI.]

NB. Saturn near opposition to the Sun. *Saturn in its perigee and in the solar apogee.* [NB. ♄ iuxta ☉ ☍. ♄ *in perigæo ſuo & apogæo ſolari.*]

The clock was corrected to the transit of the end of the wing of Pegasus through the meridian, at $6^h\ 25^m$. [Horologium corrigebatur ad tranſitum extremæ alæ Pegaſi per Meridianum H. 6 M. 25.]

Time [Tempus]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination [Decl.]	Altitude of Saturn [Alt. ♄]
$7^h\ 7^m\ 35^s$ [7 7 35]	21° 39¼′	22° 15½′	26° 5′
$7^h\ 14½^m$ [7 14½]	21° 39½′	22° 15′	27° 2½′

Then the distance of Saturn from the forefoot of ♊ [Greek: προποδε (propode), "forefoot"], 0° 52′. [Tunc diſt. ♄ a προποδε ♊ 0 52]

Time	Between the following horn of ♉ and Saturn [Inter ſeq. cornu ♉ & ♄]	Declination [Declinatio]	Declination (second value)	For correcting the clock: end of the wing of Pegasus, west [Pro corrig. Horol. Extr. alæ Peg. occ.]
$7^h\ 22⅚^m$ [7 22 22⅚]	22′	22° 16′	22° 14¾′	14° 50′
$7^h\ 27½^m$ [7 27½]	22½′	22° 15¾′	22° 14¾′	16° 0′

Time	Between the following horn of ♉ and Saturn [Inter ſeq. cornu ♉ & ♄]	Declination [Declinatio]	Declination (second value)	For correcting the clock: end of the wing of Pegasus, west [Pro corrig. Horol. Extr. alæ Peg. occ.]
	Between Saturn and 10 ♊, at the end of the upper knee of ♊ [Inter ♄ & 10 ♊ in fin. genu ſuper. ♊]			
7h 53m 25s [7h 53 25]	17° 23¼′	22° 14½′	22° 15¾′	22° 25′
7h 57⅔m [7h 57⅔]	17° 25′ better [17° 25′ melior]		better [melior]	23° 29′
8h 3m [8h 3]	9° 25′	22° 14½′	22° 15½′	24° 52′

Here the clock was running one minute slower than it should, and this was corrected. [Hic mouebatur horol. iuſto tardius vno minuto, quod corrigebatur.]

Time	Between the following horn of ♉ and Saturn	Declination	Declination (second value)	For correcting the clock: end of the wing of Pegasus, west
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			
8h 28m [8h 28]	23° 30⅙′	22° 15⅙′	22° 14⅓′	31° 1′
				Bright star of the jaw of Cetus, east [Luc. mand. Ceti or.]
8h 37⅙m [8h 37⅙]	23° 30¼′	22° 16′	22° 14⅓′	8° 45′
8h 42⅙m [8h 42⅙]	23° 31′			7° 25′
	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]			
8h 46m 35s [8h 46 35]	21° 41½′			6° 18′
8h 50⅓m [8h 50⅓]	21° 41′	22° 14¼′		5° 14′
8h 54⅙m [8h 54⅙]	21° 41′			4° 20′
9h 13⅓m [9h 13⅓]	The bright star of the jaw of Cetus crossed the meridian. [Luc. mand. Ceti tranſibat per Merid.]			
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			Bright foot of Orion, east [Luc. pes Or. orient.]
10h 34⅔m [10h 34⅔]	23° 30′	22° 14′ with the prior [22 14 priori]		11° 55′
10h 39⅚m [10h 39⅚]	23° 30½′	pinnule [pinn.]		10° 38′

Time	Between the following horn of ♉ and Saturn	Declination	Declination (second value)	For correcting the clock: end of the wing of Pegasus, west
	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]			Right shoulder of Orion, east [Dext. hum. Or. orient.]
10^h 42½^m [♒° 42′ 42½]		22° 14′	22° 15′	19° 26′
10^h 47¼^m [♒° 41¾′ 47¼]				18° 13′

On the same day, 4 December, in the evening, Saturn was observed further. [Eodem die 4 Decembris, Veſperi vlterius obſeruabatur ♄.]

At 12^h 4^m Saturn crossed the meridian, having an altitude [H. 12 4′ Tranſibat ♄ per Meridianum habens altit.]

Time	Line	Value
	by the steel instrument [per Chalyb.]	56° 19′
	by the revolving quadrant [per Volubilem]	55° 18¾′
	Right shoulder of Orion, west [Dexter hum. Orion. occ.]	1° 39′
	Declination of Saturn [Declin ♄]	22° 15′
		22° 14⅓′
12^h 11⅚^m [12 11⅚]	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	23° 31′
	Right shoulder of Orion, west [Dext. hum. Orion. occ.]	3° 39′
12^h 15⅓^m [12 15⅓]	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	23° 31¼′
	Right shoulder of Orion, west [Dext. hum. Or. occ.]	4° 39′
12^h 18¼^m [12 18¼]	Between Saturn and the eye of ♉ [Inter ♄ & oculum ♉]	21° 41′
	Right shoulder of Orion, west [Dext. hum. Or. occ.]	5° 19′
12^h 21⅓^m [12 21⅓]	Between Saturn and the eye of ♉ [Inter ♄ & oculum ♉]	21° 40¾′
	Declination of Saturn [Declinatio ♄]	22° 14⅚′
		22° 14′
	Right shoulder of Orion, west [Dext. hum. Orion. occ.]	6° 15′

Note well. The preceding and following observations are good for Saturn, it being acronychal, and that near the perigee of its eccentric and the solar apogee. For this reason these observations are, on two counts, especially useful, and they are sure enough that one may safely trust them. At least let its place be examined conversely from each fixed star. [*Nota bene. Præcedentes & ſequentes obſeruationes ſunt bonæ pro ♄ exiſtente Acronychio, idque iuxta Perigæum ſui Eccentrici & Apogæum Solare, quare duplici ratione hæ obſeruationes ſunt imprimis vtiles & ſunt ſatis certæ, quibus tuto fidere liceat. Examinetur ſaltem locus eius viceverſa ab vtraque fixa.*]

5 DECEMBER, EVENING [DIE 5 DECEMBRIS, VESPERI.]

At 12^h 0^m the meridian altitude of Saturn was then [H. 12 0′ Tunc erat altit. meridiana ♄]

Line	Value
by the steel instrument [per Chalyb.]	56° 19$\frac{1}{12}$′ [56 19 1/12]
by the revolving quadrant [per Volub.]	56° 18½′
Declination of Saturn [Declin. ♄]	22° 13⅔′
	22° 14½′
Right shoulder of Orion, west [Dexter humer. Orion. occ.]	1° 32′

More could not be observed because of the clouds passing in front and because of mists. [Plura propter obuerſantes nubes & propter nebulas obſeruari non potuerunt.]

6 December, evening [DIE 6 DECEMBRIS, VESPERI.]

Saturn was observed as follows. [Obſeruabatur ♄ vt ſequitur.]

NB. Saturn acronychal in its perigee. [NB. ♄ Acronychus in ſuo Perigæo.]

The clock was corrected to the end of the wing of Pegasus crossing the meridian, at 6^h 17⅙^m. [Horologium corrigebatur ad extremam alæ Pegaſi tranſeuntem per Meridianum H. 6 17⅙′.]

Time [Tempus]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude by the revolving quadrant [Altit. per Volub.]	For the clock: end of the wing of Pegasus, east [Pro horol. Extr. alæ Peg. or.]
5^h 47^m 45^s [5 47 45]	21° 34′	22° 15½′	16° 6½′	7° 18′
		22° 15′		
5^h 52½^m [5 52½]	21° 34⅙′	22° 16′	16° 44⅓′	6° 2′
		22° 15¼′		
5^h 58⅚^m [5 58⅚]	21° 33⅚′	22° 15′	17° 35′	4° 31′
		22° 16′		
6^h 6⅙^m [6 6⅙]	21° 33½′	22° 14⅚′	18° 38½′	2° 38′
		22° 16′		west [occid.]
6^h 37⅓^m [6 37⅓]	21° 33′	22° 16′		4° 48′
		22° 15′		
Saturn was observed conversely from the heel of ♊. [♄ obſeruabatur viceverſa a calce ♊.]				
6^h 52^m 25^s [6 52 25]	4° 17′	22° 15¾′	24° 58′	8° 51′
		22° 15′		
6^h 55⅙^m [6 55⅙]			25° 23′	9° 39′
6^h 57^m 55^s [6 57 55]	4° 15′		25° 47′	
7^h 0^m [7 0]		22° 15⅔′		
		22° 14⅚′		
7^h 25⅓^m [7 25⅓]	4° 24′			
7^h 26⅚^m [7 26⅚]	4° 25′	22° 15½′		17° 28′
		22° 15′		
7^h 29⅔^m [7 29⅔]	4° 25′	22° 15′		18° 11′
		22° 15⅓′		

Time		Declination of Saturn [Declinatio ♄]	Declination of Saturn (second value)	(fifth column)
7^h $35\frac{1}{6}^m$ [7 35 1/6]	23° 39′	22° 15′	22° 15′	19° 30′
7^h $38\frac{1}{6}^m$ [7 38 1/6]	23° 39⅓′	22° 15′	with one [vno]	20° 1′
7^h 47^m 55^s [7 47 55]	23° 40½′	22° 15⅓′	with one [vno]	22° 40′
	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]			
8^h $26\frac{1}{3}^m$ [8 26 1/3]	21° 33′	22° 15½′	22° 15⅔′	32° 20′
8^h 35^m [8 35]	21° 33¼′			Eye of ♉, east [Ocul. ♉ or.]
8^h $40\frac{1}{6}^m$ [8 40 1/6]	21° 33½′			29° 29′
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			
8^h $43\frac{1}{2}^m$ [8 43½]	23° 39⅓′			28° 40′
8^h $54\frac{1}{2}^m$ [8 54½]	23° 38⅚′			25° 53′
	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]			Aldebaran, west [Aldeb. occ.]
11^h $29\frac{1}{6}^m$ [11 29 1/6]		22° 15⅓′	22° 15⅚′	12° 52½′
11^h $33\frac{2}{3}^m$ [11 33 2/3]	21° 30′			
11^h 36^m [11 36]	21° 30⅔′			14° 23′
11^h $39\frac{2}{3}^m$ [11 39 2/3]	21° 30⅙′			15° 18′
11^h $44\frac{1}{6}^m$ [11 44 1/6]	21° 30⅔′			16° 30′
	Saturn from the lower head of ♊ [♄ ab inf. cap. ♊]			
11^h $52\frac{1}{6}^m$ [11 52 1/6]	23° 40¼′	22° 15⅙′	22° 15⅔′	18° 28′
11^h $54\frac{1}{6}^m$ [11 54 1/6]	23° 41′			19° 0½′
12^h $4\frac{1}{3}^m$ [12 4 1/3]	Meridian altitude of Saturn [Alt. merid. ♄]			
	by the steel instrument [per Chalyb.]			56° 18⅔′
	by the revolving quadrant [per Volub.]			56° 18⅙′
				Aldebaran, west [Aldeb. occ.]
	Declination of Saturn [Decl. ♄]	22° 13⅔′	22° 14′	21° 37′
12^h $17\frac{2}{3}^m$ [12 17 2/3]	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			

Time	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	Declination of Saturn [Declinatio ♄]	Declination of Saturn (second value)	(fifth column)
	23° 40⅚′			24° 58½′

9 December, evening [DIE 9 DECEMBRIS, VESPERI.]

Saturn was observed as follows. [Obſeruabatur ♄ vt ſequitur.]

Time [Tempus]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination of Saturn [Declinatio ♄]	Declination of Saturn (second value)	For the clock: eye of ♉, east [Pro horol. Ocul. ♉ or.]
7^h 4^m [7 4⅔]	21° 18¾′	22° 15′	22° 14½′	38° 43′
7^h 7^m [7 7]	21° 18′			37° 50′ End of the wing of Pegasus, west [Ext. alæ Peg. occ.]
7^h 42^m [7 42] The clock was corrected. [Corrigebatur horologium.]	21° 17⅚′	22° 14⅓′	22° 14⅔′	24° 15′
7^h 58^m [7 58]	21° 18⅙′	22° 15′		28° 50′ First of the wing of Pegasus, west [Prima alæ Peg. occ.]
9^h $13½^m$ [9 13½]	21° 17¾′	22° 15⅙′	22° 15′	49° 37′ Right shoulder of Orion, east [Dext. hum. Or. or.]
9^h $18⅔^m$ [9 18⅔] Conversely [Viceverſa]	21° 17′			34° 39′
	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]			
9^h $23⅙^m$ [9 23⅙]	23° 54½′			33° 26′
9^h $26⅚^m$ [9 26⅚]	23° 54′			32° 33′
9^h $29⅔^m$ [9 29⅔]	23° 54¾′			31° 49′

10 December, evening [DIE 10 DECEMBRIS, VESPERI.]

Transit of Aldebaran through the meridian at 10^h $19¼^m$. [Tranſitus Aldeb. per Merid. H. 10 M. 19¼]

Time	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Aldebaran, east [Aldeb. or.]
6^h 44^m [6 44]	21° 12¾′		27° 50′	50° 47′
6^h $48½^m$ [6 48½]	21° 12¾′	22° 15⅚′		49° 31′

Time	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Aldebaran, east [Aldeb. or.]
		22° 14⅝′		
At this time chasmata began to appear. [Ad hoc tempus Chasmata apparere incipiebant.]				
6^h 56^m [6 56]	21° 13′	22° 15½′		47° 41′
		22° 14¾′		
7^h $1⅝^m$ [7 1⅝]	21° 13′			46° 10′
The chasmata ceased. [Deſinebant chasmata.]				
7^h $16½^m$ [7 16½]	21° 12½′			44° 35′

A little before the seventh hour, chasmata of unusual appearance — that is, of a red, blood-like colour — were seen in the east below Saturn. Lasting for ⅓ of an hour, they took their beginning below the feet of the following ♊, and, descending through Saturn and through Aldebaran, at last vanished below the Pleiades. [Horam paulo ante ſeptimam Chasmata inſolitæ apparentiæ, rubei ſcilicet ac ſanguinei inſtar coloris in Oriente infra ♄ conſpiciebantur. Quæ per ⅓ horæ durantia initium infra pedes ſequentis ♊ ducebant & per ♄ perque Aldeboram deſcendendo ſub Pleiadibus tandem dispauerunt.]

N.B. These did not move now here, now there, with a swift and violent darting about, as other chasmata do, although they sometimes appeared larger and at other times smaller. Their middle extent was contained between the lower feet of ♊ and Saturn. [N. B. Hæc non vt alia Chasmata celeri violentaque diſcurſione, nunc huc nunc illuc mouebantur, licet interdum maiora interdum vero minora apparebant. Media quantitas inter inferiores pedes ♊ & ♄ comprehenſa fuit.]

16 December [DIE 16 DECEMBRIS.]

In the evening Saturn was observed; its altitude was hindered by no refraction. [Veſperi obſeruabatur ♄, altitudo eius a nulla refractione impediebatur.]

Time [Tempus]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination [Declinatio]	Decli-nation (second value)	For correcting the clock: left shoulder of Orion, east [Pro horol. corrigendo Siniſt. hum. Orion. or.]
7^h 39^m 30^s [7 39 30]	20° 44′	22° 13′ with one pinnule [22 13 vno pin.]		42° 10′
				Following shoulder of Orion, east [Seq. hum. Or. or.]
7^h $45⅔^m$ [7 45⅔]	20° 43⅚′			48° 11′
7^h $49½^m$ [7 49½]	20° 44¼′			47° 9′

Time [Tempus]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination [Declinatio]	Declination (second value)	For correcting the clock: left shoulder of Orion, east [Pro horol. corrigendo Siniſt. hum. Orion. or.]
Conversely, between Saturn and the lower head of ♊ [Viceverſa, inter ♄ & inf. cap. ♊]				
7^h 53⅓^m [7 53⅓]	24° 25¾′	22° 14′ with the other pinnule [alt. pin. 22 14]		46° 11′
7^h 57½^m [7 57½]	24° 25½′			45° 4′
8^h 1^m [8 1]	22° 13⅔′ with one [22 13⅔ vno]			
	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]			
8^h 36^m [8 36]	20° 44½′	22° 14¼′	22° 13⅙′	39° 9′[1]

[1] It does not agree with the interval of time from 7^h 57½^m. Perhaps 36° 9′ should be read. [Non reſpondet intervallo temporis a 7^h 57½^m. Fortaße legendum eſt 36° 9′.]

17 December, evening [DIE 17 DECEMBRIS, VESPERI.]

Time [Tempus]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination of Saturn [Declinatio ♄]	Declination of Saturn (second value)	Right shoulder of Orion, east [Dext. hum. Or. orient.]
7^h 17⅙^m [7 17⅙]	[20° 38¼′]	22° 14⅚′	22° 13½′	58° 33′
7^h 25⅙^m [7 25⅙]	[20° 39½′ better [20 39½ melior]]			56° 35′
7^h 30⅓^m [7 30⅓]	[20° 39¼′]			55° 15′
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			
7^h 34⅙^m [7 34⅙]	[24° 31⅙′]	22° 14¼′	22° 13¼′	
7^h 37⅔^m [7 37⅔]	[24° 30½′]			53° 27′
7^h 41⅓^m [7 41⅓]	[24° 30½′]			52° 40′

18 December [DIE 18 DECEMBRIS.]

In the evening Saturn was observed as follows. The clock was corrected at noon. [Veſperi obſeruabatur ♄ vt ſequitur. Horologium corrigebatur in Meridie.]

Time	Distance between Saturn and the lower head of ♊ [Diſt. inter ♄ & inf. cap. ♊]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Right shoulder of Orion, east [Dext. hum. Or. orient.]
7^h 5⅓^m [7 5⅓]	24° 34¼′	22° 14½′ 22° 13½′	34° 58′	
The lower head of ♊ was then at altitude [Tunc erat inf. cap. ♊ alt.]			24° 32′	
7^h 8¼^m [7 8¼]	24° 34½′			59⅙° [59⅙]
7^h 12^m [7 12]	24° 34¼′		35° 42⅓′	58° 7′
Conversely [Viceverſa]				
	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]			
7^h 15⅚^m [7 15⅚]	20° 34⅚′	22° 15′ 22° 13¾′	36° 4′	57° 23′ Third of the jaw of Cetus, east [Tertia mandib. Ceti or.]
7^h 19^m [7 19]	20° 34⅚′		36° 30′	8° 44′
7^h 24⅔^m [7 24⅔]	20° 23¾′		36° 57′	7° 23′
Uncertain because of clouds [incerta propter nubes]				
7^h 41⅚^m [7 41⅚]	20° 34½′	22° 15′ 22° 14′	39° 20′	3° 17′ Bright star of the jaw of Cetus, west [Luc. mand. Ceti occ.]
7^h 48¼^m [7 48¼]	20° 34⅓′			6° 41′
	Saturn again from the lower head of ♊ [♄ rurſus ab inf. cap. ♊]			Bright lower foot of ♊, east [Luc. pes inf. ♊ or.]
7^h 57^m [7 57]	24° 35′	22° 14′ 22° 13⅔′	41° 45′	57° 43′

19 December, evening [DIE 19 DECEMBRIS, VESPERI.]

N.B. The clock was corrected at 12^h 6^m after noon, and it was then running 58^m more than it should; this error had accrued since the immediately preceding noon. [N. B. Horologium corrigebatur hora 12 M. 6 poſt Meridiem & tunc mouebatur 58^m plus iuſto, qui error acceſſit a proxime præterlapſo Meridie.]

Time [Tempus]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Following shoulder of Orion, east [Seq. hum. Orion. or.]
9^h 59^m 25^s [9 59 25]	20° 30′	22° 15′	53° 27′	19° 23′
		22° 14′		
10^h 9^m 25^s [10 9 25]	20° 29¼′			17° 1′

Time [Tempus]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Following shoulder of Orion, east [Seq. hum. Orion. or.]
10^h 15^m 35^s [10 15 35]	20° 29⅙′	22° 14⅓′		15° 37′
		22° 14′		
10^h $19⅔^m$ [10 19⅔]	20° 29½′			14° 37′

Conversely [Viceverſa]

Time	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	Altitude of Saturn [Alt. ♄]	Lesser Dog, east [Can. minor orient.]
10^h $22⅙^m$ [10 22⅙]	24° 38′		40° 14′
10^h $26½^m$ [10 26½]	24° 38¼′		39° 19′
10^h $29½^m$ [10 29½]	24° 38¼′		38° 33′
10^h $32⅓^m$ [10 32⅓]	24° 38′	55° 3′	37° 53½′
11^h 24^m [11 24]	Saturn crossed the meridian [Tranſibat ♄ per Merid.]		25° 49′
	having an altitude by the revolving quadrant of [habens alt. per Volub.]	56° 18¾′	
11^h 34^m 35^s [11 34 35]	24° 38⅙′		22° 57⅓′
11^h $40½^m$ [11 40½]	24° 39′		21° 39′
11^h $45⅔^m$ [11 45⅔]	24° 38⅚′		20° 31′

Transit of the Lesser Dog through the meridian at 12^h $41¼^m$. [Tranſitus Canis minoris per Merid. H. 12 M. 41¼.]

20 December, evening [DIE 20 DECEMBRIS, VESPERI.]

Time by the clock [Tempus Horol.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn by the Q. min. [Alt. ♄ per Q. min.]	Following shoulder of Orion, east [Seq. hum. Or. orient.]
5^h $47⅔^m$ [5 47⅔]	20° 24⅚′	22° 14′	27° 30′	73° 20′
		22° 13¾′		
5^h $53⅓^m$ [5 53⅓]	20° 24¾′	22° 14′	28° 30′	71° 46′
6^h $0⅙^m$ [6 0⅙]	20° 25′	22° 14⅓′		70° 2′
		22° 13′		
6^h $5⅓^m$ [6 5⅓]	20° 25′		30° 0′	67° 55′

Time by the clock [Tempus Horol.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn by the Q. min. [Alt. ♄ per Q. min.]	Following shoulder of Orion, east [Seq. hum. Or. orient.]
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			
$8^h\ 4^m$ [8 4]	24° 43′	22° 13½′	46° 30′	37° 30′
		22° 13′		
The altitude of the lower head of ♊ was then 38⅓ [Alt. inf. cap. ♊ tunc erat 38⅓]				
$8^h\ 9½^m$ [8 9½]	24° 43⅙′			35° 58′
$8^h\ 14½^m$ [8 14½]	24° 43¼′			34° 43′
$8^h\ 30½^m$ [8 30½]	24° 44′			30° 30′
$8^h\ 34⅓^m$ [8 34⅓]	24° 43½′	22° 13′		29° 28′
		22° 13′		
Conversely [Viceverſa]				
	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]			
$9^h\ 2⅓^m$ [9 2⅓]	20° 25′		Lesser Dog, east [Can. min. orient.]	22° 0′
$9^h\ 5⅙^m$ [9 5⅙]	20° 24¾′	Altitude of Saturn [Alt. ♄]		21° 27′
$9^h\ 37⅔^m$ [9 37⅔]	20° 24⅓′	55° 40′	39° 6′	
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			
$9^h\ 49⅓^m$ [9 49⅓]	24° 43′		36° 5′	
$10^h\ 11⅙^m$ [10 11⅙]	24° 43′			4° 8′

21 December, evening [DIE 21 DECEMBRIS, VESPERI.]

Time by the clock [Tempus Horol.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Following shoulder of Orion, east [Seq. hum. Orion. or.]
$6^h\ 24⅚^m$ [6 24⅚]	20° 20½′	22° 14½′	33° 40′	62° 23′
		22° 13½′		
$6^h\ 30⅚^m$ [6 30⅚]	20° 20⅓′	22° 12⅚′	34° 32′	60° 44′
		22° 12′		
$6^h\ 41⅚^m$ [6 41⅚]	20° 21′		36° 2′	57° 59′

Time by the clock [Tempus Horol.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Following shoulder of Orion, east [Seq. hum. Orion. or.]
6^h $53\frac{1}{3}^m$ [6 53⅓]	20° 20⅙′	22° 13′ 22° 13½′	37° 35′	55° 3½′

Conversely [Viceverſa]

Time	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	Declination of Saturn	Altitude of Saturn	Preceding shoulder of Orion, east [Præced hum. Or. or.]
7^h $4\frac{1}{2}^m$ [7 4½]	24° 49′		39° 5′	44° 38½′ Following shoulder of Orion, east [Seq. hum. Or. or.]
7^h $22\frac{1}{3}^m$ [7 22⅓]	24° 50′			47° 55′
7^h $24\frac{2}{3}^m$ [7 24⅔]	24° 48′	22° 13⅙′		47° 3′
among clouds [inter nubes]		22° 12¾′		

22 December, evening [DIE 22 DECEMBRIS, VESPERI.]

Time by the corrected clock [Temp. Hor. corr.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Right shoulder of Orion, east [Dext. hum. Or. or.]
7^h 1^m [7 1]	20° 15′	22° 14′ 22° 13′	37° 7′	56° 4′
7^h 7^m [7 7] * with one and the same, better, pinnule [* vno eodemque meliori pinnac.]	20° 15⅓′	22° 13½′*		54° 35′
8^h $50\frac{1}{3}^m$ [8 50⅓]	20° 15½′			29° 40′
8^h $53\frac{1}{2}^m$ [8 53½]	20° 15½′	22° 13½′ 22° 12⅔′		28° 55′
8^h $55\frac{5}{6}^m$ [8 55⅚]	20° 15¼′	22° 12′	50° 21′	28° 20′
Conversely [Viceverſa]	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			
9^h 2^m 25^s [9 2 25]	24° 52¼′			26° 45′
9^h 4^m 45^s [9 4 45]	24° 52¼′			26° 11′
9^h $6\frac{1}{2}^m$ [9 6½]	24° 52⅔′	22° 13′ better [22 13 melior]		25° 45′

Time by the corrected clock [Temp. Hor. corr.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Right shoulder of Orion, east [Dext. hum. Or. or.]
		22° 12′		
9^h 10½^m [9 10½]	24° 52¼′			24° 46′

N.B. The right shoulder of Orion crossed the meridian at 10^h 44⅔^m. The clock was corrected to this transit. [N. B. Dexter humerus Orionis tranſibat per Meridianum Hora 10 M. 44⅔. Ad hunc tranſitum corrigebatur horologium.]

28 December, evening [DIE 28 DECEMBRIS, VESPERI.]

N.B. When the clock showed 5^h 46^m, the bright star of the jaw of Cetus was 20° 47′ east, and it was due to cross the meridian at 7^h 27^m. The clock was therefore running slower than it should by 17^m 52^s [17′ 52″], an error that had accrued to it since noon of this day, 28 December. It was therefore set right at 6^h 3^m 52^s to the transit of the bright star of the jaw of Cetus through the meridian. [N. B. Horologio indicante Horam 5 M. 46 erat lucida mandibulæ Ceti orient. 20 47, tranſitura per Meridianum Hora 7 M. 27, mouebatur igitur Horologium iuſto tardius 17′ 52″, qui error illi acceßerat a Meridie huius diej 28 Decembris. Rectificabatur ergo Hora 6 M. 3 52″ ad tranſitum lucid. mand. Ceti per merid.]

Time [Tempus]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn by the Q. min. [Alt. ♄ per Q. min.]	Following shoulder of Orion, east [Seq. hum. Or. orient.]
6^h 29^m 25^s [6 29 25]	19° 47¾′			57° 10′
6^h 34⅙^m [6 34⅙]	19° 48½′	22° 13′	37° 50′	55° 57½′
6^h 40½^m [6 40½]	19° 49′	22° 12⅔′	38° 47′	54° 14′
		22° 12⅙′		
6^h 42⅚^m [6 42⅚]	19° 48¾′		39° 0′	53° 41′

Time	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	Declination of Saturn	Altitude of Saturn	Bright star of the jaw, east [Luc. mand. orient.]
6^h 49⅚^m [6 49⅚]	25° 16½′	22° 12⅔′		9° 8′
6^h 53⅚^m [6 53⅚]	25° 16¾′	with one pinnule [vno pin.]	40° 40′	8° 8′
6^h 59¼^m [6 59¼]	25° 16½′		41° 40′	6° 37′

At 8^h 55^m Saturn and the Moon were seen as if in one vertical circle. [H. 8 M. 55 cernebatur ♄ & ☾ quaſi in vno verticali.]

At 10^h $18\frac{2}{3}^m$ Saturn crossed the meridian, having an altitude [H. 10 18⅔ Tranſibat ♄ per Merid. habens Altitud.]

Line	Value
by the revolving quadrant [per Volub.]	56° 16⅔′
by the steel instrument [per Chalyb.]	56° 17′
Declination by the armillae, with one pinnule [Declin. per Armillas, vno pinnacidio]	22° 11⅓′

30 December [DIE 30 DECEMBRIS.]

Time	Line	Value
9^h $15\frac{2}{3}^m$ [9 15⅔]	Bright shoulder of Orion, east [Luc. hum. Orion. orient.]	10° 26½′
9^h 53^m [9 53]	Transit of Saturn through the meridian [Tranſitus ♄ per Merid.] having an altitude by the revolving quadrant of [habens altit. per Volub.]	56° 16⅔′

Collection of the motions of Saturn[1] [COLLECTIO MOTUUM ♄[1]]

for the three days of December named below, so that from them both the daily motion and the time of the opposition with the simple Sun might be properly established. [ad tres infra nominatos dies Decembris, vt hinc inde tam motus diurnus, quam tempus ☍ cum ſimplici ☉ rite conſtaret.]

N.B. The operation is free of any suspicion of error, since afterwards, from the presupposed place of Saturn, exactly the same distances to the fixed stars result. [N. B. Operatio falſitatis ſuſpicione caret, quandoquidem poſtea ex præſuppoſito ♄ loco eædem omnino diſtantiæ ad fixas reſultent.]

December, day [Decembris Die]	Time [H. M.]	Right ascension [Aſcenſio Recta]	Declination [Declinatio]	Longitude [Longitudo]	Latitude [Latitudo]
6	8^h 35^m [8 35]	84° 50′ 50″	22° 13′ 0″	25° 13′ 50″ ♊	1° 13′ 20″ south [1 13 20 M.]
9	9^h 21^m [9 21]	84° 33′ 24″	22° 13′ 0″	24° 57⅔′	1° 12′ 45″
19	9^h $58\frac{1}{2}^m$ [9 58½]	83° 41′ 15″	22° 13′ 15″	24° 9′ 30″	1° 20′ 30″

From these is derived the time of the opposition of the apparent Saturn with the mean motion of the Sun: in the month of December, on day 6, at 12^h 6^m. At that time the place of the simple Sun was 25° 13′ 3″ ♐, the apparent place of Saturn 25° 13′ 3″ ♊, and the daily motion of Saturn 5′ 20″. Copernicus's calculation [Copernici calculus] gives 25° 4′ ♊. [Ex his elicitur tempus ☍ apparentis ♄ cum medio motu ☉ menſe Decembri Die 6 H. 12 M. 6, quo tempore fuit Locus ſimplicis ☉ 25° 13′ 3″ ♐, Locus apparens ♄ 25° 13′ 3″ ♊, Motus diurnus ♄ 5′ 20″. Copernici calculus habet 25° 4′ ♊.]

For the place of Saturn on 4 December, about the opposition with the Sun. [Pro loco ♄ die 4 Decembris circa ☍ cum ☉le.]

Time	Line	Value
12h 12m [Hora 12 M. 12]	Distance between Saturn and the lower head of ♊ [Diſt. inter ♄ & inferius caput ♊]	23° 31′
	Declination of Saturn from the meridian altitude [Decl. ♄ ex alt. merid.]	22° 13⅓′ north [22 13⅓ B.]
	Declination of the lower head of ♊ [Decl. infer. cap. ♊]	28° 57′ 10″
	Right ascension of the same [Aſc. R. eiuſdem]	110° 2′ 40″
	Therefore, from this, the right ascension of Saturn [Ergo hinc Aſc. R. ♄]	84° 59′ 50″

Time	Line	Value
12h 18m [Hora 12 M. 18]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	21° 41′
	Declination of Aldebaran [Decl. Aldeb.]	15° 37′ 0″
	Right ascension of Aldebaran [Aſc. R. Aldeb.]	63° 8′ 0″
	Therefore, from this, the right ascension of Saturn [Ergo hinc Aſc. R. ♄]	84° 59′ 45″
12¼h [H. 12¼]	Right ascension of Saturn *limitata* [Aſc. R. ♄ limitata]	84° 59′ 50″
	Declination north [Declin. B.]	22° 13⅓′

Resp. longitude 25° 22′ 0″ ♊, latitude 1° 13⅓′ south. [Reſp. Longitudo 25 22 0 ♊, Latitudo 1 13⅓ M.]

Having examined the last time of the opposition of Saturn with the mean Sun, and having used also the place of Saturn on this day, we found that it was on 6 December at 11h 48m, and that Saturn was then at 25° 12′ ♊. [Examinato vltimo tempore ☍ ♄ cum medio ☉ adhibito etiam huius diej loco ♄ inuenimus illud fuiße die 6 Decembris H. 11 M. 48, et tunc ♄ fuit in 25 12 ♊.]

Repetition. In the preceding, the distance from Aldebaran may be 21° 40½′; therefore the right ascension of Saturn from it is ½′ smaller. [*Repetitio. Poteſt in antecedente eße diſtantia ab Aldebora 21 40½, igitur ♄ Aſcenſio Recta ab hac ½′ minor.*]

Line	Value	Line	Value
Right ascension of Saturn from Aldebaran [*♄ Aſc. ab Aldeb.*]	*84° 59′ 15″*	*Ascension limit.* [*Aſcen. limit.*]	*84° 59′ 37″*
from the lower ♊ [*ab inf.* ♊]	*84° 59′ 58″*	*Resp. longitude* [*Reſp. Longit.*]	*25° 21′ 45″* ♊

If you add 10′ to these for the daily motion within the following two days, the longitude of Saturn at the time of the opposition with the Sun will come out. [*His ſi addideris 10′ pro motu diurno intra biduum ſequens prodibit long. ♄ ad tempus ☍ cum Sole.*]

From this, the longitude of Saturn at the time of the opposition with the Sun, about the midnight following 6 December: in opposition with the Sun, Saturn 25° 11′ 45″ ♊. [*Long.* ♄^{ni} *hinc ad tempus* ☍ *cum Sole circa mediam noctem ſequentem diem 6 Dec., in* ☍ *cum* ☉ ♄ *25 11 45* ♊.]

Limitatio for the observations of Saturn when it was near opposition to the Sun this year, not far from its perigee, so that its motion might be exactly established. [*Limitatio pro obſeruationibus* ♄^{ni} *quando erat iuxta* ☍ ☉ *hoc anno non longe a ſuo Perigæo, vt exacte conſtare queat eius motus.*]

I. On day 6 itself, when the opposition to the simple Sun took place, let its distance about midnight be taken as follows. From Aldebaran 21° 30⅓′. From the lower head of ♊ *23° 41′. From this results* [*I. Ipſo die 6, quando fiebat* ☍ *ad ſimpl.* ☉*, accipiatur circa mediam noctem eius diſtantia hoc modo. Ab Aldebora 21 30⅓. Ab inf. cap.* ♊ *23 41. Hinc prouenit*]

Line	Value	Line	Value
Right ascension of Saturn from Aldebaran [*Aſc. R.* ♄^{ni} *ab Aldeb.*]	*84° 47′ 35″*	*Ascension lim.* [*Aſc. lim.*]	*84° 47′ 50″*
from the lower head of ♊ [*ab inf. cap.* ♊]	*84° 48′ 5″*	*Resp. longitude of Saturn* [*Reſp. long.* ♄^{ni}]	*25° 11′ 2″* ♊

[1] From codices V. and K. [E codd. V. et K.]

Line	Value	Line	Value
II. For 9 December, at 9½^{h} [II. Ad diem 9 Decemb. H. 9½]		Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	21° 17′ 0″
Hence the angular difference of ascension [Hinc Ang. diff. aſc.]	21° 25′ 7″	Distance from the lower head of ♊ [Diſt. ab inf. cap. ♊]	23° 54½′,
hence the angular difference of ascension [hinc Ang. diff. aſc.]	25° 29′ 50″		
Therefore the right ascension of Saturn from Aldebaran [Ergo Aſc. R. ♄ ab Aldeb.]	84° 32′ 44″		
from the lower head of ♊ [ab inf. cap. ♊]	84° 33′ 7″	Declination of Saturn, north [Declinatio ♄ B.]	22° 13′
Right ascension *limitata* [Aſc. R. limitata]	84° 32′ 55″	Resp. longitude [Reſp. Long.]	24° 57′ 13″.

When this motion of Saturn is carried back to the moment of the opposition with the Sun by the daily motion (namely 5′ [5 M.]), its place at that time comes out as 25° 11′ 43″ ♊. This agrees very closely with the earlier place. [Revocato hoc ♄ motu ad momentum ☍ cum ☉^{le} per motum diurnum (videlicet 5 M.), prodit locus eius tunc temporis 25 11 43 ♊. Quod cum priori loco conuenit quam proxime.]

The places of Saturn about the opposition of the Sun, found in four ways. [*Loca* ♄ *circa* ☍ *Solis quadrupliciter inuenta.*]

No.	Place	Remark
I.	*25° 12′*	*from day 4* [*ex die 4*]
II.	*25° 11¾′*	*limitatius, for the same* [*limitatius ad idem*]
III.	*25° 11′ 0″*	*limitate, for the 6th day* [*limitate ad 6 diem*]
IIII.	*25° 11′ 43″*	*limitate, for the 9th day* [*limitate ad 9 diem*]

From all these, finely limitatis, and taking on day 6 those distances which were made about the meridian and were likewise accurately limitatis, I conclude that, if the mean of all of them is taken, Saturn was at 25° 11½′ ♊ when it was opposed to the Sun. This agrees well enough with the verified calculation; and it can scarcely be smaller, but rather a little larger, if indeed anything has to be added. [*Ex his omnibus ſubtiliter limitatis et acceptis die 6 ijs diſtantijs, quæ circa meridianum fiebant ijſdemque accurate limitatis, colligo ſi horum omnium medium accipiatur, fuiße ♄ in 25 11½ ♊ quando Soli opponebatur, quod cum verificato calculo ſatis conuenit, vixque minor eße poteſt ſed potius aliquantulo maior ſi modo quid apponendum fuerit.*]

Line	Value	Line	Value
The greater limitatum [*Limitatum Maius*]	*11 45*	*True longitude limit.* [*Vera longit. limit.*]	*11 22*
The lesser limitatum [*Limitatum Minus*]	*11 0*	*Subtract from this on account of the latitude* [*Hinc ſubtrahe ob lat.*]	*1 37*
True place at the time of the opposition [*Verus locus temp. ☍*]	*25° 9′ 45″ ♊*		

Inquiry into the place of Saturn for 7 September, when it was about the eastern quadrature with the Sun. [Inquiſitio loci ♄ ad 7 VII^{bris} cum eßet circa □^{am} ☉ orient.]

Time	Line	Value
11^{h} 48^{m} [Hora 11 M. 48]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	24° 22½′
	Declination of Saturn [Declin. ♄]	22° 20′
	Declination of Aldebaran [Declin. Aldeb.]	15° 37′
	Right ascension of Aldebaran [Aſc. R. Aldeb.]	63° 7′ 45″
	Angle [Angulus]	24° 49′ 10″
	Accordingly, the right ascension of Saturn from Aldebaran [Itaque Aſc. R. ♄ ab Aldeb.]	87° 56′ 55″

Time	Line	Value
11^{h} 52^{m} [Hora 11 M. 52]	Distance of Saturn from the upper head of ♊ [Diſt. ♄ a ſup. cap. ♊]	19° 46′ 40″
	Declination of the upper head of ♊ [Decl. ſup. cap. ♊]	32° 41′
	Angular difference of ascension [Ang. diff. aſc.]	19° 5′ 25″
	Right ascension of the upper head [Aſc. R. ſup. cap.]	107° 3′ 35″

Time	Line	Value
	Therefore, from this, the right ascension of Saturn [Ergo hinc Aſc. R. ♄]	87° 58′ 10″
11^{h} 50^{m} [Hora 11 M. 50]	Right ascension limit. [Aſc. R. limit.]	87° 57′ 30″

Resp. longitude 28° 6′ 40″ ♊, latitude 1° 10′ 20″ south. [Reſp. Longitudo 28° 6′ 40″ ♊ / Latitudo 1 10 20 M.]

If the right ascension from Aldebaran is put at 87° 57′ 45″, which is found from a distance of 24° 23′, the resp. longitude is 28° 6′ 53″. [Si ponatur aſc. r. ab Aldebora 87 57 45, quæ ex diſtantia 24 23 reperitur, reſp. Longitudo 28° 6′ 53″.]

Proof of the calculation of the place of Saturn found for 12 February from the observations, when it was about the western quadrature from the Sun. [Apodixis calculi inuenti loci ♄ ad diem 12 Feb. ex obſeruationibus, cum circa □^{ram} occid. a ☉ eßet.]

Time	Line	Value
8^{h} 33^{m} [H. 8 M. 33]	Distance of Saturn from the bright star of ♈ [Diſt. ♄ a luc. ♈]	37° 23½′
	Declination of Saturn from the meridian altitude [Decl. ♄ ex alt. merid.]	20° 10′ north [20 10 B.]
	Declination of the bright star of ♈ [Decl. lucid. ♈]	21° 30′
	Right ascension of the bright star of ♈ [Aſc. R. luc. ♈]	26° 4′ 10″
	Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	66° 9′ 40″

Time	Line	Value
8^{h} 45^{m} [H. 8 M. 45]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	40° 38′
	Declination of the lower head of ♊ [Decl. inf. cap. ♊]	28° 57′ 0″
	Right ascension of the lower head [Aſc. R. inf. cap.]	110° 2′ 0″
	Consequently, from this, the right ascension of Saturn [Igitur hinc Aſc. R. ♄]	66° 10′ 0″

At 8^{h} 40^{m}, right ascension *limitata* 66° 9′ 50″, declination north 20° 10′ 0″. [Hora 8 M. 40 Aſcenſio R. limitata 66° 9′ 50″, Declin. B. 20° 10′ 0″]

Resp. longitude 7° 41′ 53″ ♊, latitude 1° 31′ 31″ south. [Reſp. Longitudo 7° 41′ 53″ ♊ / Latitudo 1 31 31 M.]

Observations of Jupiter [OBSERUATIONES IOUIS.]

5 January, morning [DIE 5 JANUARIJ, MANE.]

Line	Value
The meridian altitude of Jupiter by the steel instrument was [Erat Altit. ♃ Merid. per Chalyb.]	28° 34⅔′
Spica had then passed the meridian, on the equator, by [Erat tunc Spica transgreßa Meridiem in Æquatore]	0° 32½′

16 January, morning [DIE 16 JANUARIJ, MANE.]

For the visible diameters of the stars. [Pro viſibilibus ſtellarum diametris.]

Johannes Aurifaber [Ioannes Aurifaber] observed with the larger armillae of declinations, taking first the upper circumference of Jupiter, then the lower, and found the difference of the two: [Obſeruabat Ioannes Aurifaber per Armillas Declinationum maiores, accipiendo primum Iouis ſuperiorem circumferentiam, poſtea inferiorem, & inuenit diſcrimen vtriusque:]

No.	Value
I	2′ 15″ [M.2 15″]
II	2′ 30″ [M.2 30″]

But dawn was already breaking, and the Moon was approaching Jupiter, so that perhaps it would have appeared a little larger still had these hindrances been absent. [Sed Aurora iam illuceſcebat, & luna ♃ui appropinquabat, quare forte adhuc paulo amplior apparuißet, ſi hæc impedimenta abfuißent.]

18 January, morning [DIE 18 JANUARIJ, MANE.]

Aurifaber again observed the diameter of Jupiter with the armillae. [Obſeruabat rurſus Aurifaber diametrum ♃ per Armillas.]

No.	Value		Value
I	2′ 0″	repeated [Repetita]	2′ 30″
II	2′ 15″ alt. pin. [2 15 alt. pin.]		2′ 20″ alt. pin. [2 20 alt. pin.]

20 January, morning [DIE 20 JANUARIJ, MANE.]

Aurifaber observed the diameter of Jupiter as follows. [Obſeruabat Aurifaber ♃ diametrum vt ſequitur.]

No.	Value
I	3′ 0″
	3′ 15″ [3 15]
II, repeated [II Repetita]	3′ 30″ [3 30]
	3′ 0″ [3 0]
III, repeated [III Repetita]	3′ 30″ [3 30]
	3′ 20″ [3 20]

24 January, morning [DIE 24 JANUARIJ, MANE.]

Time	Line	Value
$4^h\ 26^m\ 24^s$ [H.4 26′ 24″]	Spica ♍ was on the equator, to the west [Erat Spica ♍ in Æquatore ad occidentem]	20° 51′
	Then the altitude of Jupiter by the revolving quadrant was [Tunc erat Alt. ♃ per Volub.]	26° 13⅔′
	and Jupiter was distant from the tail of ♌ [& diſtabat ♃ a cauda ♌]	33° 24½′
$4^h\ 10⅚^m$ [4 10⅚]	Spica ♍ was west [Erat Spica ♍ occid.]	21° 17¼′
	Then Jupiter was distant from the tail of ♌ [Tunc diſtabat ♃ a cauda ♌]	33° 25′
$4^h\ 15⅚^m$ [4 15⅚]	Spica ♍ was west [Erat Spica ♍ occid.]	22° 38′
	Then Jupiter was distant from the northern scale-pan of ♎ [Tunc diſtabat ♃ a lance ♎ Boreali]	26° 44¼′

Time	Line	Value
$4^h\ 18⅚^m$ [4 18⅚]	Spica ♍ was west [Erat Spica ♍ occid.]	23° 37⅔′
	Then Jupiter was distant from the northern scale-pan of ♎ [Tunc diſtabat ♃ a Boreali lance ♎]	26° 44¼′
	Altitude of Jupiter by the revolving quadrant [Altit. ♃ per Volub.]	25° 19⅓′
	Declination of Jupiter by the armillae [Declinatio ♃ per Armill.]	5° 38′
	Then Spica ♍ was west [Tunc erat Spica ♍ occid.]	24° 25′

Aurifaber observed the diameter of Jupiter with the armillae as 3⅙′, with the other pinnule 3¼. [Obſeruabat Aurifaber diametrum ♃ per Armillas 3⅙′ altero pinnacid. 3¼]

29 January, evening [DIE 29 JANUARIJ, VESPERI.]

For investigating the refraction [Pro Refractione indaganda]

Time [Tempus]	Azimuth of Jupiter, east [Azim. ♃ orient.]	Altitude of Jupiter [Altit. ♃]	Declination, with one [Declinatio vno]	Declination, alt. [Declinatio alt.]
	100° 18′	1° 4′	7° 16⅔′	
	99° 26′	2° 16′	7° 12½′	
$7^h\ 19½^m$ [7 19½]	98° 25′	2° 53⅓′	7° 11′	
$7^h\ 22⅓^m$ [7 22⅓]			7° 9⅔′	
$7^h\ 23^m$ [7 23]				7° 10′
$7^h\ 26^m$ [7 26]	97° 9′	3° 44′	7° 9½′	7° 9′
$7^h\ 30^m$ [7 30]	96° 25′	4° 13½′	7° 8′	7° 7½′
$7^h\ 35⅙^m$ [7 35⅙]	95° 20′	4° 52′	7° 6⅔′	7° 7′
$7^h\ 40½^m$ [7 40½]	94° 24′	5° 31⅓′	7° 5½′	7° 6′
	93° 36′	6° 1½′	7° 5⅓′	7° 5½′

Time [Tempus]	Azimuth of Jupiter, east [Azim. ♃ orient.]	Altitude of Jupiter [Altit. ♃]	Declination, with one [Declinatio vno]	Declination, alt. [Declinatio alt.]
7^h $50\frac{1}{10}^m$ [7 $50\frac{1}{10}$]	91° 44′	7° 17½′	7° 4⅔′	
7^h $57\frac{5}{6}^m$ [7 $57\frac{5}{6}$]	90° 56′	7° 46½′	7° 3½′	7° 4¼′
8^h 2½^m [8 2½]	90° 1′	8° 23½′	7° 3⅓′	7° 4′
8^h 6½^m [8 6½]	89° 19′	8° 54′	7° 2⅔′	7° 3⅓′
8^h $13\frac{1}{3}^m$ [8 $13\frac{1}{3}$]	87° 58′	9° 49½′	7° 3′	7° 3⅓′
after midnight [P. M. N.]				
1^h $43\frac{2}{3}^m$ [1 $43\frac{2}{3}$]	5° 20′	40° 57′	7° 0′	6° 59½′
1^h 46½^m [1 46½]	4° 14′	41° 0½′	7° 0′	7° 0½′
1^h 56½^m [1 56½]	2° 16′	41° 1½′	7° 0′	
	1° 17′	41° 3′	7° 0′	7° 0′

30 January, morning [DIE 30 JANUARIJ, MANE.]

Time	Line	Value	Value
1^h 46½^m [H. 1 M. 46½]	Between Jupiter and cor ♌, by the sextant [Inter ♃ & cor ♌ per Sext.]		21° 36⅔′
1^h 50^m [1 50]	The same distance [Eadem Diſtantia]		21° 37′
1^h 52^m [1 52]	The same distance [Eadem Diſt.]		21° 37′
	Declination of Jupiter [Declin. ♃]	7° 0′	7° 0½′
	Altitude [Altitudo]	41° 0′	
1^h 54^m [1 54]	Between Jupiter and Spica ♍ [Inter ♃ & Spicam ♍]		32° 33⅙′
1^h 54¼^m [1 54¼]	The same distance [Eadem diſt.]		32° 32⅚′
1^h 56^m [1 56]	The same distance, by the sextant [Ead. diſt., per Sext.]		32° 33′
	Declination of Jupiter, with both [Declin. ♃ … vtroque]	7° 0′	
	Altitude of Jupiter [Altit. ♃]	41° 3′	

30 January, evening [DIE 30 JANUARIJ, VESPERI.]

Jupiter was observed further, as follows, for the refraction. [Obſeruabatur ♃ vlterius vt ſequitur pro refractione.]

Time [H. M.]	Azimuth of Jupiter [Azim. ♃]	Altitude of Jupiter [Alt. ♃]	Declination of Jupiter [Declin. ♃]	Declination of Jupiter, second figure
7^h $8\frac{5}{6}^m$ [7 $8\frac{5}{6}$]	101° 0′	1° 19½′	7° 20¾′	
7^h 12½^m [7 12½]	100° 11′	1° 49′	7° 18′	

Time [H. M.]	Azimuth of Jupiter [Azim. ♃]	Altitude of Jupiter [Alt. ♃]	Declination of Jupiter [Declin. ♃]	Declination of Jupiter, second figure
7^h 18^m [7 18]	99° 6′	2° 17′	7° 14′	
7^h 21^m [7 21]	98° 26′	2° 54′	7° 13½′	
7^h 29^m [7 29]	96° 50′	3° 56′	7° 10′	7° 10½′
7^h $32½^m$ [7 32½]	96° 7′	4° 26′	7° 9½′	7° 10′
7^h $36½^m$ [7 36½]	95° 20′	4° 55½′	7° 9′	7° 9½′

6 February, morning [DIE 6 FEBRUARIJ, MANE.]

Time	Line	Value
6^h $8½^m$ [H. 6 8½′]	Between Jupiter and the bright star in the southern wing of ♍ [Inter ♃ & lucid. in auſtrali ala ♍]	13° 5′
6^h $14⅓^m$ [6 14⅓]	The same distance [Eadem diſt.]	13° 3⅚′
6^h $25½^m$ [6 25½]	Between Jupiter and the northern scale-pan of ♎ [Inter ♃ & borealem lancem ♎]	27° 2⅚′
6^h 29^m [6 29]	The same distance [Eadem diſt.]	27° 2′
6^h $39⅙^m$ [6 39⅙]	Spica ♍ was west [Erat Spica ♍ occ.]	41° 25′
6^h 42^m 35^s [6 42′ 35″]	Southern declination of Jupiter [Declin. ♃ Auſt.]	5° 27½′
	Spica was then west [Erat tunc Spica occid.]	42° 18¾′

From this the clock can be checked, for it was running too fast. [Hinc poteſt horologium verificari, nimis cito enim mouebatur.]

Diameter of Jupiter by the armillae 3⅓′. [Diameter ♃ per Armillas 3⅓′.]

25 February [DIE 25 FEBRUARIJ.]

Time	Line	Value
4^h $49⅔^m$ [H. 4 49⅔′]	Jupiter was distant from the northern scale-pan of ♎ [Diſtabat ♃ a Boreali lance ♎]	28° 17½′
	Spica ♍ was then west [Tunc erat Spica ♍ occid.]	51° 1⅓′
4^h $50⅚^m$ [4 50⅚]	Spica ♍ was west [Erat Spica ♍ occid.]	51⅓
	Then Jupiter was distant from the northern scale-pan of ♎ [Tunc diſtabat ♃ a Boreali lance ♎]	28° 17¾′
4^h 53^m 15^s [4 53′ 15″]	Spica ♍ was west [Erat Spica ♍ occid.]	51° 47′
	Then Jupiter was distant from the northern scale-pan of ♎ [Tunc diſtabat ♃ a Boreali lance ♎]	28° 17½′
4^h $56⅔^m$ [4 56⅔]	Jupiter was distant from the tail of ♏ [Diſtabat ♃ a cauda ♏]	31° 43½′
4^h $57⅔^m$ [4 57⅔]		31° 43½′
4^h $59⅙^m$ [4 59⅙]	Declination of Jupiter [Declinatio ♃]	4° 50½′

Time	Line	Value
	alt. pinnac.	4° 50⅔′
4h 59⅔m [4 59⅔]	Between Jupiter and the tail of ♑ [Inter ♃ & caudam ♑]	31° 44′
5h 3m [5 3]		31° 43½′

10 March, evening [DIE 10 MARTIJ, VESPERI.]

Time [Tempus]	Jupiter was distant from cor ♑ [Diſtabat ♃ a corde ♑]	Declination of Jupiter [Declin. ♃]	Altitude of Jupiter by the revolving quadrant [Alt. ♃ per Vol.]	For the clock: Spica, east [Pro Horol. Spica or.]
11h 2½m [11 2½]	50° 28′	4° 15½′	24° 25′	33° 51½′
		4° 16′		
11h 9m [11 9]	50° 27⅔′			32° 14½′

Time [Tempus]	Jupiter was distant from cor ♑ [Diſtabat ♃ a corde ♑]	Declination of Jupiter [Declin. ♃]	Altitude of Jupiter by the revolving quadrant [Alt. ♃ per Vol.]	For the clock: Spica, east [Pro Horol. Spica or.]
11h 13⅙m [11 13⅙]	50° 27½′	4° 16½′	25° 13′	31° 15′
		4° 16¼′		
11h 18½m [11 18½]	50° 28′	4° 16′	25° 38½′	29° 56′
		4° 16½′		

15 March, evening [DIE 15 MARTIJ, VESPERI.]

Time [Tempus]	Distance between Jupiter and cor ♑ [Diſt. inter ♃ & cor ♑]	Meridian declination of Jupiter [Declin. merid. ♃]	Meridian declination of Jupiter, second figure	Altitude by the revolving quadrant [Altit. per Volub.]
10h 17m [10 17]	49° 49½′	4° 1½′	4° 2′	23° 17⅔′
10h 21⅚m [10 21⅚]	49° 49′	4° 1½′	4° 2⅙′	23° 45½′
10h 26½m1 [10 26½1]	49° 49½′			24° 5⅓′
	the Lesser Dog, west [Canis minor occid.]			50° 33′
10h 28⅚m1 [10 28⅚1]	49° 49⅓′	4° 2′	4° 2⅓′	

18 March, evening [DIE 18 MARTIJ, VESPERI.]

Jupiter was observed as follows. [Obſeruabatur ♃ vt ſequitur.]

Time [Tempus]	Between Jupiter and Regulus [Inter ♃ & Regulum]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter by the revolving quadrant [Altit. ♃ per Volub.]	Bright star of Hydra, west [Luc. Hydræ occ.]
$10^h\ 2^m$ [10h 2]	49° 27′	3° 51½′	22° 35½′	18° 0½′
		3° 51⅓′		
$10^h\ 5½^m$ [10h 5½]	49° 26⅚′	3° 51⅙′	22° 54½′	18° 48′
		3° 51½′		
$10^h\ 8⅚^m$ [10h 8⅚]	49° 26⅚′		23° 12½′	19° 37′
	Between Jupiter and Spica [Inter ♃ & Spicam]			
$10^h\ 13⅙^m$ [10h 13⅙]	31° 48½′		23° 36¾′	20° 48′
$10^h\ 15⅚^m$ [10h 15⅚]	31° 47⅔′	3° 51½′	23° 50′	21° 22½′
		with both [vtroque]		

21 March [DIE 21 MARTIJ.]

After midnight. [Poſt mediam noctem.]

Time	Line	Value
$12^h\ 18½^m$ [H.12 M.18½.]	Spica ♍ was east [Erat Spica ♍ orient.]	3° 12′
	and Jupiter was then crossing the meridian, having an altitude [& tranſibat ♃ tunc per Meridianum habens Alt.]	
	by the revolving quadrant [per Volub.]	30° 21⅚′
	by the steel instrument [per Chalyb.]	30° 21¼′

Time	Between Jupiter and cor ♌ [Inter ♃ & cor ♌]	Declination of Jupiter [Declinatio ♃]	Declination of Jupiter, second figure	For the clock: Spica, east [Pro Horol. Spica or.]
$12^h\ 30⅓^m$ [12h 30⅓]	49° 4½′	3° 43⅓′	3° 43⅚′	0° 24′
				west [occid.]
$12^h\ 33½^m$ [12h 33½]	49° 4′			0° 20′
$12^h\ 35⅚^m$ [12h 35⅚]	49° 4½′			0° 52½′
	Between Jupiter and the upper scale-pan of ♎ [Inter ♃ & ſuper. lancem ♎]			

Time	Between Jupiter and cor ♌ [Inter ♃ & cor ♌]	Declination of Jupiter [Declinatio ♃]	Declination of Jupiter, second figure	For the clock: Spica, east [Pro Horol. Spica or.]
12h 39⅙m [12h 39⅙]	11° 5′	3° 43⅓′	3° 44′	
12h 43⅙m [12h 43⅙]	11° 5⅓′			2° 27′
12h 46m [12h 46]	11° 5¾′			3° 15′
1h 0⅚m [1h 0⅚]		3° 43⅔′	3° 43⅓′	6° 20′

[1] In codex E, 10 26½ and 10 28⅚ are struck through with lines, and 10 16 18 is written beside both. [In codice E 10 26½ et 10 28⅚ lineis inducta ſunt et utrique adſcriptum eſt 10 16 18.]

25 March [DIE 25 MARTIJ.]

Time [Tempus]	Between Jupiter and cor ♌ [Inter ♃ & Cor ♌]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	Bright star of Hydra, west [Luc.Hydræ occ.]
10h 14⅙m [10h 14⅙]	8° 33′	3° 30⅙′	24° 5′	20° 5′
		3° 31′		
10h 18⅚m [10h 18⅚]	8° 32′			21° 16′
10h 22m [10h 22]	8° 32⅓′	3° 31⅙′		21° 57′
		3° 31½′		
10h 26⅚m [10h 26⅚]	8° 32½′		25° 3′	23° 3′
	Between Jupiter and the navel of ♍ [Inter ♃ & vmbilicum ♍]			
10h 34½m [10h 34½]	7° 58⅔′	3° 31⅓′		24° 50′
		3° 31⅙′		
10h 38⅚m [10h 38⅚]	7° 59¼′			25° 56′
10h 42⅓m [10h 42⅓]	8° 0′	3° 31½′	26° 10′	
		3° 31⅓′		26° 37′

26 March, evening [DIE 26 MARTIJ, VESPERI.]

Time [Tempus]	Between Jupiter and cor ♌ [Inter ♃ & cor ♌]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	Cor ♌, west [Cor ♌ occ.]
8^h 48⅓^m [8 48⅓]	48° 25½′	3° 29′	20° 48′	1° 53′
		3° 28½′		
8^h 54⅚^m [8 54⅚]	48° 23′		21° 26⅓′	3° 30′

Uncertain because of the clouds. [incerta propter nubes]

27 March [DIE 27 MARTIJ.]

In the evening Jupiter was observed as follows. [Veſperi obſeruabatur ♃ vt ſequitur.]

Time [Tempus]	Distance between Jupiter and cor ♌ [Diſt. inter ♃ & cor ♌]	Southern declination of Jupiter [Decl. ♃ auſt.]	Altitude by the revolving quadrant [Alt. per Volub.]	For the clock: bright star of Hydra, west [Pro Horol. Luc. Hyd. occ.]
10^h 4^m [10 4]	48° 17′	3° 25½′	26° 50′	28° 46′
		3° 26′		cor ♌, west [Cor ♌ occ.]
10^h 7^m [10 7]	48° 17½′		27° 4¾′	
10^h 10½^m [10 10½]	48° 17′	3° 25½′	27° 18′	20° 36½′
	Between Jupiter, the navel of ♍ [Inter ♃ vmbilicum ♍]	3° 25½′		
10^h 14⅔^m [10 14⅔]	48° 17⅔′		27° 34′	21° 41′
10^h 19^m [10 19]	48° 2⅓′	3° 25⅙′	27° 50′	22° 48′
		3° 25½′		
10^h 21⅙^m [10 21⅙]	48° 2′		27° 57¼′	23° 17′
10^h 22⅔^m [10 22⅔]	48° 1½′	3° 25½′	27° 58⅔′	23° 41′
		3° 25¼′		

28 March, evening [DIE 28 MARTIJ, VESPERI.]

Time	Jupiter from cor ♌ [♃ a corde ♌]	Declination of Jupiter [Declin. ♃]	Declination of Jupiter, second figure	Bright star of Hydra, west [Luc. Hyd. occ.]
9^h 22⅚^m [9 22⅚]	48° 9′	3° 21⅔′	3° 22′	22° 32′
9^h 27½^m [9 27½]	48° 9′			23° 45′

Time	Jupiter from cor ♌ [♃ a corde ♌]	Declination of Jupiter [Declin. ♃]	Declination of Jupiter, second figure	Bright star of Hydra, west [Luc. Hyd. occ.]
9^h $30½^m$ [9 30½]		3° 21⅓′ with both [3 21⅓ vtroq.]		
	Altitude by the revolving quadrant [Altit. per Volub.]		25° 38½′	
9^h 33^m [9 33]	48° 9⅙′		26° 10′	25° 11′

Time	Between Jupiter and the navel of ♍ [Inter ♃ & vmbilicum ♍]	Declination of Jupiter [Declin. ♃]	Declination of Jupiter, second figure	Bright star of Hydra, west
9^h 39^m [9 39]	8° 7½′	3° 21½′	3° 21¼′	26° 40′
9^h $41⅚^m$ [9 41⅚]	8° 9′			27° 22′
9^h 45^m [9 45]	8° 8′	3° 21⅓′	3° 21⅙′	28° 12′
9^h $47⅓^m$ [9 47⅓]	8° 8⅓′			28° 46′

17 April [DIE 17 APRILIS.]

In the evening Jupiter was observed as follows. [Veſperi obſeruabatur ♃ vt ſequitur.]

Time	Between Jupiter and cor ♌ [Inter ♃ & cor ♌]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	Spica ♍, east [Spica ♍ orient.]
10^h 33^m [10 33]		2° 29½′		
		2° 30′		
Corrected time [Temp. corr.]				
10^h 10^m 19^s [10 10′19″]	45° 47′		31° 32¾′	8° 27′
10^h 11^m 42^s [10 11 42]	45° 47¼′			8° 7′
		Declination of Jupiter [Declin. ♃]		
10^h 14^m 23^s [10 14 23]	45° 47½′	2° 29⅓′	2° 29⅚′	7° 26′
10^h 21^m 35^s [10 21 35]	Between Jupiter and Spica ♍ [Inter ♃ & Spicam ♍]			5° 38′
10^h 22^m 45^s [10 22 45]	8° 53½′			5° 23′
10^h 24^m 19^s [10 24 19]	8° 54′			

11 July [DIE 11 JULIJ.]

In the evening Jupiter was observed. [Veſperi obſeruabatur ♃.]

Transit of the Vulture through the meridian at $11^h\ 28\frac{1}{6}^m$. [Tranſitus Vulturis per Meridianum Hora 11 28⅙.]

The clock verified at $9^h\ 51\frac{1}{6}^m$. [Horolog. verificatum Hora 9 M. 51⅙.]

Between Jupiter and Arcturus [Inter ♃ & Arcturum]	Altitude of Jupiter by the revolving quadrant [Alt. ♃ per Volub.]	Declination of Jupiter, M., by the armillae [Decl. ♃ M. per Armill.]	Bright star of the Vulture, east [Luc. Vult. orient.]
30° 27′	4° 14′	3° 7⅓′, 3° 8′ alt. [3 7⅓, 3 8 alt.]	24¼
30° 26⅚′	3° 45′	3° 6½′ with one [3 6½ vno]	23° 24′
30° 26′	3¼	3° 4½′ with one [3 4½ vno]	22° 42′
30° 25½′	2° 57′	3° 3½′ with both [3 3½ vtroq.]	21° 57′

14 November, morning [DIE 14 NOUEMBRIS, MANE.]

Between Jupiter and Spica ♍ [Inter ♃ & Spicam ♍]	Declination of Jupiter [Declinatio ♃]	Declination of Jupiter, second figure	Altitude of Jupiter [Alt. ♃]	Cor ♌, west [Cor ♌ occ.]
17° 29′	12° 18½′	12° 17′	8° 5′	11° 45½′
17° 30′	12° 18⅙′	12° 19′	8° 53′	13° 39′
17° 29⅔′	12° 17½′		9° 20′	14° 46′
17° 30′	12° 18½′	12° 19⅓′	11° 45′	20° 28½′

25 November, morning [DIE 25 NOUEMBRIS, MANE.]

Between Jupiter and Spica ♍ [Inter ♃ & Spicam ♍]	Declination of Jupiter [Declinatio ♃]	Declination of Jupiter, second figure	Altitude of Jupiter [Alt. ♃]	Cor ♌, west [Cor ♌ occ.]
19° 43′	16° 44′ south[1] [16 44 Auſt.[1]]		13° 25′	29° 11′
19° 44′	16° 44′	16° 44½′	14° 0′	30° 27′

N.B. These observations are not to be trusted very far, because of the dawn and the recurring clouds. [N.B. Non vſque adeo fidendum eſt his obſeruationibus, propter Auroram & recurrentes nubes.]

[1] Thus in the codex. According to Neugebauer's tables the declination was — 12° 59′. [Sic in codice. Iuxta tabulas Neugebaueri declinatio erat — 12° 59′.]

27 November [DIE 27 NOUEMBRIS.]

In the morning Jupiter was observed. [Mane obſeruabatur ♃.]

At $4^h\ 53^m$, the transit of cor ♌ through the meridian. [H.4 53 tranſitus cordis ♌ per Merid.]

N.B. The clock was running slow by nearly one hour. [N.B. Horologium vna fere hora tardius iuſto mouebatur.]

Time [Tempus]	Distance between Jupiter and Spica [Diſt. inter ♃ & Spicam]	Declination [Decl.]	Altitude [Altit.]	For the clock: cor ♌, west [Pro horol. cor ♌ occ.]
$6^h\ 15^m$ [6 15]	20° 25′	13° 11′	13° 10′	28° 50′
		13° 11⅓′		
$6^h\ 18^m\ 55^s$ [6 18 55]	20° 25¾′	13° 11′	13° 34′	29° 53′
$6^h\ 22⅔^m$ [6 22⅔]	20° 25′	13° 10½′	13° 54½′	30° 54′

18 December [DIE 18 DECEMBRIS.]

In the morning Jupiter was observed. [Mane obſeruabatur ♃.]

Time on the clock [Tempus in horol.]	Distance between Jupiter and Spica [Diſt. inter ♃ & Spicam]	Declination of Jupiter [Decl. ♃]	Altitude [Altit.]	For the clock: Spica, west [Pro horol. Spica occ.]
$7^h\ 1⅔^m$ [7 1⅔]	23° 54⅚′	14° 22′ M. [14 22 M.] with one pinnule [vno pinn.]	18° 3′	5° 14′
$7^h\ 9⅓^m$ [7 9⅓]	23° 55⅔′	14° 22⅙′ with the same pinnule [eodem pin.]	18° 22′	7° 10′
$7^h\ 15⅓^m$ [7 15⅓]	23° 55′	14° 21⅔′ alt. pinn.	18° 35′	8° 41′

Time	Line	Value
$8^h\ 14½^m$ [*8 14½*]	*Jupiter crossed the meridian, having an altitude* [*Tranſiuit ♃ Meridianum habens altitud.*]	
	by the steel instrument [*per Chalyb.*]	*19° 46′*
	by the revolving quadrant [*per Volub.*]	*19° 44½′*
	its declination [*Declinatio eius*]	*14° 23′*
		14° 22½′

At $8^h\ 35^m$ the Sun was rising. [H. 8 M. 35 oriebatur ☉.]

19 December, morning [DIE 19 DECEMBRIS, MANE.]

Time on the clock [Tempus in horol.]	Distance between Jupiter and the left knee of Ophiuchus [Dist. inter ♄ & fin. gen. Oph.]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	For the clock: Spica, west [Pro horol. Spica occ.]
7^h 39^m [7 39]	23° 43¼′	14° 25½′	18° 30′	8° 17′
7^h $42⅔^m$ [7 42⅔]	23° 44′	14° 25½′		9° 3′
		14° 25′		
7^h $45⅔^m$ [7 45⅔]	23° 43′	14° 25⅙′		9° 45′
		14° 25⅔′		
7^h $48½^m$ [7 48½]	23° 44′			10° 26′
	Vice versa [Viceversa]			
7^h 52^m 25^s [7 52 25]	Between Jupiter and Spica [Inter ♃ & Spicam]	14° 25¼′	18° 53′	11° 13′
		14° 25⅔′		
7^h $56⅓^m$ [7 56⅓]	24° 3′			12° 22′
7^h 59^m 45^s [7 59 45]	24° 3½′	14° 25½′		
		14° 26′		

Time on the clock	Between Jupiter and Spica	Declination of Jupiter	Altitude of Jupiter	For the clock: Spica, west
8^h 2^m [8 2]	24° 3⅔′			13° 35′
8^h 13^m [8 13]	24° 3¼′		19° 22′	16° 0′
8^h 16^m [8 16]	24° 4′	14° 25½′		16° 45′
		14° 26⅙′		

Time	Line	Value
8^h 47^m 45^s [8 47 45]	Jupiter was crossing [Transibat ♃]	
	through the meridian, having an altitude [per Meridianum habens Alt.]	
	by the steel instrument [per Chalyb.]	19° 40⅚′
	by the revolving quadrant [per Volub.]	19° 40½′
	or rather [vel potius]	40⅗

20 December, morning [DIE 20 DECEMBRIS, MANE.]

Time	Between Jupiter and the left knee of Ophiuchus [Inter ♄ & fin. gen. Oph.]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	Spica, west [Spica occ.]
7^h $47⅓^m$ [7 47⅓]	23° 35′	14° 28⅓′	18° 3′	6° 5′
7^h 51^m [7 51]	23° 34⅓′	14° 28⅔′	18° 14′	6° 57′

Time	Between Jupiter and the left knee of Ophiuchus [Inter ♃ & ſin. gen. Oph.]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	Spica, west [Spica occ.]
7^h $54\frac{1}{6}^m$ [7 54⅙]	23° 34⅓′		18° 21′	7° 40′
	Vice versa [Viceverſa]			
	Between Jupiter and Spica [Inter ♃ & Spicam]			
7^h $57\frac{2}{3}^m$ [7 57⅔]	24° 13½′	14° 28′		8° 30′
		alt. pin.		
8^h $1\frac{1}{3}^m$ [8 1⅓]	24° 14⅙′	14° 28′	18° 33′	9° 24′
8^h $5\frac{1}{6}^m$ [8 5⅙]	24° 14⅙′			10° 15′
8^h $13\frac{1}{2}^m$ [8 13½]	24° 14⅙′		18° 56′	12° 9′

Time	Line	Value
9^h 4^m [9 4]	Jupiter was crossing [Tranſibat ♃]	
	through the meridian, having an altitude [per Merid. habens Altitud.]	
	by the steel instrument [per Chalybeum]	19° 38⅔′
	by the revolving quadrant [per Volubilem]	19° 38⅚′

28 December, morning [DIE 28 DECEMBRIS, MANE.]

Time	Between Jupiter and the right knee of Ophiuchus [Inter ♃ & dext. genu Oph.]	Declination of Jupiter [Declin. ♃]	Declination of Jupiter, second figure	For the clock: Spica, west [Pro horol. Spica occ.]
7^h 17^m 25^s [7 17 25]	29° 20¼′	14° 50¼′	14° 50⅙′	16° 57′
7^h $19\frac{1}{2}^m$ [7 19½]	29° 20⅙′	Altitude of Jupiter [Alt. ♃]	18° 57⅔′	17° 35′
7^h $21\frac{1}{2}^m$ [7 21½]	29° 20¼′	14° 50⅙′	14° 50½′	18° 1½′
	Between Jupiter and Spica [Inter ♃ & Spicam]			
7^h $32\frac{5}{6}^m$ [7 32⅚]	25° 29½′			21° 0′
7^h $35\frac{1}{6}^m$ [7 35⅙]	25° 28½′	14° 50′	14° 50⅓′	21° 41′
7^h $37\frac{1}{3}^m$ [7 37⅓]	25° 29½′			22° 11′
7^h 40^m [7 40]	25° 29′			22° 51′

Time	Line	Value
7^{h} 49⅙^{m} [7 49⅙]	Jupiter was crossing [Tranſibat ♃]	
	through the meridian, having an altitude [per Meridianum habens Alt.]	
	by the steel instrument [per Chalyb.]	19° 17′
	by the revolving quadrant [per Volub.]	19° 15¾′

The declination of Jupiter was then 14° 50⅙′ with both pinnules; Spica ♍ west 25° 31′. [Tunc erat Declinatio ♃ 14 50⅙ vtroque pinn.; Spica ♍ occid. 25 31]

For the longitude and latitude of Jupiter [PRO LONGITUDINE & LATITUDINE ♃.]

24 January [DIE 24 JANUARIJ.]

Tycho's calculation [Calculus Tychonicus]

At 4^{h} 26^{m} 24^{s} in the morning Jupiter was at [Hora 4 M.26 S.24 Mane fuit ♃]

Line	Value
Longitude [Longitudo]	17° 45′ 40″ ♎
Latitude [Latitudo]	1° 28′ 7″ north [1 28 7 B.]

The calculation for the same time [Ad idem tempus Calculus]

Line	Mästlin's [Mæſthlinianus]	Prutenic, of Stadius [Prutenicus Stadianus]	Alphonsine [Alphonſinus]
Longi-tude	17° 51′ 0″	17° 50′ 0″	16° 4′ 0″ [16 4 0]
Latitude	1° 40′ 7″ [1 40 7]	1° 40′ 12″ [1 40 12]	1° 45′ 0″ [1 45 0]

15 March [DIE 15 MARTIJ.]

At 10^{h} 16^{m} 18^{s} in the evening Jupiter was at [H. 10 16′ 18″ Veſperi fuit ♃]

Line	Value
Longitude [Longitudo]	13° 55′ 55″ ♎
Latitude [Latitudo]	1° 36′ 15″ north [1 36 15 B.]

from the Tychonic [ex Tychonico]

The calculation for the same time [Ad idem tempus Calculus]

Line	Mästlin's [Mæſthlinianus]	Prutenic [Prutenicus]	Alphonsine [Alphonſinus]
Longitude	14° 18′ 57″	14° 20′ 54″	12° 10′ 1″
Latitude	1° 59′ 6″	1° 59′ 8″	2° 3′ 0″

21 MARCH [DIE 21 MARTIJ]

Before the opposition of Jupiter with the Sun. [ante ☍ ♃ cum ☉.]

Time	Line	Value
12⅓h [H. 12⅓]	Distance of Jupiter from cor ♌ [Diſt. ♃ a corde ♌]	49° 4⅓′
	Declination of Jupiter from the meridian altitude [Decl. ♃ ex alt. Merid.]	3° 44′ 0″
	Angle of the difference of ascension, computed [Ang. diff. aſcens. ſupp.]	46° 9′ 43″
		146° 36′ 10″
	Therefore the right ascension of Jupiter [Ergo Aſcenſio R. ♃]	192° 45′ 53″
	Declination, south [Declinatio M.]	3° 44′ 0″

Line	Value
Resp. longitude [Reſp. Longitudo]	13° 11′ 35″ ♎
Latitude [Latitudo]	1° 37′ 15″ north [1 37 15 B.]

Hence it is gathered that the opposition of Jupiter with the simple Sun took place on 25 March, [Hinc colligitur ☍ ♃ cum Simplici ☉lis fuiße D. 25 Martij,]

Time	Line	Value
6h 46m [H. 6 M. 46]	Longitude of Jupiter in [Long. ♃ in]	12° 40⅓′ ♎
	Latitude, north [Lat. B.]	1° 37′ 25″

account being taken of the parallax of Jupiter. [habita ratione parallaxeos ♃.]

25 MARCH [DIE 25 MARTIJ.]

Calculation of the observed appearance [Greek: φαινομένου (phainomenou, "of the appearance, of the phenomenon")] of Jupiter when it was in opposition to the Sun. [Calculus obſeruati φαινομένου ♃ cum eßet in ☍ ☉.]

Time	Line	Value
9⅝h [H. 9⅝]	Distance of Jupiter from cor ♌ [Diſt. ♃ a corde ♌]	48° 32½′
	from the navel of ♍ [ab vmbilico ♍]	7° 58′ 50″
	Declination of Jupiter, limit. [Declin. ♃ limit.]	3° 31′ 50″ south [3 31 50 M.]

Line	Right ascension [Aſc. R.]	Declination [Decl.]
Of cor ♌ [Cordis ♌]	146° 36′ 10″	13° 56′ 30″ north [13 56 30 B.]
Of the navel of ♍ [Vmbilici ♍]	198° 24′ 30″	1° 32′ 0″ north [1 32 0 B.]

Line	Value	Line	Value
Angle of right ascension, computed, from cor ♌ [Angulus aſc. r. ſupputatus, a corde ♌]	45° 40′ 15″	from the navel [ab vmbil.]	6° 10′ 17″
Right ascension of Jupiter [Aſcenſio Recta ♃]	192° 16′ 25″		192° 14′ 13″
Right ascension *limitata*, adhering rather to Regulus [Aſc. R. limitata, adhærendo potius Regulo]			192° 16′ 0″

Resp. longitude 12° 39⅓′ ♎, latitude 1° 36⅚′ north. [Reſp. Longitudo 12° 39⅓′ ♎, Latitudo 1° 36⅚′ B.]

17 April [DIE 17 APRILIS.]

At 10^h 16^m 32^s Jupiter was at [H. 10 16′ 32″ fuit ♃]

Line	Value
Longitude [Longitudo]	9° 54′ 25″ ♎
Latitude [Latitudo]	1° 34′ 15″ south [1 34 15 M.]

from Tycho's observations [ex Tychonicis obſeruationibus]
The calculation for the same time [Ad idem tempus Calculus]

Line	Mästlin's [Mæſthlinianus]	Prutenic [Prutenicus]	Alphonsine [Alphonſinus]
Longitude	10° 26′ 26″	10° 11′ 26″	8° 8′ 26″
Latitude	1° 56′ 12″	1° 58′ 48″	2° 59′ 35″

11 July [DIE 11 JULIJ.]

At 9^h 51⅙^m in the evening Jupiter was at [H. 9 51⅙′ Veſperi erat ♃]

Line	Value
Longitude [Longitudo]	11° 19′ 39″ ♎
Latitude [Latitudo]	1° 19′ 33″ north [1 19 33 B.]

from our observation [ex obſeruatione noſtra]
The calculation for the same time [Ad idem tempus Calculus]

Line	Mästlin's [Mæſthlinianus]	Prutenic [Prutenicus]	Alphonsine [Alphonſinus]
Longitude	11° 6′ 55″	11° 9′ 27″	9° 27′ 22″
Latitude	1° 25′ 44″[1]	1° 26′ 9″	1° 25′ 26″

Computation of the right ascension of Jupiter for the morning of 18 December, for investigating the motion of Venus for the same day.[2] [Supputatio Aſcenſionis rectæ ♃ ad diem 18 Decembris mane pro inquiſitione motus ♀ ad eundem diem[2].]

Time	Line	Value
7¼ʰ [H. 7¼]	Distance of Jupiter from Spica [Diſtantia ♃ a Spica]	23° 55′
	Declination of Jupiter [Declinatio ♃]	14° 20½′
	Declination of Spica, south [Declinatio Spicæ M.]	8° 58′ 0″

Line	Value
Right ascension of Spica [Aſcenſio R. Spicæ]	195° 56′ 5″
Therefore the right ascension of Jupiter [Igitur Aſc. R. ♃]	219° 44′ 50″
For the angle of the difference of ascension [Nam Ang. diff. aſcens.]	23° 48′ 45″

[1] Codices E, V and K also give this: ”From Mästlin's ephemeris for the same moment of time, longitude 11° 6′ 55″ ♎, latitude 1° 26′ 0″ north.” But 1 26 0 is the latitude for noon at Tübingen. [Codices E, V, K hoc quoque præbent: »Ex ephemeride Mæſthlini ad idem temporis momentum Long. 11° 6′ 55″ ♎, Lat. 1° 26′ 0″ B.« Sed 1 26 0 eſt latitudo ad meridiem Tubingenſem.] [2] From codices V and K. [E codd. V. et K.]

Observations of Mars [OBSERUATIONES MARTIS.]

23 January [DIE 23 JANUARIJ.]

Time	Line	Value
5ʰ 48ᵐ [H. 5 M. 48]	The preceding shoulder of Orion, east, was at [Erat præced. hum. Orionis orient.]	30° 24½′
	Then Mars was distant [Tunc diſtabat ♂]	
	from the first of the wing of Pegasus [a prima alæ Peg.]	21° 1′
	Altitude of Mars by the quadrant, min. [Alt. ♂ per Quadr. min.]	18½
5ʰ 51⅓ᵐ [5 51⅓]	Between Mars and 1 of the wing of Pegasus [Inter ♂ & 1 alæ Peg.]	21° 0⅚′
	Altitude of Mars [Altitudo ♂]	18⅙
	The bright foot of Orion, east [Luc. pes Orionis orient.]	27° 10′
5ʰ 55ᵐ 35ˢ [5 55 35]	Between Mars and 1 of the wing of Pegasus [Inter ♂ & 1 alæ Peg.]	21° 0½′
	Altitude of Mars [Altit. ♂]	17⅔
	The preceding shoulder of Orion, east [Præced. hum. Orion. or.]	28° 11′
	Mars then had southern declination [Erat tunc ♂ Decl. Merid.]	2° 40½′
	with the other pinnule [altero pinnacidio]	2° 40¼′
6ʰ 2⅚ᵐ [6 2⅚]	Between Mars and the bright star of ♈ [Inter ♂ & lucid. ♈]	38° 38′
	Altitude of Mars [Altitudo ♂]	16⅔
	Then the preceding shoulder of Orion, east, was at [Tunc erat præc. hum. Orion. or.]	26° 11′
6¼ʰ [H. 6¼]	The declination of Mars was taken again [Repetebatur declin. ♂]	2° 39′
	with the other pinnule [alt. pin.]	2° 39½′
6ʰ 6⅖ᵐ[1] [6 6⅖[1]]	Between Mars and the bright star of ♈ [Inter ♂ & lucid. ♈]	38° 38′
	Altitude of Mars [Altitudo ♂]	16⅓
	The preceding shoulder of Orion [Præced. humer. Orion.]	25° 9¼′

26 January [DIE 26 JANUARIJ.]

Observation of the diameter of Mars made by Aurifaber: about 1′. [Obſeruatio diametri ♂ per Aurifabrum facta 1′ fere]

4 March, evening [DIE 4 MARTIJ, VESPERI.]

Mars was observed as follows. [Obſeruabatur ♂ vt ſequitur.]

Time [Tempus]	Distance between Mars and Aldebaran [Diſt. inter ♂ & Aldeb.]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Alt. ♂]	Azimuth of Mars, west [Azim. ♂ occ.]
7^h $5\frac{5}{6}^m$ [740° 0¾′ 5⅚]		9° 26′	14° 4½′	86° 0′
		9° 26½′	The Greater Dog, west [Can. mai. occ.]	4° 21′
7^h $9\frac{2}{3}^m$ [739° 59⅓′ 9⅔]		9° 26′		5° 16½′
		9° 26⅔′		Azimuth of Mars [Az. ♂]
7^h $10\frac{1}{6}^m$ [7 10⅙]			13° 30½′	87° 0′
7^h $12\frac{5}{6}^m$ [740° 0⅓′ 12⅚]		9° 28¾′	12° 56⅓′	88° 0′
		9° 29′	The Greater Dog, west [Can. mai. occ.]	6° 4′

From the preceding noon until noon of this day, 4 March, the clock ran 0^m 40^s faster than it should. [Horologium ab antecedente Meridie vſque in Meridiem huius diej 4 Martij mouebatur 0 M. 40″ iuſto celerius.]

It was exceptionally clear and calm. [Erat apprime ſerenum & tranquillum.]

6 October, morning [DIE 6 OCTOBRIS, MANE.]

Between Mars and the bright star of Hydra [Inter ♂ & lucid. Hydræ]	Altitude of Mars by the steel instrument [Alt. ♂ per Chal.]	Declination of Mars [Declin. ♂]	Declination of Mars, second figure	The bright star of ♈, west [Luc. ♈ occid.]
34° 33½′				64° 55′
34° 33½′				65° 13′
	12° 29′	6° 14′	6° 14½′	65° 58′
Between Mars and the tail of ☋ [Inter ♂ & caudam ☋]	Vice versa [Viceverſa]			
11° 5⅓′				68° 38′
11° 5¾′				68° 55′
	14° 29′	6° 13′	6° 12½′	69° 30′

10 October [DIE 10 OCTOBRIS.]

The clock was corrected by the eye of ☉. [Horol. ad oculum ☉ correctum eſt.]

Time	Between Mars and cor ♌ [Inter ♂ & cor ♌]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Lesser Dog, west [Can. min. occ.]
5^h 51^m [5 51]	25° 43½′	5° 12′	22° 0′	2° 53′
		5° 13′		
5^h $54½^m$ [5 54½]	25° 43¾′	5° 11½′		3° 42′
		5° 12′		
5^h 58^m [5 58]	25° 44′			4° 35′

31 October [DIE 31 OCTOBRIS.]

Between Mars and cor ♌ [Inter ♂ & cor ♌]	Southern declination of Mars [Declin. ♂ auſt.]	Altitude of Mars [Alt. ♂]	Cor ♌, east [Cor ♌ orient.]
38° 50′	0° 1′	23° 2′	9° 17′²
38° 49⅚′	0° 1½′		7° 19′
Between Mars and Arcturus [Inter ♂ & Arcturum]			
33° 9⅓′	0° 1⅓′		6° 7½′
33° 8½′	0° 2½′		5° 14′

25 November [DIE 25 NOUEMBRIS.]

Mars was observed. [Obſeruabatur ♂.]

Between Mars and 7 ♍, the last bright star in the wing [Inter ♂ & 7 ♍ in ala poſtrema lucid.]	Declination of Mars [Decl. ♂]	Altitude of Mars [Altit. ♂]	Time in æquat.: cor ♌, west [Tempus in æquat. Cor ♌ occ.]
13° 51′	5° 59½′	High, and freed from all refraction [Altus & ab omni refractione vindicatus]	26° 27′
13° 51¾′	6° 0′		27° 58½′
	5° 59′		

N.B. Further observation was not possible because of small clouds. [N. B. Vlterius propter nubeculas obſeruari non poterat.]

18 December, morning [DIE 18 DECEMBRIS, MANE.]

Time on the clock [Tempus in horologio]	Declination of Mars, south [Decl. ♂ M.]	Altitude of Mars [Alt. ♂]	Between Mars and Spica [Inter ♂ & Spicam]	Spica ♍, west [Spica ♍ occ.]
7^h $20⅙^m$ [7 20⅙]	11° 4⅚′	22° 35′		9° 53′
	11° 5′			

[1] 6⅔ in codex V. [6⅔ cod. V.] [2] It is added in codices V and K: Resp. 6^h 7^m. [Adſcriptum eſt in codicibus V. et K: Reſp. H. 6 M. 7.]

Time on the clock [Tempus in horologio]	Declination of Mars, south [Decl. ♂ M.]	Altitude of Mars [Alt. ♂]	Between Mars and Spica [Inter ♂ & Spicam]	Spica ♍, west [Spica ♍ occ.]
7^h 26½^m [7 26½]	11° 5½′ 11° 5¼′	22° 58′	14° 22⅔′[1]	11° 30′
7^h 31⅓^m [7 31⅓]			14° 22½′	12° 44′

Time	Line	Value
7^h 38^m [7 38]	The meridian altitude of Mars was [erat Alt. ♂ Merid.]	
	by the revolving quadrant [per Volub.]	23° 2′
	by the steel instrument [per Chalyb.]	23° 2½′
	Then Spica ♍ was, west [Tunc erat Spica ♍ occid.]	14° 21′

19 December, morning [DIE 19 DECEMBRIS, MANE.]

Spica ♍ crossed the meridian with the clock showing 7^h 2⅔^m. [Spica ♍ tranſibat per Meridianum horologio indicante Horam 7 M. 2⅔.]

Time on the clock [Tempus in horol.]	Between Mars and Spica [Inter ♂ & Spicam]	Declination of Mars [Declin. ♂]	Altitude of Mars [Alt. ♂]	Spica, west [Spica occid.]
7^h 10½^m [7 10½]	15° 0′	11° 17′ with one pinnule [vno pinn.]	21° 25′	1° 44′
7^h 13^m 35^s [7 13 35]	15° 0½′	11° 17½′ 11° 18⅓′	22° 2′	2° 23′
7^h 17^m [7 17]	14° 59⅚′			3° 6′
	Between Mars and the northern scale-pan of ♎ [Inter ♂ & bor. lanc. ♎]	Declination [Declinatio]		
7^h 19^m 25^s [7 19 25]	13° 3¼′	11° 18′	11° 18½′	3° 43′
7^h 22⅚^m [7 22⅚]	13° 4½′			4° 33′
7^h 25⅙^m [7 25⅙]	13° 4¼′	11° 18⅙′	11° 18⅔′	5° 3′
	Between Mars and the southern scale-pan of ♎ [Inter ♂ & mer. lanc. ♎]			
7^h 31^m [7 31]	6° 36¾′			6° 15′
7^h 33⅙^m [7 33⅙]	6° 37½′	11° 18⅓′	11° 18⅔′	
7^h 36¼^m [7 36¼]	6° 36½′			7° 35′

Time	Line	Value
8^h 8¼^m [8 8¼]	Mars crossed [Tranſibat ♂]	
	the meridian, having altitude [per Merid. habens Alt.]	
	by the revolving quadrant [per Volub.]	22° 49½′
	by the steel instrument [per Chalyb.]	22° 49⅙′
	Declination of Mars [Declinatio ♂]	11° 18′
		11° 18½′

20 DECEMBER, MORNING [DIE 20 DECEMBRIS, MANE.]

Time [Tempus]	Between Mars and Spica [Inter ♂ & Spicam]	Declination of Mars [Decl. ♂]	Altitude of Mars [Altit. ♂]	Spica, west [Spica occ.]
7^h 32⅚^m [7 15° 33′ 32⅚]		11° 30′	21° 47′	2° 42′
7^h 35⅙^m [7 15° 33′ 35⅙]			21° 51′	3° 15′
7^h 37⅓^m [7 15° 33¾′ 37⅓]			22° 0′	
	Vice versa [Viceverſa]			
	Between Mars and the scale-pan of ♎ [Inter ♂ & lancem ♎]			
7^h 40½^m [7 5° 35¾′ 40½]		11° 39′	22° 2′	4° 34′
		11° 39¼′		
7^h 42⅔^m [7 5° 36′ 42⅔]		11° 39¾′	22° 3′	5° 10′
		11° 39⅚′		

Time	Line	Value
8^h 28⅙^m [8 28⅙]	Mars crossed [Tranſibat ♂]	15° 30′
	the meridian, having altitude [per Merid. habens Alt.]	
	by the revolving quadrant [per Volub.]	22° 36⅙′
	by the steel instrument [per Chalyb.]	22° 36½′

28 DECEMBER, MORNING [DIE 28 DECEMBRIS, MANE.]

With the clock showing [Horologio indicante]	Between Mars and Spica [Inter ♂ & Spicam]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	Spica, west [Spica occ.]
6^h 59⅚^m [6 59⅚]	20° 16′	13° 6′	20° 42′	12° 33½′
		13° 5½′		
7^h 2^m 25^s [7 2 25]	20° 15¼′		20° 44′	13° 6′
7^h 5^m [7 5]	20° 15′			13° 46′

With the clock showing [Horologio indicante]	Between Mars and Spica [Inter ♂ & Spicam]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	Spica, west [Spica occ.]
	Between Mars and the right knee of Ophiuchus [Inter ♂ & dext. genu Ophiuchi]			
7^h $10\frac{2}{3}^m$ [7 10⅔]	34° 35′	13° 5⅔′ 13° 5⅚′		15° 12′
7^h $12\frac{3}{4}^m$ [7 12¾]	34° 33′			15° 42′
7^h $15\frac{1}{6}^m$ [7 15⅙]	34° 34′			16° 24′

Time	Line	Value
7^h $29\frac{1}{6}^m$ [7 29⅙]	Mars crossed [Tranſibat ♂]	20° 6′
	the meridian, having altitude [per Merid. habens Alt.]	
	by the steel instrument [per Chalyb.]	21° 1′
	by the revolving quadrant [per Volub.]	21° 0⅓′

Calculation[2] of the place of Mars for 4 March, for the least latitude. [Calculus[2] pro loco ♂ ad diem 4 MARTIJ pro minima latitudine.]

From the distance from Aldebaran, 40° 0′, and the apparent declination, 9° 26′ [Ex diſtantia ab Aldebora 40°0′ et declinatione viſa 9°26′]

(Supp. right ascension of Aldebaran 63° 8′ 10″) [(Supp. Aſc. R. Aldeb. 63°8′10″)]

the right ascension of Mars comes out 22° 35′ 10″. [prouenit Aſcenſio recta ♂ 22°35′10″.]

Line	Value
Apparent longitude [Longitudo viſa]	24° 22¾′ ♈
Latitude [Latitudo]	0° 3⅓′ south [0 3⅓ M.]

The difference of refraction and parallax is to be subtracted from the longitude, 1′ 20″, and added to the latitude, 1′ 4″. [Differentia Refractionis & Parallaxis ſubtrahenda Long. 1′20″, add. Lat. 1′4″.]

Therefore at 7^h 6^m the true longitude is 24° 21½′ ♈, the latitude 0° 4⅖′ south. [Ergo H. 7 M. 6 vera Long. 24°21½′ ♈, Latit. 0°4⅖ M.]

6 October [DIE 6 OCTOBRIS]

for determining the latitude of Mars when it is in the apogee of the eccentric, one sign from the Sun. [pro cognoſcenda latitudine ♂ in Apogæo Eccentri exiſtentis vno ſigno a ☉.]

Time	Line	Value
4^h 50^m in the morning [Mane hora 4 M. 50]	Distance of Mars from the heart of Hydra [Diſt. ♂ a corde Hydræ]	34° 33½′
	from the tail of ♍ [cauda ♍]	11° 5½′
	Declination of Mars, north [Decl. ♂ B.]	6° 14′

N.B. Compare with the observation of the year 88[3], 23 September. [N.B. Confer cum obſer. anni 88[3] d. 23 VII[b]]

[1] In codex V Kepler added this: "It seems it should be increased by 2′ or 3′, so that the proportion of the daily motion agrees." [In cod.V. hæc addidit Kepler: »Videtur augenda 2 vel 3 ſcrupulis, vt proportio motus diurni reſpondeat«.] [2] From codices V and K. [E codd. V. et K.] [3] It should be the year 86. [Debet eße anni 86.]

Line	Right ascension [Aſc. R.]	Declination [Decl.]	Angle of the difference of ascension [Ang. diff. aſc.]
Of the heart of Hydra [Cordis Hydræ]	136° 53′ 30″	6° 54½′ south [6 54½ M.]	32° 1′ 55″
Of the tail of ♍ [Caudæ ♍]	172° 1′ 10″	16° 52⅓′ north [16 52⅓ B.]	3° 11′ 22″

Hence the right ascension of Mars, limit., 168° 52′ 37″. Resp. longitude 17° 20′ 9″, latitude 1° 19′ 6″ north; set the true one at 1° 18′ 0″. [Vnde Aſc. R. ♂ limit. 168 52 37 Reſp. Long. 17°20′9″, Lat. 1°19′ 6″ B, pone veram 1°18′0″.]

Setting the earlier distance of Mars from the tail of ♍, 11° 5½′, together with the latitude of the star and the difference of the longitudes of the two, the latitude of Mars comes out 1° 17′ 50″. [Poſita diſtantia ♂ quæ antea fuit a cauda ♍ 11 5½ cum ſtellæ latitudine atque longitudinis vtriusque differentia prouenit ♂ Lat. 1°17′50″.]

Line	Value
Refraction of Mars in the circle of altitude, 13½ [Refractio ♂ in circulo altit. 13½]	3′ 45″
Distance of Mars from the Earth in semidiameters, 2756; resp. parallax [Diſt. ♂ a terra in ſemid. 2756, reſp. Parallaxis]	1′ 13″
Difference [Differentia]	2′ 32″
Resp. refraction of latitude [Reſp. Refr. lat.]	1′ 26″

To determine the latitude of the tail of ♍ precisely: in the completed year 1584 the declination was 16° 54′ 0″. Therefore at the beginning of 1590 the declination is 16° 52⅓′. Resp. the exact latitude of the tail of ♍, 12° 18′ 11″. Therefore the observed latitude of Mars is 1° 18′ north, and the true latitude 1° 16½′ north, with both the parallax and the refraction subtracted. Set the latitude of Mars at exactly 1° 16′. [Pro latitudine caudæ ♍ præciſe cognoſcenda anno 1584 compl. decl. 16 54 0. Ergo ad initium 1590 Declin. 16 52⅓. Reſp. exquiſite latitudo caudæ ♍ 12 18 11. Ergo obſeruata latitudo ♂ 1°18′ B., vera

latitudo 1°16½′ B. ſubducta tum parallaxi tum refractione. Pone latitudinem ♂ 1°16′ exacte.]

Observations of Venus [OBSERUATIONES VENERIS.]

19 January [DIE 19 JANUARIJ.]

In the evening the diameters of the stars were observed by Aurifaber. [Veſperi obſeruabantur diametri ſtellarum per Aurifabrum.]

Observation of the diameter of Venus [Obſeruatio diametri ♀]

No.	With one pinnule [vno pin.]	With the other [alt.]	Sky
I	3½	3⅓	Not properly clear [Non bene ſerenum]
II	3½	3⅚	
III	3⅔	3¾	Properly clear [Bene ſerenum]
IV	3¾	3⅚	
V	Repeated [Repetita]	4 with both pinnules [vtroque pin.]	
VI		4⅙ with one pinnule [vno pin.]	
VII		3⅚ with one pinnule [vno pin.]	

23 January [DIE 23 JANUARIJ.]

Time	Between Venus and the bright star of ♈ [Inter ♀ & lucid. ♈]	Altitude of Venus by the quadrant, min. [Alt. ♀ per Q. min.]	Declination of Venus, south [Decl. ♀ M.]	The shoulder of Orion, east [Humer. Orion. or.]
$6^h\ 10^m\ 55^s$ [6 10 55]	35° 28½′	18½		
$6^h\ 13^m\ 35^s$ [6 13 35]	35° 29′	18		23° 0′
$6^h\ 16^m$ [6 16]	35° 28¾′	17⅔		22° 25′
	Vice versa [Viceverſa]			
	Between Venus and ι of the wing of Pegasus [Inter ♀ & ι alæ Peg.]			
$6^h\ 19⅓^m$ [6 19⅓]	21° 52⅓′	17		21° 32′
$6^h\ 21½^m$ [6 21½]	21° 52¼′	17	1° 1′	20° 31′
			1° 0½′	
$6^h\ 24^m$ [6 24]	21° 52¼′	16½		19° 43½′

Line	Value
Diameter of Venus by the alidade, 930 [Diameter ♀ per Alhidada 930]	*1*
Repeated by the armillae [Repetita per Armill.]	*4*
	3¾
	4

N.B. From the observation by the alidade, the diameter of Venus comes out, from the first observation made this evening, 3′ 42″. [N.B. Ex obſeruatione per Alhidada prouenit diameter ♀ ex prima obſeruatione hoc veſpere facta 3′42″.]

26 January [DIE 26 JANUARIJ.]

Observation of the diameter of Venus made by Aurifaber: 3¾′ by the armillae. [Obſeruatio diametri ♀ per Aurifabrum facta 3¾′ per Armillas.]

4 0″

28 January [DIE 28 JANUARIJ]

By Aurifaber. [Per Aurifabrum.]

Line	No.	Value
Diameter of Venus [Diameter ♀]	I	3⅝
	II	4⅛
	III	4
	IV	4
	V	3⅔

4 February, evening [DIE 4 FEBRUARIJ, VESPERI.]

Time	Line	Value
7^h 19⅙^m [7 19⅙′]	Between Venus and [Inter ♀ &]	53° 5¾′
7^h 26½^m [7 26½]	Aldebaran [Aldeboram]	53° 5¾′
7^h 32⅙^m [7 32⅙]		53° 5¾′
7^h 37⅙^m [7 37⅙]		53° 5$\frac{1}{12}$′
7^h 41⅝^m [7 41⅝]		53° 5′
7^h 51⅓^m [7 51⅓]	Declination of Venus 5° 26½′; altitude [Declinatio ♀ 5 26½, Alt.]	11° 55′

7 February, evening [DIE 7 FEBRUARIJ, VESPERI.]

The times have been corrected. [Tempora ſunt correcta.]

Time	Line	Value
6^h 34⅙^m [H. 6 34⅙′]	Altitude of Venus by the min. quadrant [Altit. ♀ per min. Q.]	23° 20′
	Between Venus and the head of Andromeda [Inter ♀ & caput Androm.]	25° 15¾′
6^h 35⅝^m [6 35⅝]	Between Venus and [Inter ♀ &]	25° 16′

Time	Line	Value
6^h $37\frac{2}{3}^m$ [6 37⅔]	the head of Andromeda [caput Andromedæ]	25° 16⅙′
6^h 39^m 55^s [6 39 55]	Altitude of Venus [Altitudo ♀]	23° 0′
	Venus was then distant from Aldebaran [Diſtabat tunc ♀ ab Aldeb.]	49° 56½′
6^h $41\frac{1}{3}^m$ [6 41⅓]	Distance of Venus from Aldebaran [Diſt. ♀ ab Aldeb.]	49° 56¼′
6^h $42\frac{1}{3}^m$ [6 42⅓]		49° 56′
	The declination of Venus, north, was then [Erat tunc Declinatio ♀ B.]	
	with both pinnules [vtroque pinnacidio]	6° 42½′

8 February, evening [DIE 8 FEBRUARIJ, VESPERI.]

The times have been corrected here. [Tempora ſunt hic correcta.]

Time	Line	Value
7^h $13\frac{2}{3}^m$ [H. 7 13⅔′]	Between Venus and [Inter ♀ &]	25 26
7^h 16^m 25^s [7 16 25]	the head of Andromeda [caput Andromedæ]	25 25½
7^h $18\frac{2}{3}^m$ [7 18⅔]	The same distance repeated [Eadem diſt. repet.]	25 26
7^h $21\frac{1}{6}^m$ [7 21⅙]	Declination of Venus, north, with one pinnule [Declin. ♀ B. vno pinn.]	7 14½
	Vice versa [Viceverſa]	
7^h 23^m 25^s [7 23 25]	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	48 51
	The altitude of Venus was then [Erat tunc. Alt. ♀]	
	by the steel instrument [per Chalyb.]	17 48
7^h 26½^m [7 26½]	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	48 51⅓
7^h $28\frac{1}{3}^m$ [7 28⅓]		48 51
	The altitude of Venus was then [Erat tunc Altit. ♀]	
	by the steel instrument [per Chalyb.]	17 9
	Declination of Venus at the same time [Declinatio ♀ ad idem tempus]	7 14⅓

12 February, evening [DIE 12 FEBRUARIJ, VESPERI.]

The times have been corrected. [Tempora ſunt correcta.]

Time	Line	Value
6^h $6\frac{1}{6}^m$ [H. 6 6⅙′]	Between Venus and [Inter ♀ &]	26 29½
6^h 9½^m [6 9½]	the head of Andromeda [caput Andromedæ]	26 30
	The declination of Venus, north, was then [Tunc erat Declin. ♀ B.]	9 10⅙
		9 10⅔
6^h $14\frac{2}{3}^m$ [6 14⅔]	The same distance repeated [Eadem diſt. repetita]	26 29½
6^h 17½^m [6 17½]		26 29½
6^h $23\frac{1}{3}^m$ [6 23⅓]	Between Venus and the eye of ♉ [Inter ♀ & oculum ♉]	44 44
	The altitude of Venus was then [Tunc erat ♀ Altit.]	

Time	Line	Value
	by the steel instrument [per Chalyb.]	27 38½
	The declination of Venus was then 9 10½ with both pinnules [Declin. ♀ tunc erat 9 10½ vtroq. pin.]	
6^h $26\frac{1}{6}^m$ [6 26⅙]	Between Venus and the eye of ♉ [Inter ♀ & oculum ♉]	44 $44\frac{1}{3}$
	Altitude of Venus at the same time [Altit. ♀ ad idem tempus]	27 $16\frac{1}{3}$
6^h 28^m 35^s [6 28 35]	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	44 45
6^h 30^m 55^s [6 30 55]	The same distance repeated [Eadem diſt. repet.]	44 45
6^h 33^m 55^s [6 33 55]		44 44
	Altitude of Venus at the same time [Altit. ♀ ad idem tempus]	26 47
6^h 34^m 55^s [6 34 55]	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	44 44
	Declination of Venus at the same time [Declin. ♀ ad idem tempus] with both pinnules [vtroque pinnacidio.]	9 11
	Use here the distance between Venus and Aldebaran [Vtere hic diſtantia inter ♀ & Aldeboram]	44 44^1

Diameter of Venus by the armillae [Diameter ♀ per Armillas]

Value
3¾
4 twice [4 bis]
4¼

18 February, evening [DIE 18 FEBRUARIJ, VESPERI.]

The times have been corrected. [Tempora ſunt correcta.]

Time	Line	Value
6^h $43\frac{1}{6}^m$ [H. 6 43⅙′]	Between Venus and [Inter ♀ &]	29 0

Time	Line	Value
6^h $45\frac{1}{3}^m$ [6 45⅓]	the head of Andromeda [caput Andromedæ]	29 0½
6^h $47\frac{1}{3}^m$ [6 47⅓]		29 0⅓
6^h $50\frac{1}{3}^m$ [6 50⅓]	Declination of Venus [Declinatio ♀]	12 3 12 3½
6^h 57^m [6 57]	Between Venus and [Inter ♀ &]	38 39½
7^h $1\frac{1}{2}^m$ [7 1½]	Aldebaran [Aldeboram]	38 40
7^h $3\frac{2}{3}^m$ [7 3⅔]		38 $39\frac{5}{6}$
7^h $10\frac{1}{3}^m$ [7 10⅓]		38 39¼
	The altitude of Venus was then [Tunc erat Altit. ♀]	

Time	Line	Value
	by the steel instrument [per Chalyb.]	23 30½
7^h 30½^m [7 30½]	Declination of Venus [Declinatio ♀]	12 4½
7^h 33^m 15^s [7 33 15]	Declination of Venus [Declinatio ♀]	12 4

Diameter of Venus 4½². [♀ Diameter 4½².]

23 February [DIE 23 FEBRUARIJ.]

The times have been corrected to Aldebaran. [Tempora ſunt correcta ad Aldeboram.]

Time	Line	Value
7^h 24⅙^m [H. 7 24⅙′]	Between Aldebaran [Inter Aldeboram]	33 50½
7^h 27⅙^m [7 27⅙]	and Venus [& ♀]	33 50⅔
7^h 29½^m [7 29½]	Between the same and Venus [Inter eandem & ♀]	33 50½
7^h 34½^m [7 34½]	Declination of Venus, north [Declinatio ♀ B.]	14 19½
		14 19

N.B. Venus is here near its greatest distance from the Sun. [N. B. ♀ hic circa maximam remotionem a ☉.]

Diameter of Venus. *Christiernus observed.*² [Diameter ♀. *Chriſtiernus obſeruauit*².]

No.	Value
I	5⅙
II	5
III	5½

24 February [DIE 24 FEBRUARIJ.]

N.B. Venus was here near its greatest distance from the Sun. [N. B. ♀ erat hic circa maximam remotionem a ☉.]

The clock was being corrected. [Horologium corrigebatur.]

Time	Line	Value (inner)	Value (outer)
6^h 32½^m [H. 6 32½′]	Between Venus and Aldebaran [Inter ♀ & Aldeboram]		32 56⅓
	Altitude of Venus [Altitudo ♀]	30 56	
6^h 33⅚^m [6 33⅚]	Declination of Venus [Declinatio ♀]		14 42⅔
	with the other pinnule [alt. pin.]		14 42
6^h 36^m [6 36]	The distance repeated [Diſtantia repetita]		32 55½
	The altitude of Venus [Altitudo ♀]		
	was then [tunc erat]	30 20	
6^h 37^m 15^s [6 37 15]	Between Venus and Aldebaran [Inter ♀ & Aldebor.]		32 55⅓

Time	Line	Value (inner)	Value (outer)
	The altitude of Venus was then [Altit. ♀ tunc erat]	30 8	
6^h 38⅙^m [6 38⅙]	Declination of Venus with both pinnules [Declin. ♀ vtroq. pin.]		14 42½
6^h 41⅓^m [6 41⅓]	Between Venus and Aldebaran [Inter ♀ & Aldeb.]		32 55¼
	The altitude of Venus was then [Altit. ♀ tunc erat]	29 31½	

[1] Written in the margin. [In margine adſcriptum.] [2] In codex V: "Christiernus Ripensis observed." [In codice V.: »Obſervabat Chriſtiernus Ripenſis«.]

Time	Line	Value (inner)	Value (outer)
6^h 45^m [6 45]	Between Venus and the bright star of ♈ [Inter ♀ & luc. ♈]		7 18⅓
	The altitude of Venus was then [Altit. ♀ tunc erat]	29 0	
6^h 46⅙^m [6 46⅙]	Between Venus and the bright star of ♈ [Inter ♀ & lucid. ♈]		7 18½
	Declination of Venus with one pinnule [Declin. ♀ vno pin.]		14 42⅓

25 February, evening [DIE 25 FEBRUARIJ, VESPERI.]

At $6½^h$ the clock was being corrected. [H. 6½ Horologium corrigebatur.]

Time [Tempus]	Line	Value
6^h 35^m 40^s [H. 6 35′ 40″]	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	32 0
	Declination of Venus [Declin. ♀]	15 9
	with the other pinnule [alt. pin.]	15 9¼
	Altitude of Venus [Altit. ♀]	30 45

28 February, afternoon [DIE 28 FEBRUARIJ P. M.]

The clock was being corrected at noon. [Horologium in Meridie corrigebatur.]
Exceptionally clear and calm. [*Apprime ſerenum & tranquillum.*]

Time [Tempus]	Between Venus and the Sun [Inter ♀ & ☉]	Declination of Venus, north [Declin. ♀ B.]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the steel instrument [Alt. ☉ per Chal.]
1^h 0½^m [1 0½]		16 18½		
1^h 23⅔^m [1 23⅔]				
1^h 32⅓^m [1 32⅓]			48 8	

Here the clock was running one minute faster, which had to be subtracted. [Hic mouebatur horologium vno minuto celerius, quod ſubtrahendum venit.]

Time	Between Venus and the Sun	Declination of Venus, north	Altitude of Venus by the revolving quadrant	Altitude of the Sun by the steel instrument
$1^h\ 46^m\ 45^s$ [1 46 45]	46 10⅓			26 8⅓
$1^h\ 48⅓^m$ [1 48⅓]		16 20½ not valid [non valet]		
$1^h\ 50^m\ 35^s$ [1 50 35]		16 18½		
$1^h\ 52^m\ 35^s$ [1 52 35]	46 10⅓			25 49⅔
$1^h\ 55½^m$ [1 55½]	46 10⅙		49 15	25 32⅓
$1^h\ 58⅙^m$ [1 58⅙]	46 10½		49 17½	25 20
$2^h\ 0^m\ 40^s$ [2 0 40]		16 19½		
$2^h\ 4^m\ 0^s$ [2 4 0]	46 10½		49 32⅙	24 54½
$2^h\ 6^m\ 45^s$ [2 6 45]	46 10⅔		49 38⅚	24 41⅙
$2^h\ 9^m\ 0^s$ [2 9 0]		16 20¼		
$2^h\ 11^m\ 40^s$ [2 11 40]	46 9⅔		49 49	24 17
$2^h\ 17^m\ 55^s$ [2 17 55]	46 10		49 57⅓	23 46⅙

Time	Line	Value
$2^h\ 48^m\ 0^s$ [2 48 0]	*Venus was in the meridian, having altitude* [*Fuit ♀ in Meridie habens Alt.*]	
	by the revolving quadrant [*per Volub.*]	*50 23⅓*
	The Sun was then [*Fuit tunc ☉*]	
	west of the meridian [*a Meridie occ.*]	*41 50*
$2^h\ 48^m\ 35^s$ [2 48 35]	*by the steel instrument* [*per Chalybeum*]	*50 24*
	The Sun was then west [*Erat tunc ☉ occ.*]	*41 52*
	Declination of Venus [*Declin. ♀*]	*16 20 with one* [*vno*]
		16 20½ with the other [*alt.*]
	N.B. Venus near the meridian. [*N.B. ♀ iuxta Meridianum.*]	
$2^h\ 55^m\ 40^s$ [2 55 40]	*Declination of Venus* [*Decl. ♀*]	*16 20¾ with both.* [*vtroque.*]

About this time the clock, which was showing one minute more fast, was being corrected. [*Circa hoc tempus corrigebatur horologium vno minuto plus citius monſtrans.*]

Afterwards Venus was observed past the meridian, sinking towards its setting, as follows. [Poſtea obſeruabatur ♀ poſt meridiem vergens ad occaſum vt ſequitur.]

Time	Venus from the Sun [♀ a ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the steel instrument [Alt. ☉ per Chal.]
$3^h\ 2^m\ 45^s$ [3 46 9¾ 2 45]				19 31
$3^h\ 6^m\ 10^s$ [3 46 9½ 6 10]				19 13⅚
$3^h\ 7^m\ 0^s$ [3 7 0]		16 20½		
		16 20¾		
$3^h\ 11^m\ 0^s$ [3 46 9 11 0]			50 10⅚	18 38½
$3^h\ 28\frac{1}{10}^m$ [346 8½ $28\frac{1}{10}$]			49 45⅙	16 54⅔
$3^h\ 30\frac{1}{2}^m$ [3 $30\frac{1}{2}$]		16 20½		
		16 21		
$3^h\ 34^m\ 50^s$ [346 8 34 50]			49 31⅔	16 11⅔
$3^h\ 40\frac{1}{6}^m$ [3 46 8⅓ $40\frac{1}{6}$]			49 18	15 30
$3^h\ 41\frac{1}{3}^m$ [3 $41\frac{1}{3}$]		16 20¾		
$3^h\ 42^m\ 45^s$ [3 42 45]		Sun 4 6 south [☉ 4 6 M.]		
$3^h\ 47\frac{1}{6}^m$ [3 46 8⅙ $47\frac{1}{6}$]				14 45⅚
$3^h\ 52\frac{1}{2}^m$ [3 46 9½ $52\frac{1}{2}$]			48 41½	14 8⅓

For correcting the clock. [Pro horologio corrigendo.]

Time	Line	Value
$3^h\ 54^m$ [3 54]	The Sun was then west [Tunc erat ☉ occ.]	57 30
$3^h\ 55^m\ 35^s$ [3 55 35]	The Sun was west [Erat ☉ occid.]	58 0
$4^h\ 0^m\ 5^s$ [4 0 5]		59 0

Here the clock was going 4 minutes faster than it should, but it was not corrected; at least, two little balls were removed. [*Horologium hic 4 minutis iuſto citius ibat, ſed non emendabatur, ſublatis ſaltem duobus globulis.*]

Time	Venus from the Sun [♀ a ☉]	Declination [Declin.]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Vol.]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ☉ per Q. min. azim.]
$4^h\ 3^m\ 0^s$ [4 46 8 3 0]				12 40
$4^h\ 5^m\ 25^s$ [4 5 25]		Sun 4 0½ [☉ 4 0½]	47 57	
		4 0		

Time	Venus from the Sun [♀ a ⊙]	Declination [Declin.]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Vol.]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ⊙ per Q. min. azim.]
4^h 11⅓^m [446 7 11⅓]			47 30	11 50
4^h 15⅙^m [446 7½ 15⅙]			47 16	11 20
4^h 17^m 0^s [4 17 0]		Venus 16 21 [♀ 16 21]		
4^h 18⅚^m [4 18⅚]		Sun 4 0 [⊙ 4 0]		
4^h 30^m 0^s [446 7¾ 30 0]			46 11	9 30
4^h 34⅙^m [446 7⅙ 34⅙]			45 49	8 56
4^h 36½^m [4 36½]		Venus 16 21 [♀ 16 21]		
		16 21½		
4^h 38⅓^m [4 38⅓]		Sun 3 58½ [⊙ 3 58½]		
		3 58¾		
4^h 43^m 0^s [446 7¼ 43 0]			45 4⅚	7 46
4^h 45½^m [446 6½ 45½]				7 27
4^h 46⅚^m [4 46⅚]		16 21½		
		16 21⅓		

At 4^h 47⅙^m [4 47⅙] the Sun, west, 70 49½, for correcting the clock. Therefore it was running 4 minutes faster than it should; this was corrected at that time, and the error came from the third hour. [4 47⅙ Sol occid. 70 49½ pro horologio emendando. Ergo 4 minutis iusto celerius mouebatur, qui tunc temporis emendabatur, venitque ab hora tertia error.]

Time	Venus from the Sun	Declination	Altitude of Venus by the revolving quadrant	Altitude of the Sun by the min. azimuthal quadrant
4^h 52⅓^m [4 52⅓]		*Sun 3° 57′ [⊙ 3 57]*	*44° 30′*	*7° 0′*
5^h 2^m 0^s [5 2 0]	46° 5′		43° 34¾′	5° 44′
5^h 6^m 0^s [5 6 0]	46° 3′		43° 12′	5° 15′
5^h 7^m 25^s [5 7 25]		16° 21⅔′		
		16° 21¾′		
5^h 9^m 5^s [5 9 5]		Declination of the Sun 3° 54¾′ [Decl. ⊙ 3 54¾]		

Time	Venus from the Sun	Declination	Altitude of Venus by the revolving quadrant	Altitude of the Sun by the min. azimuthal quadrant
		3° 55′ with the other pinnule [3 55 alt. pin.]		

Time	Line	Value	Note
$6^h\ 10^m\ 53^s$ [6 10 53]	The Greater Dog, east [Can. maior orient.]	15 11	For the clock [Pro horologio]
$6^h\ 11^m\ 57^s$ [6 11 57]		14 54	
$6^h\ 13^m\ 20^s$ [6 13 20]		14 32	
$6^h\ 22^m$ [6 22]	The eye of ♉, west [Oculus ♉ occid.]	20 51½	

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Decl. ♀]	Altitude of Venus by the steel instrument [Alt. ♀ per Chal.]	Azimuth of Venus [Azim. ♀]
$6^h\ 22^m$ [6 22]	29° 18¼′	16° 23½′	34° 29½′	
		16° 23⅙′		
$6^h\ 24⅚^m$ [6 24⅚]	*29° 19′*		*34° 5′*	
$6^h\ 31^m$ [6 31]	*29° 18¾′*	*16° 20½′*	*33° 20′*	*71° 2′*
		16° 20⅔′		
$6^h\ 34½^m$ [6 34½]	*29° 18½′*	*16° 20′*	*32° 49′*	
$6^h\ 40½^m$ [6 40½]	*29° 19′*	*16° 20⅙′*	*32° 2′*	
$6^h\ 42⅙^m$ [6 42⅙]		*16° 20⅓′*	*31° 48′*	*71° 12½′*
			by the min. quadrant [*Per Q. min.*]	
$8^h\ 7^m$ [8 7]	*29° 16¾′*		*20° 21½′*	*89° 31′*
$8^h\ 9½^m$ [8 9½]	*The Lesser Dog, west of the meridian, for the clock* [*Canis minor a meridiano pro horol., occ.*]	*1 35*		
$8^h\ 11¾^m$ [8 11¾]		*2 7*		
$8^h\ 16^m$ [8 16]		*3 5*		
$8^h\ 11¾^m$ [8 11¾]	*29° 16′*	*16° 26½′*	*19° 41′*	*90° 31′*

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Decl. ♀]	Altitude of Venus by the steel instrument [Alt. ♀ per Chal.]	Azimuth of Venus [Azim. ♀]
8h 16m [*8 16*]	*29° 15½′*	*16° 26⅓′*	*19° 4½′*	*91° 22′*
		16° 26⅔′		

1 MARCH, AFTERNOON [DIE 1 MARTIJ, P. MERID.]

Time	Line	Value
1h 29⅚m [H. 1 29⅚′]	Declination of Venus [Declin. ♀]	16° 44′
1h 40½m [1 40½]		16° 43⅓′

At 1h 40m the clock was being corrected exactly to the Sun. [1 40 corrigebatur horologium exacte ad Solem.]

Time	Line	Value
2h 45⅓m [2 45⅓]	The Sun, west [⊙ occid.]	41 47
	Venus crossed the meridian, having altitude [Tranſiuit ♀ per meridianum habens altit.]	
	by the steel instrument [per Chalybeum]	50° 49′
	by the revolving quadrant [per Volubilem]	50° 49⅓′
	The declination of Venus was then [Tunc erat Decl. ♀]	*16° 45′ with one* [*vno*]
		16° 44⅔′ with the other [*alt.*]

Time	Between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Declin. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the steel instrument [Alt. ⊙ per Chal.]
2h 53m 0s [53 0]	46° 8′		50° 48′	
2h 56⅚m [56⅚]	46° 7′	16° 44⅔′	50° 45⅓′	

At 3h the clock was running 2 minutes slow; therefore two little balls were added to the weight.[1] [H. 3 mouebatur horol. 2 Minutis tardius, ergo addebantur ponderi duo globuli[1].]

Time	Between Venus and the Sun	Declination of Venus	Altitude of Venus by the revolving quadrant	Altitude of the Sun by the steel instrument
3h 2½m [3 2½]	46° 6¼′		50° 39¾′	19° 32′

Time	Between Venus and the Sun	Declination of Venus	Altitude of Venus by the revolving quadrant	Altitude of the Sun by the steel instrument
3^h $5\frac{2}{3}^m$ [3 $5\frac{2}{3}$]	46° 7¾′		50° 38′	19° 10′
3^h $9\frac{2}{3}^m$ [3 $9\frac{2}{3}$]	46° 6⅚′	16° 44½′	50° 32′	18° 44½′
3^h 21^m 25^s [3 21 25]	46° 6½′		50° 13½′	17° 28′
3^h $25\frac{1}{6}^m$ [3 $25\frac{1}{6}$]	46° 7′	16° 44½′	50° 6⅙′	17° 1′
		16° 45′		
		Declination of the Sun [Decl. ☉]		By the min. azimuthal quadrant [Per Q. min. azim.]
3^h $30\frac{1}{2}^m$ [3 $30\frac{1}{2}$]		3° 38½′	49° 51½′	
		3° 38′		
4^h $1\frac{2}{3}^m$ [4 $1\frac{2}{3}$]	46° 6′		48° 15⅓′	12° 30′
4^h $5\frac{1}{6}^m$ [4 $5\frac{1}{6}$]	46° 5½′			12° 1′
4^h $7\frac{5}{6}^m$ [4 $7\frac{5}{6}$]	46° 5⅙′	3° 37′	47° 44⅚′	11° 43½′
		3° 36¾′		
		Declination of Venus [Decl. ♀]		
		16° 45½′		
		16° 46′		
4^h $30\frac{5}{6}^m$ [4 $30\frac{5}{6}$]	46° 5½′		45° 50′	8° 43½′
			uncertain [incerta]	
4^h $37\frac{1}{2}^m$ [4 $37\frac{1}{2}$]	46° 4½′		45° 16¾′	7° 53′
4^h $42\frac{2}{3}^m$ [4 $42\frac{2}{3}$]	46° 3¾′	16° 47½′	44° 49⅓′	7° 10′
		16° 47¼′		
		Declination of the Sun [Decl. ☉]		
4^h $45\frac{2}{3}^m$ [4 $45\frac{2}{3}$]		3° 34′		
		3° 34½′		
4^h $55\frac{1}{2}^m$ [4 $55\frac{1}{2}$]	46° 2′		43° 32⅓′	5° 30′
				With the Radius [Per Radium]
4^h $58\frac{2}{3}^m$ [4 $58\frac{2}{3}$]	46° 1′		43° 11⅓′	4° 45′
5^h 1^m [5 1]	46° 0′	Declination of Venus [Decl. ♀]	42° 57¼′	
5^h $2\frac{1}{2}^m$ [5 $2\frac{1}{2}$]		16° 47′		
		16° 46¾′		

Time	Between Venus and the Sun	Declination of Venus	Altitude of Venus by the revolving quadrant	Altitude of the Sun by the steel instrument
5^h 8½^m [5 8½]	45° 58′		42° 9′	3° 42′
5^h 12½^m [5 12½]	45° 56½′		41° 42⅚′	3° 7′
5^h 13⅚^m [5 13⅚]		16° 47½′		
		16° 48′		
5^h 15½^m [5 15½]				2° 38′
5^h 17⅔^m [5 17⅔]	45° 55′		41° 7½′	2° 26′
5^h 21⅙^m [5 21⅙]	45° 51′		40° 30⅚′	1° 58′
5^h 22⅓^m [5 22⅓]		16° 47½′		1° 42′
		16° 48′		
		Declination of the Sun [Decl. ☉]		
5^h 24^m [5 24]		3° 22′		
5^h 27^m [5 27]	45° 49′		40° 2′	1° 14′

After sunset. [*Poſt occaſum Solis.*]

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Azimuth of Venus, west [Azim. ♀ occ.]
6^h 15⅚^m [6 15⅚]	28° 24¼′	16° 47⅔′		68° 9½′
		16° 48′		
6^h 17⅓^m [6 17⅓]	28° 25′	16° 47′	33° 45⅓′	
		16° 47½′		
6^h 19^m [6 19]	28° 25′	16° 47⅔′	33° 28¾′	
		16° 48′		

[1] Written in the margin. [In margine adſcriptum.]

The bright shoulder of Orion was east 4½°. [*Fuit clarus humerus Orionis or. 4½ gr.*]

Time	Between Venus and Aldebaran	Declination of Venus	Altitude of Venus	Azimuth of Venus, west
6^h 21⅙^m [6 21⅙]	28° 25¼′	16° 48½′	33° 12′	69° 58′
7^h 49½^m [7 49½]	28° 23½′	16° 50′	20° 56½′	89° 23′

Time	Between Venus and Aldebaran	Declination of Venus	Altitude of Venus	Azimuth of Venus, west
Cor ♌, east [Cor ♌ or.]	*35½*	16° 50½′		
7^h 52⅚^m [7 52⅚]	28° 22⅚′	*16° 50′*	20° 30′	90° 0′
Cor ♌, east [Cor ♌ or.]	*34 56*	*16° 50⅔′*		good [bona]
7^h 57⅚^m [7 57⅚]	28° 23′	16° 50¼′	19° 46⅓′	91° 3′
Cor ♌, east [Cor ♌ or.]	*33 41*	16° 50⅔′		
8^h 1⅔^m [8 1⅔]	28° 22⅚′	16° 50½′	19° 12¾′	91° 52′
Cor ♌, east [Cor ♌ or.]	*32 40*	with both [vtroq.]		

N.B. I observed the times from Cor ♌. [*N. B. Ego tempora ex corde ♌ obſeruaui.*]

Time	Figure (distance position)	Figure (declination position)	Figure (altitude position)	Figure (azimuth position)
10^h 1¼^m [10 1¼]		*17 3*	*6 0*	
		17 3¼	*good* [*bona*]	
10^h 5½^m [10 5½]	28 12⅓	17 3½	*the bright star of* ♈ [*Luc.* ♈]	
		17 3⅔	*Declination 21° 44′, for it has the same altitude as Venus* [*Decl. 21 44 nam habet eandem cum* ♀ *altitud.*]	
10^h 12⅙^m [10 12⅙]	28 9	17 3¾	*3 45*	
10^h 18⅓^m [10 18⅓]	28 6⅚	*17 3¾*	1 12⅚	120 3
				good [bona]

Line	Value
Venus at the 90th degree had a declination by the armillae [Venus in 90 gradu habebat declinationem per Armillas]	16° 50′
subterranean [ſubterraneas]	16° 50½′

The declination of Venus found by computation from the altitude and azimuth: 16° 51′ 33″. [Declinatio ♀ ex Altitud. & Azimutho per operationem inuenta 16°51′33″.]

2 March [*DIE 2 MARTIJ.*]

On the following day, in the afternoon, Venus was observed again in declination, when it was a little past the meridian. [*Die ſequente p. M. obſeruabatur* ♀ *denuo in declinatione, cum eßet paulo vltra Meridiem.*]

Time [*Tempus*]	Declination of Venus, north, with one pinnule [*Declinatio ♀ B. vno*]	with the other [*alt.*]	Altitude of Venus [*Altit. ♀*]	Azimuth of Venus [*Azim. ♀*]
$3^h\ 4^m$ [3 4]	17° 8½′	17° 8¾′		
$3^h\ 33^m$ [3 33]	17° 9′	17° 10′		

Venus was about 15° away towards its setting. [*Abfuit ♀ verſus occaſum quaſi 15 gr.*]

Time	Declination of Venus, north, with one pinnule	with the other	Altitude of Venus	Azimuth of Venus
$3^h\ 38\frac{2}{3}^m$ [3 38⅔]			50° 0′	19° 30′
$3^h\ 41\frac{1}{3}^m$ [3 41⅓]			49° 51½′	20° 30′
$3^h\ 44\frac{1}{6}^m$ [3 44⅙]	17° 9′	17° 9⅚′	49° 42′	21° 30′

Time	Line	Value
$3^h\ 52\frac{1}{2}^m$ [3 52½]	*The Sun, west* [⊙ *occ.*]	58 8
$3^h\ 55^m$ [3 55]	*for the clock* [*pro Horologio*]	58 44
$3^h\ 56^m$ [3 56]		59 0
$4^h\ 0^m$ [4 0]		60 0

Therefore the clock has been right since noon. [*Ergo horologium recte ſe habet a Meridie.*]

Time	Figure	Figure
	48 33½	28 30
$4^h\ 6^m$ [4 6]	48 22	29 30
$4^h\ 9^m\ 50^s$ [4 9 50]	48 10	30 30
$4^h\ 12^m\ 40^s$ [4 12 40]	47 56	31 30
$4^h\ 19^m\ 0^s$ [4 19 0]	47 30	33 30

Time	Distance of Venus and the Sun [*Diſt. ♀ & ⊙*]	Declination of Venus [*Decl. ♀*]	Altitude of Venus [*Altit. ♀*]	Altitude of the Sun [*Altit. ⊙*]
$4^h\ 21^m\ 20^s$ [4 21 20]		17° 10′		
		17° 9¾′		
$4^h\ 28^m$ [4 28]	46° 1½′	17° 10¼′	46° 45′	9° 47′
		17° 10⅓′		

Time	Distance of Venus and the Sun [*Diſt.* ♀ & ⊙]	Declination of Venus [*Decl.* ♀]	Altitude of Venus [*Altit.* ♀]	Altitude of the Sun [*Altit.* ⊙]
4^h 33⅓^m [4 33⅓]	46° 1′		46° 21⅔′	9° 18′
4^h 36½^m [4 36½]	46° 1′	17° 10½′	46° 5′	8° 52′
		17° 11′		
4^h 42⅚^m [4 42⅚]	46° 0¼′		45° 31½′	8° 1′
4^h 47½^m [4 47½]	46° 0′	17° 11¼′	45° 5′	7° 26′
		17° 11½′		
4^h 53⅓^m [4 53⅓]	45° 58¾′		44° 32′	6° 39′
4^h 55⅚^m [4 55⅚]	45° 58⅔′	17° 11¼′	44° 18¼′	
		17° 11½′		
4^h 58⅔^m [4 58⅔]	The declination of the Sun was then 3° 8½′ with both pinnules [Tunc erat declin. ⊙ 3 8½ vtr. pin]			
5^h 2^m [5 2]	45° 58¼′		43° 40′	5° 32′
5^h 6^m [5 6]	45° 58′	17° 11½′	43° 14⅙′	4° 59′
		with both [vtroque]		
5^h 8⅚^m [5 8⅚]	The declination of the Sun was then 3° 6½′ [Tunc erat declin. ⊙ 3 6½]			
	3° 6′			
5^h 12⅙^m [5 12⅙]	45° 55¾′		42° 35′	4° 10′
5^h 16^m [5 16]	45° 55¼′	17° 12′	42° 10¾′	3° 34′
		17° 11½′		
5^h 19⅙^m [5 19⅙]		Declination of the Sun 3° 3′ [Declin. ⊙ 3 3]		
5^h 22½^m [5 22½]	45° 54′		41° 27′	2° 46′
5^h 25⅚^m [5 25⅚]	45° 52⅓′	17° 11¾′	41° 5½′	2° 24′
		17° 12′		
5^h 30⅙^m [5 30⅙]	45° 47½′		40° 35⅔′	1° 48′

The azimuth of Venus was then 55° 13′ west. [Tunc erat Azim. ♀ 55 13 occ.]

Afterwards Venus was observed again in the evening of the same 2 March. [Poſtea obſeruabatur ♀ iterum veſperi eodem 2 Martij.]

Time [Tempus]	Distance between Venus and Aldebaran [Dist. inter ♀ & Ald.]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	The Greater Dog, east [Can. mai. or.]
6^h $24\frac{5}{6}^m$ [~~26~~ 24⅚]	27° 32¾′	17° 11⅔′	17° 12′			8 5
6^h 28^m [6 28]	27° 32⅓′			33° 28½′	70° 0′	7 25
6^h $31\frac{2}{3}^m$ [~~6~~ 31⅔]	27° 34′	17° 13′	17° 12⅚′			6 28
6^h 32^m [6 32]				32° 53½′	71° 0′	6 12½
						The Greater Dog, west [*Can. mai. occid.*]
7^h $53\frac{1}{3}^m$ [*7 53⅓*]	*27° 29¾′*			*21° 49′*	*89° 0′*	*14 2*
7^h 58^m 55^s [*7 58 55*]		*17° 15¾′*	*17° 16′*	*21° 0½′*	*90° 0′*	*15 23*
8^h $3\frac{1}{3}^m$ [*8 3⅓*]	*27° 29½′*	*17° 16½′*	*17° 17′*	*20° 22⅓′*	*91° 0′*	*16 42*
8^h $8\frac{1}{4}^m$ [*8 8¼*]	*27° 29′*	*17° 17′*	*17° 17½′*	*19° 41′*	*92° 0′*	*17 47½*

The clock at the following noon: 8 minutes slower than correct. [*Horologium in Meridie sequente 8 Minutis iusto tardius.*]

N.B. From these observations of Venus, made near the meridian and at the 90th degree, you can reason about its parallax from the variation of the declination and of the altitude, applying the diurnal motion, beyond what the places of the fixed stars prove. [*N.B. Ex his observationibus ♀ circa Meridianum habitis & in 90 gradu per declinationis & altitudinis variationem, adhibito motu diurno, potes de Parallaxi eius ratiocinari præter ea, quæ fixarum loca probant.*]

Line	Value (in the line)	Value (right-hand position)
Venus at the 90th degree. Its declination by the armillae [Venus in 90 gradu. Declinatio eius per Armillas]		17° 15¾′
Declination from the altitude and azimuth [Declinatio ex Altit. & Azimutho]	17° 16¼′	17 16

The following day, which was 3 March [*Die sequente qui erat 3 MARTIJ*]

Venus was crossing the meridian at 2^h 47^m, when the Sun was west 41 40¾. Meridian altitude of Venus [*♀ transibat Meridianum H. 2 47, quando ☉ fuit occ. 41 40¾. ♀ Altitudo merid.*]

Line	Value
by the revolving quadrant [*per Volub.*]	*51° 35⅓′*
by the steel instrument [*per Chalyb.*]	*51° 35¾′*
Set down here the meridian altitude, good [*Pone hic altitudinem meridianam, bon.*]	*51° 35½′*

Time	Declination of Venus [*Declin.* ♀]
2h 53½m [*H. 2 53½*]	*17° 31½′, 17° 32′*
2h 55⅓m [*2 55⅓*]	*17° 31½′, 17° 32′*

N.B. However, the declination taken by the armillae near the meridian is not to be trusted, because the Sun lit the lower pinnule too much; but rather the altitude derived from the meridian elevation. [*N. B. Non eſt tamen fidendum declinationi per Armillas prope Meridianum ſumptæ, eo quod Sol pinnacidium inferius illuſtraret nimium, ſed potius altitudini ex meridiana eleuatione deſumptæ.*]

On the same day, 3 March, in the afternoon. [Eodem die 3 Martij poſt meridiem.]

Time	Between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure); later Azimuth of Venus	Altitude of Venus [Alt. ♀]	The Sun, west [⊙ occ.]	Altitude of the Sun by the min. azimuthal quadrant	Declination of the Sun
3h 15⅔m [3 15⅔]	43° 0′			51° 25′	48 50		
3h 18⅙m [3 18⅙]	43° 59⅚′			51° 9′			
3h 20⅚m [3 20⅚]	43° 0′			51° 6′	*50 10*		
3h 24m 35s [3 24 35]	43° 59¼′			50° 56½′	*51 3 good* [*51 3 bona*]		
3h 26⅓m [3 26⅓]		17° 32′	17° 32¼′				
3h 36m 25s [3 36 25]					54 0 it was not clear enough [54 0 non erat ſatis ſerenum]		
3h 40⅓m [3 40⅓]					55 0		
3h 45⅙m [3 45⅙]	43° 0′			50° 4′			
3h 48⅓m [3 48⅓]	43° 59¾′			49° 56½′	57 5		
3h 50m 25s [3 50 25]		17° 33′					

Time	Between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure); later Azimuth of Venus	Altitude of Venus [Alt. ♀]	The Sun, west [⊙ occ.]	Altitude of the Sun by the min. azimuthal quadrant	Declination of the Sun
						Altitude of the Sun by the min. azimuthal quadrant [Alt. ⊙ per Q.min.azim.]	Declination of the Sun [Decl. ⊙]
3^h $55\frac{1}{6}^m$ [3 55⅙]	[illegible]	58¾′		49° 30′			
4^h $0\frac{5}{6}^m$ [4 0⅚]	[illegible]	59½′		49° 6⅔′		13° 47′	
4^h $5\frac{1}{6}^m$ [4 5⅙]	[illegible]	58¼′		48° 50⅔′		13° 16′	
4^h $7\frac{1}{2}^m$ [4 7½]		17° 34′			61 51		
4^h $9\frac{1}{6}^m$ [4 9⅙]							2° 48′ with both pinnules [2 48 vtr. pin.]
4^h $11\frac{1}{6}^m$ [4 11⅙]	[illegible]	57½′		48° 25¾′	62 48½	12° 30′	
4^h $15\frac{5}{6}^m$ [4 15⅚]	[illegible]	57¼′		48° 8½′	63 56	11° 53′	
4^h 17^m 35^s [4 17 35]		17° 34½′	17° 34¼′				
4^h 19^m [4 19]							2° 48½′ with both pinnules [2 48½ vtr. pin.]
4^h 26^m 45^s [4 26 45]	[illegible]	47½′		47° 12⅔′	66 39	10° 27′	
4^h $29\frac{1}{6}^m$ [4 29⅙]	[illegible]	57′		47° 2⅓′		10° 6′	
4^h $30\frac{5}{6}^m$ [4 30⅚]		17° 34′	17° 33¾′				2° 45′
							2° 45¼′
4^h $37\frac{5}{6}^m$ [4 37⅚]	[illegible]	57¾′	Azimuth of Venus [Azim. ♀]	46° 17′	69 25	8° 53′	
4^h $40\frac{2}{3}^m$ [4 40⅔]	[illegible]	57′	41° 0′	46° 5′	70 7½	8° 30′	
4^h 42^m 25^s [4 42 25]		17° 34¼′ with both pinnules [17 34¼ vtr. pin.]					

Time	Between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure); later Azimuth of Venus	Altitude of Venus [Alt. ♀]	The Sun, west [⊙ occ.]	Altitude of the Sun by the min. azimuthal quadrant	Declination of the Sun
4^h 43⅚^m [4 43⅚]			42° 0′	45° 43½′			
4^h 47⅓^m [4 47⅓]	45° 56¾′		43° 0′	45° 22⅔′	71 47	7° 37′	
4^h 50⅓^m [4 50⅓]			44° 0′	45° 6⅚′			
4^h 50^m 55^s [4 50 55]	45° 55¾′					7° 10′	

Time	Between Venus and the Sun	Declination of Venus	Azimuth of Venus	Altitude of Venus	The Sun, west	Altitude of the Sun by the min. azimuthal quadrant	Declination of the Sun
4^h 53⅙^m [4 53⅙]		17° 34′					2° 44½′
		17° 34½′					2° 45′
4^h 58^m [4 58]	45° 55′		46° 0′	44° 18¼′		6° 14⅓′	
5^h 1^m [5 1]	45° 54′		47° 0′	44° 2⅓′		5° 48′	
5^h 2^m 35^s [5 2 35]		17° 34½′			75 40		
		17° 35⅙′					
5^h 5^m [5 5]							2° 42¼′
							2° 42⅔′
5^h 7⅓^m [5 7⅓]			49° 0′	43° 20½′			
5^h 8⅔^m [5 8⅔]	45° 43½′					4° 35′	
5^h 10⅓^m [5 10⅓]			50° 0′	43° 1¼′			
5^h 10⅚^m [5 10⅚]					77 38		
5^h 13⅚^m [5 13⅚]	45° 51′					4° 3′	
5^h 15⅙^m [5 15⅙]			51° 30′	42° 30′			
5^h 16⅙^m [5 16⅙]		17° 35′					
		17° 35½′					
5^h 17⅚^m [5 17⅚]							2° 41½′
5^h 24^m [5 24]			54° 0′	41° 31⅙′			

On the same 3 March, in the evening. [Eodem 3 Martij, Veſperi.]

Time	Distance of Venus from Aldebaran [Diſt. ♀ ab Aldeb.]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus	The Greater Dog, east [Can. mai. or.]	Note
6^h $31\frac{2}{3}^m$ [6° 44′ $31\frac{2}{3}$]							
6^h 32^m 15^s [6 32 15]		17° 35′	17° 35½′	32° 51½′			
6^h $34\frac{1}{2}^m$ [6° 44′ $34\frac{1}{2}$]		17° 36′	17° 36′				
6^h 37^m [6° 42′ 37]		17° 36½′				3 50	
6^h $38\frac{5}{6}^m$ [6° 42⅓′ $38\frac{5}{6}$]		17° 36′					
				Altitude of Venus [Alt. ♀]	*Azimuth of Venus [Azim. ♀]*	*The Lesser Dog, west [Can. min. occ.]*	
7^h $51\frac{2}{3}^m$ [7 $51\frac{2}{3}$]				*22° 5′*	*89° 0′*	*2 15½*	*N.B. Venus about the 90th degree. [N.B. ♀ circa 90 gradum.]*
7^h $56\frac{2}{5}^m$ [7 $56\frac{2}{5}$]				*21° 27⅙′*	*90° 0′*	*3 25*	
8^h $1\frac{1}{3}^m$ [8 $1\frac{1}{3}$]				*20° 46′*	*91° 0′*	*4 40*	

N.B. I compared the transit of Venus through the meridian, together with its declination at that time, with the declination near the 90th degree, when it was elevated about 20°; and in both cases I found that the declination of Venus corresponds to its change from one noon to the other, so that the parallax is entirely insensible, whereas according to the Ptolemaic hypothesis it ought to be about 4′, quite perceptible. But you can examine this more carefully later. [*N.B. Ego contuli tranſitum ♀ per meridianum vna cum declinatione eius tunc cum declinatione iuxta 90 gradum, quando eleuabatur quaſi partibus 20, & vtrobique inueni ♀ declinationem correſpondere mutationi eius ab vno meridie in alterum, ita vt Parallaxis ſit prorſus inſenſibilis, cum tamen iuxta Ptolemaicam Hypotheſin debeat eſſe Minutorum quaſi 4 ſatis perceptibilis. Sed potes hæc poſtea diligentius examinare.*]

4 March [DIE 4 MARTIJ.]

N.B. At noon on 4 March the clock was running 0^m 40^s [0′ 40″] faster than correct, and that since the immediately preceding noon. [N. B. Horologium in Meridie diej 4. Martij 0′ 40″ iuſto celerius mouebatur, idque a Meridie proxime antecedenti.]

At 2^h 46½^m Venus was on the meridian, having altitude [H. 2 M. 46½ fuit ♀ in meridie habens altit.]

Line	Value
by the revolving quadrant [per Volub.]	51° 59⅓′
by the steel instrument [per Chalyb.]	51° 59⅚′
The declination of Venus was then [Declinatio ♀ tunc erat]	17° 55′ with one [17 55 vno]
	17° 54′ with the other pinnule [17 54 altero pin.]

---[2]

N.B. I compared the transit of Venus through the meridian, together with its [?] declination then [?], [Illegible: one word, struck through] with the declination near the 90th degree, when it was elevated about 20°; and in both cases I found [?] that the declination of Venus corresponds to its [?] change from one noon to the other, so that the parallax is [?] entirely insensible, whereas according to the Ptolemaic [?] hypothesis [?] it ought [?] to be [?] about 4′ [?], quite perceptible. But [?] you can examine these [?] later more carefully [?]. [N.B Ego [?] contuli trāſitū ♀ / p meridianū vna cū decli / natioe eius [?] tunc [?] [struck through: illegible] Cum / decl–atioe iuxta 90 gradū / quādo eleuabatur quaſi partib3.20 / & Vtrobiq; inueni [?] ♀ declinatio / nem correſpondere mutationi / eius [?] ab Vno meridie in alterū / Ita vt Paralaxis ſit [?] prorſus / Inſenſibilis | cum tamē iuxta / ptolemaicā [?] Hypotheſin [?] debeat [?] eē [?] / Mi[?] quaſi 4 ſatis ꝑceptibilis. / S3 [?] potes hæc [?] poſtea diligentius [?] / Examinare]

Time [Tempus]	Distance between Venus and the Sun [Diſt. inter ♀ & ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ☉ per Q. min. azim.]	The Sun, west [Sol occid.]
3^h 19⅓^m [3 19⅓]	4[3° 55′			51° 27¾′		18° 55′	
3^h 23⅚^m [3 23⅚]	4[3° 55½′	17° 55½′	17° 56¼′	51° 22⅔′		18° 25′	51 1
3^h 32^m 35^s [3 32 35]	[3 55½′			51° 1′		17° 23′	53 11½
3^h 37⅚^m [3 37⅚]	4[3° 54¾′			50° 46′		16° 48′	54 29½
3^h 43^m [3 43]	[345° 54¾′	17° 56¼′		50° 32⅓′		16° 11′	55 46½
3^h 51^m 25^s [3 51 25]	[3			50° 8½′	24° 30′		
3^h 51⅚^m [3 51⅚]	4[3° 55¼′					15° 7′	58 2

[2] This page reproduces a handwritten page in facsimile; it carries no printed caption.

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ☉ per Q. min. azim.]	The Sun, west [Sol occid.]
3h 56⅓m [3 56⅓]	45° 54¾′					14° 33′	59 6
3h 56⅝m [3 56⅝]		17° 56¾′	17° 57′	49° 42′	26° 30′		
4h 1m [4 1]				49° 28′	28° 0′		
4h 3⅓m [4 3⅓]	45° 55′					13° 42′	60 50
4h 5⅓m [4 5⅓]				49° 8⅔′	29° 30′		
4h 9½m [4 9½]	45° 54′					12° 55′	
4h 12½m [4 12½]				48° 39¼′	32° 0′	12° 25′	63 17½
4h 13m 15s [4 13 15]	45° 53½′	17° 57¾′					
4h 21⅝m [4 21⅝]	45° 54′					11° 19′	65 30
4h 24½m [4 24½]				47° 47½′	36° 0′		
4h 29m 35s [4 29 35]	45° 52¾′					10° 17′	
4h 30⅓m [4 30⅓]				47° 16′	38° 0′		
4h 32⅓m [4 32⅓]	45° 52¼′	17° 58′ with both [17 58 vtroque]				9° 56′	68 7
4h 34⅝m [4 34⅝]				46° 51¼′	39° 30′		
4h 39m 5s [4 39 5]	45° 51¼′			46° 28′	41° [41]	9° 2′	69 51
4h 45m [4 45]	45° 51¾′					8° 16′	71 17
4h 47m 35s [4 47 35]				45° 41½′	43° 30′		
4h 51m 5s [4 51 5]	45° 51′	17° 57½′	17° 58′			7° 26′	72 45
4h 55m 35s [4 55 35]				44° 55¾′	46° 0′		
4h 58⅔m [4 58⅔]	45° 50′					6° 24′	74 42
5h 0m 15s [5 0 15]				44° 25′	47° 30′		
5h 7⅝m [5 7⅝]	45° 49¾′					5° 10′	76 58
5h 9⅓m [5 9⅓]		17° 58′	17° 58½′	43° 29¾′	50° 0′		

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ☉ per Q. min. azim.]	The Sun, west [Sol occid.]
5h 15⅔m [5 15⅔]				42° 45′	52° 0′		
5h 19⅓m [5 19⅓]	45° 47¾′					3° 36′	
5h 20⅚m [5 20⅚]				42° 6¼′	53° 30′		

After sunset. After supper Venus was observed again. [*Post ☉ occasum.* Post cenam obseruabatur iterum ♀]

Time [Tempus]	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	The Greater Dog, east [Canis mai. or.]
6h 8m [6 8]				36° 28⅔′	66° 0′	
6h 12⅙m [6 12⅙]				35° 57′	67° 0′	9 2
6h 20⅔m [6 20⅔]		18° 0′	17° 59¾′	34° 51½′	69° 0′	7 1
6h 23⅚m [6 23⅚]	25° 53⅓′					6 10
6h 24⅔m [6 24⅔]				34° 19′	70° 0′	6 0
6h 29⅓m [6 29⅓]	25° 53¼′	18° 0′	18° 0½′			4 47½
6h 32⅔m [6 32⅔]				33° 15′	72° 0′	3 55½
7h 23m [7 23]	25° 50′	18° 1½′	18° 2′			8 32 west [8 32occ.]
					Venus was at [Fuit ♀ in]	*The Lesser Dog, west* [*Can. min. occ.*]
7h 54⅚m [7 54⅚]		*18° 1½′*	*18° 2′*	*21° 55⅙′*	90° 0′	*5 57½*
7h 56⅔m [7 56⅔]		*18° 2′*	*18° 2½′ good* [*18 2½ bona*]			
8h 1⅔m [8 1⅔]	*25° 50′*	*18° 2′*	*18° 2′*			*5 41*
8h 4½m [8 4½]				20° 30½′	92° 0′	*6 22*
8h 5m 55s [8 5 55]	*25° 50¾′*	*18° 2′ with both* [*18 2 vtroque*]				*6 43*

B. The declination of Venus by the armillae 18° 2′, the armillae having been corrected. From the altitude and azimuth, 18 0½. [*B. Declinatio ♀ per Armillas 18 2* correctis Armillis. / ex altit. & Azimuth 18 0½]

6 MARCH, IN THE EVENING [DIE 6 MARTIJ, VESPERI.]

Time	Altitude of Venus [Altit. ♀]	Azimuth [Azim.]	The Lesser Dog, west [Can. min. occ.]
7^h 53½^m [7 53½]	22° 48¾′	90° 0′	5 12

10 MARCH, IN THE EVENING [DIE 10 MARTIJ, VESPERI.]

Time [Tempus]	Distance between Venus and Aldebaran [Dist. inter ♀ & Aldeb.]	Declination of Venus, north [Declinatio ♀ B.]	Declination of Venus, north (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	The Lesser Dog, east [Can. min. orient.]
7^h 21⅓^m [7 21⅓]	21° 14′	20° 10′ with both [20 10 vtroque]		29° 35⅔′	82° 31′	1 35⅔
7^h 24⅔^m [7 24⅔]	21° 13½′	20° 10½′	20° 11′	29° 10′	83° 6′	0 46½ west [occid.]
7^h 30⅚^m [7 30⅚]	21° 13⅚′	20° 10½′	20° 11′	28° 21⅚′	84° 19′	0 40
7^h 38^m [7 38]	21° 14′	20° 10½′	20° 11′	27° 20¼′	85° 53′	2 25
7^h 43½^m [7 43½]	21° 13¾′	20° 11½′	20° 10⅔′	26° 39¼′	86° 57′	3 42
7^h 59^m 25^s [7 59 25]		20° 11′	20° 11¼′	24° 33½′ by the revolving quadrant [per Volub.]	90° 0′	7 26

11 MARCH, IN THE AFTERNOON [DIE 11 MARTIJ, POST MERIDIEM]

Venus was observed again, as follows. [obſeruabatur ♀ iterum vt ſequitur.]

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus, north [Declinatio ♀ B.]	Declination of Venus, north (second figure)	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the min. azimuthal quadrant [Altit. ☉ per Q. min. azim.]	The Sun, west
11^h 14¼^m [11 14¼]		20° 21⅚′	20° 22½′			

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ⊙]	Declination of Venus, north [Declinatio ♀ B.]	Declination of Venus, north (second figure)	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the min. azimuthal quadrant [Altit. ⊙ per Q. min. azim.]	The Sun, west
12h 29⅓m [12° 11½′ 29⅓]				46° 17¾′	34° 5′	
12h 33⅓m [12° 11¾′ 33⅓]				46° 45′	34° 1′	
12h 37⅚m [12° 12½′ 37⅚]				47° 9′	33° 55′	
12h 41m 35s [12° 12′ 41 35]		20° 22′	20° 23′	47° 35½′	33° 50′	
12h 50⅚m [12° 11′ 50⅚]				48° 25′	33° 43′	
						The Sun, west [⊙ occid.]
12h 58⅔m [12 58⅔]						14 15 for the clock [pro horol.]
1h 1m 45s [14 1 45]	5° 10½′			49° 24′	32° 59′	
1h 9⅔m [14 9⅔]	5° 10⅚′	20° 22½′	20° 23′	50° 5¼′	32° 35′	
1h 14¾m [1 14¾]						18 15
2h 28⅔m [2 28⅔]	5° 10¾′			54° 15¾′	27° 15′	
2h 33½m [2 33½]	5° 10¼′			54° 20′	26° 37′	
2h 42⅓m [2 42⅓]	5° 10′	20° 25′	20° 25¾′	54° 28′	25° 40′	
2h 48½m [2 48½]	♀ Venus crossed the meridian, having [Transiuit ♀ per Merid. habens]					
2h 45m [2 45]	altitude by the steel instrument [altitudinem per Chalybeum]			54° 29⅙′		
corrected [corr.]	by the revolving quadrant [per Volubilem]			54° 30′		

Time [Tempus]	Distance between Venus and the Sun [Dift. inter ♀ & ☉]	Declination of Venus, north [Declinatio ♀ B.]	Declination of Venus, north (second figure)	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the min. azimuthal quadrant [Altit. ☉ per Q. min. azim.]	The Sun, west
At that time [Tunc temporis]		20° 25′	20° 25¼′		25° 13′	41 15
2h 57⅚m [2 57⅚]	45° 9′			54° 28½′	24° 18′	
3h 2⅔m [3 2⅔]	45° 8½′			54° 21′	23° 42′	
3h 7½m [3 7½]	45° 9¼′			54° 19′	23° 11′	
3h 14⅔m [3 14⅔]	45° 10′			54° 9′	22° 23′	
3h 19⅓m [3 19⅓]	45° 9⅙′			54° 2′	21° 51′	48 58
3h 29⅚m [3 29⅚]	45° 8¼′	20° 26¾′ twice [20 26¾ bis]		53° 40′	20° 40′	51 25
3h 43m [3 43]	45° 9½′			53° 3½′	19° 10′	54 36½
4h 4m [4 4]	45° 8½′	20° 27½′ with one [20 27½ vno]		51° 53′	16° 34′	59 52½
4h 12⅙m [4 12⅙]	45° 7¾′			51° 17′	15° 33′	61 51⅓
4h 17⅙m [4 17⅙]	45° 8¼′			50° 55′	14° 55′	63 6

On the same day, in the evening. [Eodem die veſperi.]

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	The Greater Dog, west [Can. mai. occ.]
6h 58½m [6 58½]						6 50⅔
6h 59m 45s [6 59 45]						7 9
7h 0⅓m [7 0⅓]						7 12

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	The Greater Dog, west [Can. mai. occ.]
$7^h\ 4^m$ [7 4]	20° 35′	20° 30¼′ with one pinnule [20 30¼ vno pin.]		31° 53′		8 13
$7^h\ 10½^m$ [7 10½]	20° 33½′	20° 30′	20° 30⅓′	31° 0′	80° 50′	9 49
$7^h\ 15½^m$ [7 15½]	20° 33⅙′	20° 30¼′	20° 30′	30° 15¾′	82° 0′	11 5
$7^h\ 23⅔^m$ [7 23⅔]	20° 33′	20° 30⅙′	20° 30⅓′	29° 10⅔′	83° 41′	13 5
						The Lesser Dog, west [Can. min. occ.]
$7^h\ 27½^m$ [7 27½]	20° 33½′	20° 30½′ twice [20 30½ bis]		28° 40⅔′	84° 30′	1 35
$7^h\ 54^m\ 25^s$ [7 54 25]	*Venus crossed the 90th degree exactly [Tranſiuit ♀ per 90 gradum exacte]*					
$7^h\ 50½^m$1 corrected [7 50½1 corr.]		*20° 31¼′*	*20° 31½′*	*24° 58⅚′ by the steel instrument [24 58⅚ per Chal.]*		*6 34*

The following were observed again for the clock, because earlier, when the Lesser Dog was being observed, it was not clear enough. [Denuo pro horologio ſequentia obſeruabantur, quia antea non erat ſatis ſerenum vbi Canis minor obſeruabatur.]

Time	Line	Value
$8^h\ 2⅚^m$ [8 2⅚]	The Lesser Dog was west [Erat Canis minor occid.]	10° 2½′
$8^h\ 3½^m$ [8 3½]		10 12⅓
$8^h\ 4½^m$ [8 4½]		10 28

13 March, in the afternoon [DIE 13 MARTIJ, POST MERIDIEM.]

Time	Between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Altitude of the Sun [Altit. ⊙]	The Sun, west
$3^h\ 17⅚^m$ [3 17⅚]		21° 4½′	21° 5′	54° 55½′	24° 2′	

Time	Between Venus and the Sun [Inter ♀ & ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Altitude of the Sun [Altit. ☉]	The Sun, west
3^h 22⅚^m [3 22⅚]	44° 50½′			54° 51′	23° 33′	
3^h 27⅔^m [3 27⅔]	44° 50′	21° 5′	21° 5½′	54° 46⅓′	23° 3′	
3^h 37⅚^m [3 37⅚]	44° 49¾′			54° 28⅓′	21° 57′	
3^h 44½^m [3 44½]	44° 47′	21° 5′	21° 5½′	54° 15¼′	21° 15½′	The Sun, west [☉ occid.]
3^h 56⅔^m [3 56⅔]	44° 51′			53° 45′	19° 58′	for the clock [pro horologio]
4^h 1¼^m [4 1¼]						55 30
4^h 6⅙^m [4 6⅙]	44° 49¼′	21° 5½′		53° 13′	18° 54′	
4^h 17⅙^m [4 17⅙]	44° 48⅙′			52° 37⅔′	17° 35′	
4^h 30⅓^m [4 30⅓]	44° 48½′	21° 5′	21° 5½′	51° 43′	16° 0′	62 17
4^h 45⅓^m [4 45⅓]	44° 48¼′			50° 35′	14° 5′	65 47
5^h 3⅙^m [5 3⅙]	44° 49′	21° 5¾′	21° 6′	48° 51′	11° 56′	69 55½
5^h 17⅔^m [5 17⅔]	44° 47′			47° 35′	10° 2′	73 26½
5^h 31⅓^m [5 31⅓]	44° 46′			46° 10′	8° 10′	
5^h 36⅚^m [5 36⅚]		21° 6½′	21° 6′			
5^h 47^m 50^s [5 47 50]	44° 44½′			44° 15′	5° 59′	80 45
5^h 58⅙^m [5 58⅙]	44° 42¼′	21° 7¼′	21° 8′	43° 13′	4° 51′	83 9
6^h 8^m [6 8]	44° 40′	21° 7½′	21° 8′	42° 5¾′	3° 18′	

14 March, in the afternoon [DIE 14 MARTIJ, POST MERIDIEM.]

Time [Tempus]	Distance of Venus from the Sun [Dist. ♀ a ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Altitude of the Sun [Altit. ☉]
1^h 40^m [1 40]		21° 20′	21° 19¾′		
1^h 43⅔^m [1 43⅔]	44° 42′			48° 47¾′	34° 50′
1^h 47^m [1 47]	44° 42′	21° 20½′	21° 21′	49° 8′	34° 43′

Time [Tempus]	Distance of Venus from the Sun [Dist. ♀ a ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Altit. ♀]	Altitude of the Sun [Altit. ☉]
1h 49⅔m [49⅔]	[44° 42¼′			49° 22½′	34° 37′

[1] Struck through with lines. [Lineis inducta.]

15 March, in the afternoon [DIE 15 MARTIJ, POST MERIDIEM.]

Time [Tempus]	Distance of Venus from the Sun [Dist. ♀ a ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Alt. ♀]	Azimuth of Venus [Azim. ♀]	Altitude of the Sun by the revolving quadrant [Altit. ☉ per Volub.]	The Sun, west
0h 16m [0 16]		21° 37¼′					
0h 29⅚m [0 29⅚]	[44° 28¾′					35° 31½′	
0h 34⅓m [0 34⅓]	[44° 29¼′	21° 39½′	21° 39¾′			35° 26½′	
0h 37⅚m [0 37⅚]						35° 20⅚′	
1h 49⅙m [1 49⅙]	[44° 28½′	21° 38⅔′ with one [21 38⅔ vno]				31° 39′	
1h 56⅓m [1 56⅓]	[44° 28¾′	with the other [alt.]	21° 39⅚′			31° 8⅚′	
2h 2⅚m [2 2⅚]	[44° 28′	21° 40⅙′ with one [21 40⅙ vno]				30° 37′	
2h 7⅙m [2 7⅙]	[44° 28½′	21° 40⅔′				30° 14′	
2h 13m [2 13]	44° 29⅙′	21° 41′				29° 42⅔′	
2h 19½m [2 19½]	[44° 29′	21° 41′				29° 8⅙′	
						by the min. azimuthal quadrant [Per Q. min. az.]	
2h 29m [2 29]	44° 29¼′					28° 15′	
2h 30m [2 30]				55° 40½′	6° 0′ east [6 0 or.]		

Time [Tempus]	Distance of Venus from the Sun [Dist. ♀ a ⊙]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Alt. ♀]	Azimuth of Venus [Azim. ♀]	Altitude of the Sun by the revolving quadrant [Altit. ⊙ per Volub.]	The Sun, west
2^h 37^m 5^s [244° 27¾′ 37 5]				55° 43′	3° 0′	27° 27′	The Sun, west [⊙ occid.]
2^h $44\frac{2}{3}^m$ [*2 44⅔*]		*21° 40½′*	*21° 41′*	*Venus crossed the meridian* [*Transiuit ♀ per Meridianum*]			40 48½
2^h $43\frac{1}{4}^m$ corrected [2 43¼ corr.]	*repeated* [*repetita*]	*21° 41½′*	*21° 41⅙′*	*55° 43⅔′ by the steel instrument* [*55 43⅔ per Chalyb.*]			
				55° 44⅚′ by the revolving quadrant [*55 44⅚ per Volub.*]			
2^h $59\frac{1}{2}^m$ [244° 28⅙′ 59½]				55° 38⅓′		25° 5′	
3^h $12\frac{1}{3}^m$ [344° 27¾′ 12⅓]				55° 20′		23° 40′	
3^h 22^m [3 44° 27¾′ 22]		21° 41¼′	21° 41¾′	55° 2½′		22° 32′	
3^h $31\frac{1}{6}^m$ [3 31⅙]				54° 41⅔′	19° 0′		
3^h 40^m [3 44° 27½′ 40]				54° 15′		20° 20′	
3^h $47\frac{2}{3}^m$ [344° 27′ 47⅔]		21° 42⅙′		53° 50½′		19° 25′	
3^h $59\frac{1}{3}^m$ [344° 27½′ 59⅓]				53° 3′		17° 57½′	
4^h $3\frac{5}{6}^m$ [4 44° 26¾′ 3⅚]		21° 42¼′	21° 42½′			17° 22′	60 34
4^h $8\frac{1}{3}^m$ [4 8⅓]				52° 25¼′	33° 0′		
4^h $16\frac{1}{6}^m$ [444° 26′ 16⅙]				51° 46¾′		15° 40′	
4^h $22\frac{1}{3}^m$ [4 22⅓]				51° 15½′	38° 0′		
4^h $24\frac{2}{3}^m$ [444° 25½′ 24⅔]		21° 42½′	21° 42′			14° 40′	
4^h $27\frac{5}{6}^m$ [4 27⅚]	Declination of the Sun [Decl. ⊙]	1° 54½′	1° 54¼′			14° 13′	
4^h $41\frac{1}{3}^m$ [444° 25½′ 41⅓]						12° 29′	

Time [Tempus]	Distance of Venus from the Sun [Dist. ♀ a ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Alt. ♀]	Azimuth of Venus [Azim. ♀]	Altitude of the Sun by the revolving quadrant [Altit. ☉ per Volub.]	The Sun, west
$4^h\ 44^m$ [4 44]				49° 21½′	45° 0′		70 28
$4^h\ 54⅓^m$ [444° 24¼′ 54⅓]		21° 42¾′ with both [21 42¾ vtroque]		48° 13′		10° 49′	
$4^h\ 57⅓^m$ [4the Sun [☉] 57⅓]		1° 57′				10° 24′	
$5^h\ 18^m$ [5 18]	44° 24½′			45° 43′		7° 31′	

On the same day, in the evening. [Eodem die veſperi.]

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Alt. ♀]	Azimuth of Venus [Azim. ♀]	The Greater Dog, west [Can. mai. occ]
$6^h\ 57⅔^m$ [6 57⅔]	17° 57¼′	21° 44⅔′	21° 45′	32° 55′	80° 15′	11 16½
$7^h\ 0⅚^m$ [7 0⅚]	17° 56¾′	21° 45′	21° 45¼′	32° 33½′	80° 49′	12 10
$7^h\ 4½^m$ [7 4½]	17° 56¼′	21° 45′	21° 45½′			12 56
$7^h\ 6⅓^m$ [7 6⅓]				31° 48⅙′	82° 0′	
$7^h\ 11⅚^m$ [7 11⅚]	17° 56½′	21° 45′	21° 45¼′			14 45½
$7^h\ 14⅙^m$ [7 14⅙]				30° 32′	84° 0′	
$7^h\ 44⅙^m$ [7 44⅙]	Venus was in the 90th degree, having an altitude of [Erat ♀ in 90 gradu habens altitudinem]					The Lesser Dog, west [Can. min. occ.]
$7^h\ 40½^m$ corrected [7 40½ corr.]				26° 33′ by the revolving quadrant [26 33 per Volub.]		10 9
				26° 33½′ by the steel instrument [26 33½ per Chalyb.]		

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Declinatio ♀]	Declination of Venus (second figure)	Altitude of Venus [Alt. ♀]	Azimuth of Venus [Azim. ♀]	The Greater Dog, west [Can. mai. occ]
At that time the declination of Venus was [Tunc erat Decl. ♀]		21° 46½′	21° 46¼′			

Time	Between Venus and the bright star of ♈ [Inter ♀ & lucid. ♈]	Third column (no head on this page)	Fourth column (no head on this page)	Fifth column (no head on this page)	Sixth column (no head on this page)	Seventh column (no head on this page)	At that time the altitude of the bright star of ♈ was, by the min. azimuthal quadrant [Tunc erat alt. luc. ♈ per Q. min. azim.]
7^h 54⅙^m [7 54⅙]	7′ 51′	21 46⅙ with one pinnule [21 46⅙ vno pin.]				12 40	
7^h 58⅚^m [7 58⅚]				24 32½	93 0		
8^h 1⅙^m [8 1⅙]	7′ 50¼′	21 46⅙	21 46½			14 20	12° 30′
8^h 4⅔^m [8 4⅔]		21 46⅓	21 46½			15 15½	12° 0′
8^h 13^m [8 13]	7′ 54½′	21 46⅙	21 46½	22 30		17 18	
8^h 16⅚^m [8 16⅚]	7′ 55′			22 6			
8^h 19⅔^m [8 19⅔]	7′ 55′	21 46⅙	21 46½	21 40			

16 March, in the evening [DIE 16 MARTIJ, VESPERI.]

Note. On this day, at 12^h 14⅚^m as the clock showed it, the Sun, west, was 0° 10½′. [Nota. Hoc die hora 12 14⅚′, horologio sic indicante, erat ⊙ occ. 0° 10½′.]

Time	Distance of Venus from Aldebaran [Dist. ♀ ab Aldeb.]	Declination of Venus [Decl. ♀]	Altitude of Venus by the min. azimuthal quadrant [Alt. ♀ per Q. min. az.]	The bright star of Hydra, west [Lucid. Hydræ occ.]
9^h 11½^m [9 11½]		22° 4′		0 4
		22° 5′		
9^h 31⅙^m [9 31⅙]		22° 4½′		
		22° 5⅙′		

Time	Distance of Venus from Aldebaran [Diſt. ♀ ab Aldeb.]	Declination of Venus [Decl. ♀]	Altitude of Venus by the min. azimuthal quadrant [Alt. ♀ per Q. min. az.]	The bright star of Hydra, west [Lucid. Hydræ occ.]
9^h 51^m [9 51]	17° 16½′	22° 6½′	12° 20′	
		22° 8′		
9^h $55⅔^m$ [9 55⅔]	17° 17½′	22° 7′	11° 45′	
		22° 7½′		
9^h $57½^m$ [9 57½]	17° 17′			11 19

17 March [DIE 17 MARTIJ.]

Time	Quantity	Value	Quantity	Value
12^h $23⅔^m$ [12 23⅔]	Declination of Venus [Decl. ♀]	22° 15′, 22° 16′		
12^h $29⅓^m$ [12 29⅓]	Between Venus and the Sun [Inter ♀ & ☉]	44° 6′,	Altitude of Venus [Alt. ♀]	48° 13½′
12^h 30^m [12 30]	Distance [Diſtantia]	44° 5′		

On the same day, in the evening [Eodem die veſperi]

Time	Quantity	Value	Quantity	Value
7^h $40⅓^m$ [7 40⅓]	Altitude of Venus [Altit. ♀]	28° 37½′	Azimuth [Azim.]	88° 0′
	The Lesser Dog, west [Canis minor occid.]	8 44		
8^h $45⅓^m$ [8 45⅓]	Declination of Venus [Declin. ♀]	22° 16⅙′, 22° 16⅓′		
	Altitude of Venus by the revolving quadrant [Altit. ♀ per Volub.]	27° 56⅚′		
	by the steel instrument [per Chalyb.]	27° 57⅚′		
	Azimuth [Azim.]	89° 0′,		
	The Lesser Dog, west [Canis minor. occ.]	9 52		
7^h $50⅓^m$ [7 50⅓]	Declination of Venus [Declin. ♀]	22° 16⅓′, 22° 16½′		
	Altitude of Venus by the revolving quadrant [Altit. ♀ per Volub.]	27° 16′		
	by the steel instrument [per Chalyb.]	27° 15⅔′		
	Azimuth of Venus [Azim. ♀]	90° 0′,		
	The Lesser Dog, west [Can. min. occ.]	11 6½		

18 March [DIE 18 MARTIJ.]

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ☉ per Q. min. az.]
12^h $10\frac{1}{2}^m$ [12 10½]		22° 30′		
		22° 31′		
12^h $20\frac{2}{3}^m$ [12 20⅔]	43° 50′		48° 8½′	36° 50′
12^h $23\frac{1}{2}^m$ [12 23½]	43° 50½′		48° 20¾′	36° 48′
12^h $53\frac{5}{6}^m$ [12 53⅚]	43° 50′		51° 20′	35° 46′
1^h 6^m [1 6]		22° 30½′		
		22° 31′		
2^h $38\frac{5}{6}^m$ [2 38⅚]	43° 48¾′		56° 36′	28° 17′
2^h $43\frac{1}{6}^m$ [2 43⅙]		22° 31¾′	The Sun, west [☉ occid.]	40 20½
2^h 41^m 22^s corrected [2 41 22″corr.]		22° 32¼′		
Altitude of Venus on the meridian, by the revolving quadrant [Alt. ♀ Merid. per Volub.]			56° 36⅙′	
by the steel instrument [per Chalyb.]			56° 35⅔′	Altitude of the Sun [Alt. ☉]
2^h 54^m [2 54]	43° 48′		56° 33′	26° 47′
3^h $3\frac{2}{3}^m$ [3 3⅔]	43° 47¾′		56° 22⅓′	25° 45′
3^h $12\frac{2}{3}^m$ [3 12⅔]	43° 46¾′	22° 31¾′	56° 12½′	24° 44′
		22° 32′		
3^h $20\frac{1}{6}^m$ [3 20⅙]	43° 47¼′		55° 57⅔′	23° 53′
3^h $23\frac{1}{6}^m$ [3 23⅙]			The Sun, west [☉ occ.]	50 0
3^h $25\frac{1}{6}^m$ [3 25⅙]			55° 44′	50 30
				Altitude of the Sun [Alt. ☉]
3^h $31\frac{1}{3}^m$ [3 31⅓]	43° 47′		55° 30′	22° 39′
3^h $40\frac{1}{3}^m$ [3 40⅓]	43° 47¾′		55° 6⅓′	21° 30′
3^h 43^m 40^s [3 43 40]		22° 32¼′ with one [22 32¼ vno]		
3^h $47\frac{1}{6}^m$ [3 47⅙]	43° 47¾′		54° 42¼′	20° 40′
3^h $54\frac{1}{2}^m$ [3 54½]	43° 47½′		54° 15′	19° 41′
4^h $4\frac{1}{6}^m$ [4 4⅙]	43° 46¾′		53° 35′	18° 30′
4^h 6^m [4 6]		22° 32⅓′		
		22° 32⅚′		
4^h 12^m [4 12]	43° 47′		52° 58′	17° 27′
4^h $17\frac{2}{3}^m$ [4 17⅔]	43° 46¾′		52° 32⅔′	16° 45′
4^h $19\frac{1}{3}^m$ [4 19⅓]		22° 32½′ twice [22 32½ bis]		
4^h $25\frac{1}{3}^m$ [4 25⅓]	43° 46′		51° 56′	15° 42′
4^h $31\frac{1}{6}^m$ [4 31⅙]	43° 46¾′		51° 24′	14° 57′

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ☉ per Q. min. az.]
4^h 33⅙^m [4 33⅙]		22° 32½′		
		22° 32¾′		
4^h 40⅓^m [4 40⅓]	43° 46′		50° 30′	13° 41′
4^h 47⅙^m [4 47⅙]	43° 45′	22° 32⅔′		12° 40′
		22° 33′		
4^h 58½^m [4 58½]	43° 44′		48° 44′	11° 23′
5^h 9⅓^m [5 9⅓]	43° 43¾′		47° 38¼′	9° 54′
5^h 12½^m [5 12½]		22° 33½′		
		22° 32¾′		
5^h 16⅚^m [5 16⅚]	Declination of the Sun [Dec. ☉]	3° 4½′		
		3° 5′		
5^h 29⅙^m [5 29⅙]	43° 43½′			7° 14′

On the same day, in the evening [Eodem die veſperi]

Time	Between the eye of ♉ and Venus [Inter ocul. ♉ & ♀]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	The Greater Dog, west [Can. mai. occ.]
7^h 17⅓^m [7 17⅓]	16° 14½′	22° 34′	31° 26′	17 25
		22° 33⅔′		
7^h 19½^m [7 19½]	16° 14¾′	22° 34′		17 57
		22° 33⅚′		
7^h 22^m [7 22]	16° 14¾′	22° 34′	30° 49′	18 34½
		22° 34¼′		
7^h 25⅓^m [7 25⅓]	16° 14½′	22° 34′	30° 20¼′	19 24
		22° 34⅓′		
7^h 35⅓^m [7 35⅓]	Azimuth of Venus 88° 0′, [Az. ♀ 88 0,]			
		by the revolving quadrant [per Vol.]	28° 59⅙′	21 50½
		by the steel instrument [per Chalyb.]	28° 59⅓′	
7^h 40¼^m [7 40¼]	89° 0′,			
		by the revolving quadrant [per Vol.]	28° 18½′	The Lesser Dog [Can. min.]

Time	Between the eye of ♉ and Venus [Inter ocul. ♉ & ♀]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	The Greater Dog, west [Can. mai. occ.]
		by the steel instrument [per Chalyb.]	28° 18⅝′	10 24
7^h 45^m [7 45]		22° 34½′		11 34
7^h $31¾^m$ corrected [7 31¾corr.]		22° 35′		
At that time Venus was in the 90th degree, having an altitude of [Tunc erat ♀ in 90 gradu habens altit.]				
		by the revolving quadrant [per Vol.]	27° 39′	
		by the steel instrument [per Chal.]	27° 38⅝′	
7^h 50^m 5^s [7 50 5]	Azimuth [Azim.]	by the revolving quadrant [per Vol.]	26° 58¼′	The Lesser Dog [Can. min.]
	91° 0′	by the steel instrument [per Chal.]	26° 58⅔′	12 59
7^h $55⅙^m$ [7 55⅙]	92° 0′	by the revolving quadrant [per Vol.]	26° 16¼′	14 4
		by the steel instrument [per Chal.]	26° 16⅝′	

19 March, in the afternoon [DIE 19 MARTIJ P. M.]

Time [Tempus]	Distance between Venus and the Sun [Dift. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ☉ per Q. min. azim.]
2^h $9⅓^m$ [2 9⅓]		22° 47¾′		
		22° 48′		
2^h 25^m [2 25]	43° 34½′		56° 42′	30° 17′
2^h $27⅓^m$ [2 27⅓]	43° 34′		56° 42¾′	30° 5′
2^h $31⅓^m$ [2 31⅓]	43° 33¾′		56° 46⅔′	
2^h $37⅙^m$ [2 37⅙]		22° 47¾′		
		22° 48½′		
2^h $39⅚^m$ [2 39⅚]	43° 33′		56° 51¾′	28° 51′
2^h $41⅓^m$ [2 41⅓]	43° 33¼′		56° 52′	28° 42′
2^h $43½^m$ [2 43½]	Venus crossed [Tranſiuit ♀]			

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun by the min. azimuthal quadrant [Alt. ☉ per Q. min. azim.]
	the meridian, having an altitude of [per meridianum habens altit.]			
	by the revolving quadrant [per Vol.]		56° 52′	
	by the steel instrument [per Chalyb.]		56° 51½′	
At that time the declination was [Tunc erat Decl.]		22° 48½′		
		22° 48′	The Sun, west [☉ occid.]	40 16
2h 49⅔m [2 49⅔]	43° 33¼′		56° 51⅙′	27° 51′
2h 52⅚m [2 52⅚]	43° 33½′		56° 49¾′	27° 31′
2h 57m [2 57]	43° 33′		56° 48⅓′	27° 3′
3h 0⅙m [3 0⅙]	43° 32¾′		56° 43′	26° 43′
3h 10⅚m [3 10⅚]	43° 33½′		56° 29′	
3h 25⅔m [3 25⅔]	43° 32¼′	22° 49′	55° 58½′	
		22° 48½′		
3h 42⅔m [3 42⅔]	43° 32′			21° 44′
3h 49m [3 49]	43° 30′	22° 49′ with one [vno]	54° 47′	20° 59′
4h 0m [4 0]	43° 31½′		54° 3′	19° 40′
4h 12m [4 12]	43° 30′		53° 11′	18° 5′
4h 20⅚m [4 20⅚]	43° 30½′	22° 49¼′	52° 26½′	16° 59′
		22° 49¾′		
4h 32½m [4 32½]	43° 30⅓′	22° 48¼′	51° 22′	15° 23′
		22° 48⅔′		
4h 46½m [4 46½]	43° 29½′		49° 58′	13° 30′
4h 59m [4 59]		22° 48½′		
		22° 49′		
5h 10m [5 10]	43° 29′	22° 50′	47° 27′	10° 21′
		22° 49½′		
5h 20⅔m [5 20⅔]	43° 28¾′		46° 15′	8° 54′
5h 27⅚m [5 27⅚]	43° 27′	22° 49⅙′		7° 45′
		22° 49¾′		

On the same day, the 19th, in the evening. [Eodem die 19 veſperi.]

Time [Tempus]	Between Venus and Aldebaran [Inter ♀ & Aldebor.]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	The Lesser Dog, west [Can. min. occ.]
7h 22½m [7 22½]	15° 44½′		30° 23½′	
7h 25⅙m [7 25⅙]	15° 45′	22° 50½′	30	8 28

Time [Tempus]	Between Venus and Aldebaran [Inter ♀ & Aldebor.]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	The Lesser Dog, west [Can. min. occ.]
		with both [vtroque]		
7^h 28½^m [7 28½]	15° 44¾′			9 16
7^h 35⅓^m [7 35⅓]	Azimuth 89° 0′, [Azim. 89 0,]	by the revolving quadrant [Vol.]	28° 39⅔′	10 54
		by the steel instrument [Chalyb.]	28° 39½′	
7^h 40½^m [7 40½]	Venus was in the 90th degree [Fuit ♀ in 90 Gradu]			
7^h 30½^m corrected [7 30½corr.]	having an altitude of [habens Altit.]			
		by the revolving quadrant [per Volub.]	27° 58⅙′	
		by the steel instrument [per Chalyb.]	27° 57⅚′	
At that time the declination was [Tunc erat Decl.]		22° 50½′		12 19
		22° 51′		
7^h 45⅙^m [7 45⅙]	Azimuth 91° 0′, [Azim. 91 0,]	by the steel instrument [Chal.]	27° 18⅓′	13 23
		by the revolving quadrant [Volub.]	27° 17¾′	
7^h 52⅔^m [7 52⅔]			26° 10′	15 6
	Venus from the bright star of ♈ [♀ a luc. ♈]		Altitude of the bright star of ♈ [Alt. luc. ♈]	
7^h 54⅓^m [7 54⅓]	20° 36½′		12½°	15 35½
7^h 56^m [7 56]		22° 51⅙′		
		22° 50⅚′		
7^h 57^m [7 57]	20° 35½′			
7^h 58⅓^m [7 58⅓]	20° 36′		12° 0′	16 30½

21 March, in the afternoon [DIE 21 MARTIJ, P. M.]

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun [Alt. ☉]
2^h 2⅓^m [2 2⅓]	42° 59⅔′		57° 6′	31° 50′
2^h 21⅓^m [2 21⅓]	42° 59′	23° 19′	57° 12′	31° 30′

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun [Alt. ⊙]
		with both [vtroque]		
2^h 36½^m [2 42° 59½′ 36½]			57° 19′	30° 45′
2^h 39⅙^m [2 42° 59′ 39⅙]			57° 21½′	

Time	Distance between Venus and the Sun (head on p. 73)	Declination of Venus (head on p. 73)	Altitude of Venus (head on p. 73)	Altitude of the Sun (head on p. 73)
	For the clock, the Sun, west [Pro horologio, ⊙ occ.]			37 46½
2^h 44⅙^m [2 44⅙]				38 56½
2^h 45^m [2 45]			57° 22½′	
2^h 48⅙^m [2 48⅙]	Venus was on the meridian, having an altitude of [Erat ♀ in Mer. habens alt.]			
2^h 39¼^m corrected [2 39¼ corr.]	by the steel instrument [per Chal.]		57° 22¾′	
	by the revolving quadrant [per Vol.]		57° 23⅓′	
At that time the declination was [Tunc erat Decl.]		23° 19½′	The Sun, west [⊙ occ.]	39 49
		23° 19¼′		Altitude of the Sun by the min. quadrant [Alt. ⊙ per Q. min.]
2^h 57⅓^m [2 57⅓]	42° 58½′		57° 19′	28° 40′
				The Sun, west [⊙ occ.]
3^h 0½^m [3 0½]	42° 58½′		57° 18½′	42 48½
				Altitude of the Sun [Alt. ⊙]
3^h 48^m [3 48]	42° 58¼′		55° 42½′	23° 10′
3^h 53⅙^m [3 53⅙]	42° 58′	23° 20′	55° 32′	22° 30′
		23° 20′		
4^h 4⅔^m [4 4⅔]	42° 57′		54° 47′	21° 5′
4^h 14⅔^m [4 14⅔]	42° 57′		54° 4′	19° 50′
4^h 23⅔^m [4 23⅔]	42° 57½′		53° 22¾′	18° 40′
4^h 30⅔^m [4 30⅔]	42° 56¾′		52° 44½′	17° 40′
4^h 41^m [4 41]	42° 56⅓′		51° 51′	16° 20′
4^h 53^m [4 53]	42° 56′	23° 20′	50° 43′	14° 45′
		23° 19¾′		
4^h 56^m [4 56]	42° 55′		49° 3′	12° 30′
4^h 56¾^m [4 56¾]	For the clock, the Sun, west [Pro horologio ⊙ occ.]			74 5

Around these times[1] the clock was not much to be trusted, because at times it was standing still, and at other times it ran. [Circa hæc tempora[1] non adeo fidendum horologio, quia interdum quieſcebat, interdum autem mouebatur.]

Time	Second column (no head on this page)	Declination of Venus (head on p. 73)	Altitude of Venus (head on p. 73)	Last column
5^h $4\frac{1}{2}^m$ [5 4½]	42° 53⅚′		48° 0′	11° 15′
5^h $8\frac{1}{3}^m$ [5 8⅓]		23° 20′		
5^h $11\frac{1}{2}^m$ [5 11½]	For the clock, the Sun, west [Pro horologio ⊙ occid.]			77 30
5^h $18\frac{1}{6}^m$ [5 18⅙]	42° 53½′			9° 30′
5^h $22\frac{1}{2}^m$ [5 22½]	42° 53′		45° 59′	9° 20′
5^h 35^m [5 35]	42° 52¾′	23° 20½′ 23° 20¼′	44° 33¾′	7° 45′
5^h $38\frac{2}{3}^m$ [5 38⅔]	For the clock, the Sun, west [Pro horologio ⊙ occid.]			83 45
5^h $52\frac{1}{2}^m$ [5 52½]	42° 51′	23° 21′	42° 32′	5° 10′
		23° 20¾′		The Lesser Dog, west [Can. min. occ.]
		23° 21⅙′	29° 47′	11 2
		23° 20⅚′	by the revolving quadrant [Volub.]	
7^h $13\frac{1}{6}^m$ [7 13⅙]		23° 21⅓′	29° 12′	12 2
	Azimuth of Venus [Azim. ♀]		by the steel instrument [Chalyb.]	
	89° 0′	23° 21′	29° 12⅓′	
7^h 18^m 5^s [7 18 5]	Venus was in the 90th [Erat ♀ in 90]		28° 37¼′	13 3½
7^h $30\frac{2}{3}^m$ corrected [7 30⅔ corr.]	having an altitude of [habens alt.]		28° 37½′	

It was exceptionally clear and calm. [Erat apprime ſerenum & tranquillum.]

Time	Azimuth (no head on this page)	Declination of Venus	Altitude of Venus	The Lesser Dog, west
7^h $23\frac{1}{6}^m$ [7 23⅙]	91° 0′		27° 55¾′	14 20
			27° 55⅚′	
7^h $28\frac{1}{6}^m$ [7 28⅙]	92° 0′	23° 21′	27° 13′	15 33

Time	Azimuth (no head on this page)	Declination of Venus	Altitude of Venus	The Lesser Dog, west
		with both [vtroque]		

N. B. Compare the meridian altitude with these near the 90th degree, and from this derive the parallax of Venus. For at this altitude, nearest to the 90th degree, it is free of refraction.[2] [N. B. Confer Altitudinem Meridianam cum his circa 90 gradum atque hinc erue Parallaxin ♀. Nam refractione caret in iſta altitudine citima iuxta 90 gradum[2].]

Time	Between Venus and the bright star of ♈ [Inter ♀ & lucid. ♈]	Declination of Venus [Decl. ♀]	Altitude of the bright star of ♈ [Alt. luc. ♈]
7^h $28\frac{1}{6}^m$ [7 28⅙]	21° 52½′		11° 55′
7^h $36\frac{1}{3}^m$ [7 36⅓]	21° 52½′		11° 20′
7^h $48\frac{1}{3}^m$ [7 48⅓]	21° 50′		10° 10′
7^h $50\frac{2}{3}^m$ [7 50⅔]	21° 51′	23° 21⅔′	9° 40′
		23° 21⅓′	

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus (no head)	Altitude of Venus by the min. quadrant [Alt. ♀ per min. Quad.]	The bright star of Hydra, east [Luc. Hydræ or.]
7^h $56\frac{2}{3}^m$ [7 56⅔]	14° 48′	23° 22′	23° 40′	5 4
		with both [vtroque]		
8^h $1\frac{5}{6}^m$ [8 1⅚]	14° 48⅓′	23° 21⅔′	22° 47′	4 7
		23° 22′		
8^h 19^m [8 19]	Venus was distant from the bright star [Diſtabat ♀ a lucida]			
	among the Pleiades [inter Pleiades]			1° 15′

22 March, in the evening [DIE 22 MARTIJ, VESPERI.]

At $6\frac{1}{2}^h$ the clock was standing still, and it was then set going again. [Hora 6½ quieſcebat horologium quod tunc in motum reſtituebatur.]

Time	Quantity	Value	Quantity	Value	Last column (no head)
6^h 37⅙^m [6 37⅙]	The Greater Dog was west [Erat canis maior occ.]				20 7
6^h 38⅚^m [6 38⅚]					20 28
6^h 47^m [6 47]	Declination of Venus [Declin. ♀]	23° 35′			22 16
		23° 34½′			
6^h 53½^m [6 53½]	Altitude of Venus by the steel instrument [Alt. ♀ per Chalyb.]	30° 14⅔′			23 52
	by the revolving quadrant [per Volub.]	30° 15′			
	Azimuth of Venus [Az. ♀]	88° 0′,	Declination [Decl.]	23° 34½′	
				23° 34⅚′	
6^h 59^m [6 59]	Altitude of Venus by the steel instrument [Alt. ♀ per Chalyb.]	29° 34⅙′			25 4
	by the revolving quadrant [per Volub.]	29° 35′			
	Azimuth [Az.]	89° 0′			
7^h 4^m [7 4]	Declination of Venus [Declin. ♀]	23° 35½′			26 16⅔
		23° 35′			
At that time Venus was in the ninetieth degree [Tunc erat ♀ in nonageſimo gradu]					
	Altitude by the steel instrument [Alt. per Chalyb.]	28° 55½′			
	by the revolving quadrant [per Volub.]	28° 55⅔′			
7^h 9⅔^m [7 9⅔]	Azimuth [Az.]	91° 0′,	by the revolving quadrant [Volub.]	28° 13½	27 29
			by the steel instrument [Chalyb.]	28 13 25	

[1] That is, between 3^h 48^m and 4^h 56^m, written in the margin. [Id eſt inter H. 3.48 et 4.56, in margine adſcriptum.] [2] Written in the hand of Johannes Aurifaber. Compare Tycho's note at the end of 3 March, above, p. 52. [Manu Joannis Aurifabri conſcripta. Cfr. annotationem Tychonis ad finem diei 3 Martij, ſupra p. 52.]

Time	(no head)	(no head)	(no head)	(no head)
7^h $14\frac{2}{3}^m$ [7 $14\frac{2}{3}$]	92 0	by the steel instrument [Chalyb.]	27 33½	28 40½
		by the revolving quadrant [Volub.]	27 32⅚	
	Declination of Venus [Decl. ♀]	23° 35½′		
		23° 35′		

N. B. At about $8\frac{1}{2}^h$ Venus had passed the leading ones in the western part of the Pleiades, toward the north, and stood distant from the bright one of them toward the zenith by about as much as the bright one is removed from the outermost one at the point toward the east. [N. B. Circa Horam 8½ erat ♀ prætergreßa priores in occidentali parte Pleiadum verſus Boream, diſtititque fere a lucida earundem verſus Zenith in tantum, quantum lucida remouetur ab extrema in cuſpide verſus ortum.]

24 March, in the evening [DIE 24 MARTIJ, VESPERI.]

N. B. On this day the clock was corrected by the Sun at about $4\frac{1}{6}^h$ after noon, and 6 small balls were taken out. [N. B. Horologium corrigebatur hoc die Hora 4⅙ fere poſt Meridiem ad ☉ & eximebantur 6 globuli.]

Time	Declination of Venus [Declin. ♀]	Altitude [Altit.]	(no head)	Azimuth [Azim.]	The Lesser Dog, west [Can. min. occid.]
7^h $34\frac{1}{3}^m$ [7 $34\frac{1}{3}$]	24° 2′	30° 9¾′	by the revolving quadrant [Vol.]	89° 0′	13 20
	24° 1½′	30° 9⅚′	by the steel instrument [Chal.]		
7^h $39\frac{1}{3}^m$ [7 $39\frac{1}{3}$]	Venus in the ninetieth [♀ in nonageſimo]				
	24° 1⅔′	29° 30⅙′	by the revolving quadrant [Vol.]		14 30
	24° 2⅙′	29° 30′	by the steel instrument [Chal.]		
7^h $44\frac{1}{2}^m$ [7 $44\frac{1}{2}$]	24° 1⅔′	28° 48⅚′	by the revolving quadrant [Vol.]	91° 0′	15 44
	24° 2⅙′	28° 49¾′	by the steel instrument [Chal.]		

This evening, at about the eighth hour, Venus was distant from the Pleiades toward the zenith by a distance as great (as far as sight goes) as the one between the two points of the Pleiades, and about half as much again farther, looking down on those points below it on either side almost perpendicularly. [Hoc veſpere circiter Horam octauam diſtabat ♀ a Pleiadibus verſus Zenith ad tantam diſtantiam (quo ad viſum) quæ eſt inter vtramque cuſpidem Pleiadum, & dimidio fere remotius reſpiciens infra ſe cuſpides illas vtrinque quaſi perpendiculariter.]

25 March, in the afternoon [DIE 25 MARTIJ, P. M.]

Time [Tempus]	Distance between Venus and the Sun [Diſt. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun [Alt. ⊙]
$12^h\ 45^m$ [12 45]		24° 11⅓′		
		24° 11⅔′		
$12^h\ 57⅔^m$ [12 57⅔]				39° 5′
$1^h\ 1⅔^m$ [1 1⅔]	41° 42′			
$1^h\ 4⅚^m$ [1 4⅚]	41° 44′		53° 45′	
$5^h\ 8⅙^m$ [5 8⅙]	41° 35′	24° 14′	50° 6′	18° 10′
		24° 14$\frac{1}{12}$′		
$5^h\ 15½^m$ [5 15½]	41° 37′		49° 17½′	17° 0′
$5^h\ 19⅚^m$ [5 19⅚]	41° 36′		48° 48′	
$5^h\ 25⅔^m$ [5 25⅔]		24° 13½′		
		24° 14⅙′		
$5^h\ 30^m$ [5 30]	41° 35′		47° 37⅔′	13° 10′
			The Sun, west [⊙ occ.]	77 9
$5^h\ 34½^m$ [5 34½]	41° 35′			11° 20′
			The Sun, west [⊙ occ.]	78 9½
$5^h\ 38½^m$ [5 38½]	41° 34½′		46° 49′	11° 5′
$5^h\ 43⅓^m$ [5 43⅓]		24° 14′		
		24° 14⅙′		

On the same day, in the evening [Eodem die Veſperi]

Time	Label	Value	Instrument / note	Label	Value
$7^h\ 48^m\ 35^s$ [7 48 35]	Altitude of Venus [Altit. ♀]	30° 25⅔′	by the steel instrument [per Chalyb.]		
		30° 25′	by the revolving quadrant [per Volub.]		
	Declination of Venus [Decl. ♀]	24° 14½′			
		24° 14⅙′			
	Azimuth [Azim.]	89° 0′,		The Lesser Dog, west [Canis min. occ.]	13 45½

Time	Label	Value	Instrument / note	Label	Value
7^h 53¾^m [7 53¾]	Venus was in the 90th degree, having an altitude of [Erat ♀ in 90 gradu habens Alt.]				
	by the steel instrument [per Chalyb.]	29° 46′			
	by the revolving quadrant [per Volub.]	29° 46¼′			
	Declination of Venus [Declin. ♀]	24° 14⅝′		The Lesser Dog, west [Can. min. occ.]	
		24° 15′			14 55
7^h 59½^m [7 59½]	Declination of Venus [Declin. ♀]	24° 15′	with both pinnules [vtroq. pin.]		
	Altitude of Venus [Alt. ♀]	29° 5¾′	by the steel instrument [per Chalyb.]		
		29° 5½′	by the revolving quadrant [per Volub.]		
	Azimuth of Venus [Azim. ♀]	91° 0′,		The Lesser Dog, west [Can. min. occ.]	16 8½

Time	Between Venus and Aldebaran [Inter ♀ & Aldeb.]	Declination of Venus [Decl. ♀]	The bright star of Hydra, east [Luc. Hydræ or.]	The Lesser Dog, west [Can. min. occid.]
8^h 6⅓^m [8 6⅓]	13° 20½′	24° 15′		17 49
		24° 15′		
8^h 8⅔^m [8 8⅔]	13° 20′		8 56	Altitude of Venus [Alt. ♀]
8^h 11^m [8 11]	13° 20⅓′	24° 15⅙′	8 25½	27° 26′
		with both [vtroque]		

N. B. This evening Venus was above the Pleiades at about the same distance as there is between Aldebaran and the bright star of the Hyades, toward the zenith, that is, toward the north. [N. B. Hoc veſpere diſtabat ♀ ſupra Pleiades ad illam diſtantiam fere, quæ eſt inter Aldeboram & lucidam Hyadum, verſus Zenith ſiue Boream.]

26 March [DIE 26 MARTIJ.]

Time [Tempus]	Distance between Venus and the Sun [Diſt. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Last column (no head at the table head)
$12^h\ 9^m$ [12 9]		24° 23¾′		
		24° 24⅙′		
$12^h\ 13\frac{5}{6}^m$ [12 13⅚]	41° 17′			
$12^h\ 16\frac{1}{2}^m$ [12 16½]	41° 18′		49° 55′	
$12^h\ 21\frac{1}{6}^m$ [12 21⅙]	41° 18⅙′		50° 3⅔′	
$12^h\ 23^m$ [12 23]		24° 24½′	50° 15′	
		24° 25′		
$12^h\ 26\frac{5}{6}^m$ [12 26⅚]	41° 17½′		50° 33½′	
$12^h\ 29\frac{1}{2}^m$ [12 29½]	41° 17½′		50° 51′	
$1^h\ 55^m$ [1 55]	41° 16½′			
$2^h\ 4^m$ [2 4]	41° 16⅓′	24° 25′	57° 42⅔′	
		24° 25½′		Altitude of the Sun [Alt. ⊙]
$2^h\ 11\frac{5}{6}^m$ [2 11⅚]	41° 16½′			34½°
$2^h\ 17\frac{2}{3}^m$ [2 17⅔]	41° 16¼′			34° 0′

N. B. At $2\frac{1}{2}^h$ the clock was corrected, for since noon it had been running slower than it should by about 9 minutes. [N. B. H. 2½ corrigebatur horologium, mouebatur enim tardius iuſto a Meridie circiter 9 Minuta.]

Time	Label	Value
$2^h\ 33\frac{2}{3}^m$ [2 33⅔]	Venus crossed [Tranſiuit ♀]	
	the meridian, having an altitude of [per Merid. habens Altit.]	
	by the steel instrument [per Chalyb.]	58° 29½′
	by the revolving quadrant [per Volub.]	58° 29⅔′
	by the mural quadrant [per Muralem]	58° $30\frac{1}{12}$′
		58° 30¼′
	Its declination at that time by the armillae [Declin. eius tunc temporis per Armillas]	24° 24½′
		24° 25⅙′

Time [Tempus]	Distance of Venus from the Sun [Dist. ♀ a ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun by the min. quadrant [Alt. ☉ per Q. min.]
2h 43m [2 43]	41° 15⅚′			
2h 46m [2 46]	41° 15½′		58° 23⅙′	
2h 47½m [2 47½]	41° 15⅓′			30° 30′
2h 49½m [2 49½]	41° 15¾′	24° 25½′		29° 30′
		24° 25′		
5h 44⅔m [5 44⅔]	41° 7½′		42° 23′	6° 50′
5h 50⅙m [5 50⅙]	41° 5½′		41° 55½′	5° 50′
5h 54m [5 54]	41° 6′		41° 24′	5° 10′
6h 0½m [6 0½]	41° 4¾′		40° 31′	4° 20′
6h 7m [6 7]	41° 3′	24° 26¾′	39° 37′	3° 20′
		24° 27′		

Time [Tempus]	Declination [Declin.]	Altitude of Venus, revolving quadrant / steel instrument [Alt. ♀ Volub. Chalyb.]	Azimuth of Venus [Azim. ♀]	The Lesser Dog, west [Can. min. occ.]
7h 10½m [7 10½]		30° 41¼′	89° 0′	14 10
		30° 40½′		
7h 15⅙m [7 15⅙]	24° 26¼′	30° 1⅓′	90° 0′	15 22
corrected 21½m [corr. 21½]	24° 27′	30° 1¼′		
7h 20m [7 20]	24° 26⅓′	29° 19½′	91° 0′	16 33
	24° 27⅔′	29° 19⅔′		The bright star of Hydra, east [Luc. Hyd. or.]
7h 24¾m [7 24¾]		28° 38′	92° 0′	
		28° 37⅚′		9 23
7h 29⅔m [7 29⅔]	24° 27′	27° 58′	93° 0′	8 20½
	24° 27¼′	27° 57⅚′		

27 March, in the afternoon [DIE 27 MARTIJ P. M.]

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun [Alt. ☉]
1h 58m [1 58]		24° 36′	58° 1⅔′	
2h 3⅔m [2 3⅔]	40° 51¾′		58° 9¼′	34° 55′
2h 8m [2 8]	40° 52′		58° 18′	34° 35′
2h 13m [2 13]	40° 51′		58° 24′	34° 10′
2h 15m [2 15]		24° 37′ with both [vtroq.]		
2h 20⅓m [2 20⅓]	40° 50⅚′		58° 32½′	33° 40′
2h 23⅚m [2 23⅚]	40° 50⅚′			33° 5′
2h 26⅙m [2 26⅙]	For the clock, the Sun, west [Pro horologio ☉ occ.]			35 55
2h 28⅔m [2 28⅔]	40° 51′			32° 50′
2h 35⅙m [2 35⅙]	At that time Venus was on the meridian, having an altitude of [Tunc erat ♀ in Mer. habens Alt.]			
	by the revolving quadrant [per Volub.]		58° 40½′	
	by the steel instrument [per Chalyb.]		58° 40′	
	by the mural quadrant, with one [per Mural., vno]		58° 42⅚′	
	with the other [alt.]		58° 42⅔′	
	Declination [Decl.]	24° 37½′		
		24° 37′	The Sun, west [☉ occ.]	38 7
	Venus from the Sun [♀ a ☉]			Altitude of the Sun [Alt. ☉]
2h 50½m [2 50½]	40° 50⅔′			
2h 56½m [2 56½]			The Sun, west [☉ occ.]	43 22
2h 57⅓m [2 57⅓]	40° 50¼′			30° 0′
3h 2⅙m [3 2⅙]	40° 50′	24° 36⅚′		29° 30′
		24° 36½′		
3h 17⅙m [3 17⅙]	40° 50⅔′			28° 5′
3h 24⅔m [3 24⅔]				27° 0′
3h 25⅔m [3 25⅔]	The Sun, west [☉ occ.]	50 31	Altitude of Venus [Alt. ♀]	
3h 34½m [3 34½]			56° 44′	25° 55′

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun [Alt. ⊙]
3^h $35\frac{5}{6}^m$ [35⅚]	40° 49¾′		56° 49′	
3^h $47\frac{2}{3}^m$ [47⅔]	40° 50⅙′			24° 20′
3^h 53^m [53]	40° 49⅙′		55° 40′	23° 40′
3^h $54\frac{5}{6}^m$ [54⅚]		24° 36½′	For the clock [Pro horol.]	
		24° 36¾′	The Sun, west [⊙ occ.]	57 46½
4^h $1\frac{1}{2}^m$ [1½]	40° 49¼′		55° 2′	22° 35′
4^h $6\frac{2}{3}^m$ [6⅔]	40° 48¾′		54° 37¾′	22° 0′
4^h $12\frac{1}{6}^m$ [12⅙]	40° 48′		54° 8′	21° 20′
4^h $21\frac{1}{6}^m$ [21⅙]	40° 48¼′		53° 11⅔′	20° 5′
4^h 34^m [34]	40° 48½′		52° 3′	18° 15′
4^h $54\frac{1}{2}^m$ [54½]		24° 36⅔′	The Sun, west [⊙ occ.]	
		24° 37½′	72 38	
5^h 3^m [3]	40° 46¾′			14° 20′
5^h $9\frac{5}{6}^m$ [9⅚]	40° 47′			13° 25′
5^h $14\frac{1}{3}^m$ [14⅓]	40° 46′	24° 37′	47° 25′	
		24° 38′		
5^h $22\frac{2}{3}^m$ [22⅔]	40° 44⅚′	24° 37′	46° 29′	11° 40′
5^h $26\frac{2}{3}^m$ [26⅔]	40° 43⅚′	24° 37½′	46° 2½′	11° 0′
		24° 37⅓′		
5^h $30\frac{1}{2}^m$ [30½]	40° 44′		45° 30′	10° 5′
			The Sun, west [⊙ occ.]	81 40
7^h $18\frac{2}{3}^m$ [18⅔]			30° 53′	by the steel instrument [per Chal.]
			30° 52¾′	by the revolving quadrant [per Vol.]
7^h $22\frac{2}{3}^m$ [22⅔]	At that time Venus was in the 90th degree, having [Tunc erat ♀ in 90 gradu habens]			

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun [Alt. ☉]
	declination and altitude [Decl. & Alt.]	24° 38⅔′	30° 11⅚′	by the revolving quadrant [per Vol.]
		24° 38⅓′	30° 12′	by the steel instrument [per Chal.]
	The Lesser Dog, west [Canis minor occ.]			15 41
7h 27⅔m [27⅔]	Azimuth 91° 0′, [Azim. 91 0,]			
	The Lesser Dog, west [Canis minor occ.]			17 2
			29° 35′	by the revolving quadrant [per Vol.]
			29° 35′	by the steel instrument [per Chal.]
7h 32⅓m [32⅓]	Azimuth [Azim.]	24° 38⅚′	28° 53⅓′	by the revolving quadrant [per Vol.]
	92° 0′	24° 38⅔′	28° 53⅚′	by the steel instrument [per Chal.]
7h 37½m [37½]	93° 0′		28° 11⅚′	by the revolving quadrant [per Vol.]
			28° 13′	by the steel instrument [per Chal.]
	The bright star of Hydra, east [Luc. Hydræ or.]			7 47

Time	Between Venus and the lower head of ♊ [Inter ♀ & inf. cap. ♊]	Declination of Venus [Decl. ♀]	The bright star of Hydra, east [Luc. Hydræ or.]	(no head at the table head)
7h 50m [50]	50° 12′	24° 39′	4 46	
		24° 38⅔′		
7h 52⅔m [52⅔]	50° 11½′		3 58	
7h 59⅓m [59⅓]	50° 11′	24° 39⅙′	2 29	
		24° 38⅚′		Altitude of Venus by the min. quadrant [Alt. ♀ per Q. min.]
8h 4⅔m [4⅔]	50° 11′	24° 39′	1 5	
		24° 38½′		24° 40′

28 MARCH, IN THE AFTERNOON [DIE 28 MARTIJ P. M.]

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun [Alt. ⊙]
12^h $8\frac{1}{4}^m$ [12 $8\frac{1}{4}$]		24° 47′		
		24° 48′		
12^h $13\frac{3}{4}^m$ [12 $13\frac{3}{4}$]			by the revolving quadrant [per Volub.]	
12^h $19\frac{1}{6}^m$ [12 $19\frac{1}{6}$]			50° 47′	40° 40′
12^h $23\frac{1}{2}^m$ [12 $23\frac{1}{2}$]			51° 3′	
12^h 26^m [12 26]		24° 47⅙′	51° 17½′	
		24° 47⅔′	by the steel instrument [per Chal.]	
2^h $2\frac{5}{6}^m$ [2 $2\frac{5}{6}$]			58° 25′	35° 20′
2^h $7\frac{5}{6}^m$ [2 $7\frac{5}{6}$]		24° 47½′		
2^h $8\frac{2}{3}^m$ [2 $8\frac{2}{3}$]	The Sun, west [⊙ occ.]	32 0		
2^h $13\frac{5}{6}^m$ [2 $13\frac{5}{6}$]			58° 39¾′	34° 35′
2^h 19^m [2 19]			58° 46′	35° 55′
2^h $31\frac{1}{2}^m$ [2 $31\frac{1}{2}$]	Venus crossed the meridian, having an altitude of [Transiuit ♀ per Mer. habens Alt.]			
	by the revolving quadrant [per Volub.]		58° 51′	
	by the steel instrument [per Chalybeum]		58° 51½′	
	by the mural quadrant [per Muralem]		58° 52⅚′	
			58° 52¾′	
	The declination of Venus at that time by the armillae [Declinatio ♀ tunc temporis per Armillas]	24° 48⅙′ north [B.]		
		24° 48′		
2^h $46\frac{1}{6}^m$ [2 $46\frac{1}{6}$]			58° 45′	31° 10′
2^h $54\frac{2}{3}^m$ [2 $54\frac{2}{3}$]				30° 15′
2^h $56\frac{2}{3}^m$ [2 $56\frac{2}{3}$]	For the clock, the Sun, west [Pro horol. ⊙ occ.]		44 12	
2^h $59\frac{1}{2}^m$ [2 $59\frac{1}{2}$]		The Sun, west [⊙ occ.]	44 55	29° 45′
3^h 1^m [3 1]		24° 48′		

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun [Alt. ⊙]
		24° 48½′		
3h 44½m [3 44½]	49° 22¼′	24° 48′		24° 5′
		24° 48½′		
3h 51⅚m [3 51⅚]		The Sun, west [⊙ occ.]	58 9	
3h 52⅚m [3 52⅚]	49° 22′		55° 24′	23° 5′
4h 5m [4 5]	40° 21¾′		54° 20′	21° 30′
4h 7m [4 7]	For the clock, the Sun, west [Pro horol. ⊙ occ.]		62 6	
4h 12⅔m [4 12⅔]		24° 49½′		
		24° 49′		
4h 21⅔m [4 21⅔]	40° 21⅚′		52° 42⅔′	19° 10′
4h 25m [4 25]	40° 22′			
4h 30⅙m [4 30⅙]		24° 48′	The declination was not beyond 24° 48′ at this time. [Declin. vltra 24°48′ non erat hoc tempore.]	

Time	Label	Value	Value	Instrument	Last column
7h 6m [7 6]		24 49⅓	31 8⅚	by the steel instrument [per Chal.]	
		24 50	31 9¼	by the revolving quadrant [per Vol.]	
	The Lesser Dog, west [Canis minor occ.]				15 3
7h 10⅚m [7 10⅚]	Venus was in the 90th degree, having an altitude of [♀ erat in 90 Gradu ha-bens Altit.]				
7h 18⅓m corrected [7 18⅓corr.]			30° 29⅙′	by the steel instrument [per Chal.]	
			30° 29⅙′	by the revolving quadrant [per Vol.]	
	The declination at that time was [Tunc temporis erat Decl.]	24° 50′			The Lesser Dog, west [Can. min. occ.]
		24° 49½′			16 25

Time	Label	Value	Value	Instrument	Last column
7^h 15½^m [7 15½]	Azimuth [Azim.]	24 50	29 48⅝	by the steel instrument [per Chal.]	
	91° 0′	24 49⅓	29 48⅝	by the revolving quadrant [per Vol.]	
7^h 20^m 25^s [7 20 25]	Azimuth [Azim.]		29 6⅔	by the steel instrument [per Chal.]	
	92° 0′		29 7⅙	by the revolving quadrant [per Vol.]	
7^h 25^m [7 25]		24 50	28 27	by the steel instrument [per Chal.]	
		24 49⅔	28 27$\frac{1}{12}$	by the revolving quadrant [per Vol.]	
	The Lesser Dog, west [Canis minor occ.]				20 4
7^h 32⅔^m [7 32⅔]	49 39	24 50⅓			The bright star of Hydra, east [Luc. Hydræ or.]
		24 49⅝			8 42
7^h 33⅔^m [7 33⅔]	49 38⅝				
7^h 37½^m [7 37½]	49 39	24 50¼	25 40		4 21½
		24 49⅝			

29 March, in the afternoon [DIE 29 MARTIJ P. M.]

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Vol.]	Instrument (no head)	Last column (no head at the table head)
12^h 9⅓^m [12 9⅓]		24° 58½′			
		24° 58⅔′			
12^h 23^m [12 23]	40° 3½′		51° 26½′		
12^h 26⅓^m [12 26⅓]	40° 2⅝′		51° 46⅓′		
12^h 30^m [12 30]	40° 2⅝′		52° 8⅔′		

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Vol.]	Instrument (no head)	Last column (no head at the table head)
$12^h\ 32\frac{2}{3}^m$ [12 32⅔]	40° 12½′	24° 58½′	52° 25¾′		
		24° 58′			
$2^h\ 13^m$ [2 13]		24° 58⅙′			
$2^h\ 20\frac{5}{6}^m$ [2 20⅚]		24° 58½′			
		24° 58′			
$2^h\ 30\frac{1}{4}^m$ [2 30¼]	Venus crossed the meridian, having an altitude of [Tranſiuit ♀ Meridian. habens Altit.]				
$2^h\ 29\frac{5}{6}^m$ [2 29⅚]			59° 2′	by the steel instrument [per Chal.]	
corrected [corr.]			59° 2′	by the revolving quadrant [per Vol.]	
		24° 58¼′	59° 3½′	by the mural quadrant [per Mu-ralem]	
		24° 58′	59° 3⅔′		
	The Sun, west, was then [Fuit tunc ⊙ occ.]				37 27½
					Altitude of the Sun by the min. quadrant [Alt. ⊙ per Q. min.]
$2^h\ 36^m$ [2 36]	40° 0′				32° 50′
$2^h\ 42\frac{1}{2}^m$ [2 42½]	39° 59′	24° 58′	58° 56½′		31° 45′
		24° 58¼′			
$2^h\ 47^m$ [2 47]	39° 58′		58° 53⅔′		31° 25′
$3^h\ 2\frac{2}{3}^m$ [3 2⅔]	39° 58¾′		58° 30′		29° 40′
$3^h\ 9^m$ [3 9]	39° 59′		58° 15′		28° 55′
$3^h\ 29\frac{2}{3}^m$ [3 29⅔]	39° 57⅚′		57° 14½′		26° 30′
$3^h\ 40^m$ [3 40]	39° 57′	24° 58′	56° 36⅔′		25° 20′
		24° 58⅙′			

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Vol.]	Instrument (no head)	Altitude of the Sun by the min. quadrant [Alt. ☉ per Q. min.]
3^h $42\frac{1}{6}^m$ [3 42⅙]	39° 58′		56° 7′		24° 30′
4^h $2\frac{2}{3}^m$ [4 2⅔]	39° 57′				22° 30′
4^h 16^m [4 16]	39° 57⅙′	24° 58′			20° 55′
		24° 58⅙′			
4^h $19\frac{1}{2}^m$ [4 19½]	39° 57⅓′				20° 25′
4^h $23\frac{5}{6}^m$ [4 23⅚]	39° 57⅓′		52° 57′		19° 50′
4^h 26^m [4 26]	39° 57⅓′		52° 41′		19° 30′
4^h $28\frac{1}{2}^m$ [4 28½]		24° 59⅓′			The Sun toward the west [☉ versus occ.]
		24° 59⅙′			66 21

Time	Label	Value	Value	Instrument	Last column
7^h $12\frac{1}{2}^m$ [7 12½]		24 59¾	31 22¼	by the revolving quadrant [per Vol.]	
7^h $16\frac{1}{4}^m$ corrected [7 16¼ corr.]		24 59⅓	31 22½	by the steel instrument [per Chal.]	
	Azimuth of Venus 89° 0′, the Greater Dog, west [Azim. ♀ 89 0, Can. mai. occ.]				28 2
7^h $17\frac{1}{3}^m$ [7 17⅓]	Venus was in the ninetieth degree [Erat ♀ in nonagesimo gradu]				
	Altitude [Alt.]		30° 41⅚′	by the revolving quadrant [per Vol.]	
	At the same time the declination was [Eodem tem-pore erat Decl.]	25° 0′	30 42	by the steel instrument [per Chal.]	
		24° 59½′	the Greater Dog [Can.mai.]		29 12[3]
7^h 22^m [7 22]		25 0	30 1	by the revolving quadrant [per Vol.]	

[3]the first figure of "12" is printed with a dot above its stem, unlike the "1" of "30 1" on the next line

Time	Label	Value	Value	Instrument	Last column
		24 59⅝	30 0¼	by the steel instrument [per Chal.]	
	Azimuth of Venus 91° 0′, the Greater Dog, west [Azim. ♀ 91 0, Can. mai. occ.]				30 27
7h 26⅔m [7 26⅔]			29 21½		
	Azimuth of Venus 92° 0′ [Azim. ♀ 92 0]		29 20⅝		31 38
			revolving quadrant [Volub.]		
7h 31½m [7 31½]		25 0⅙	28 39		
	Azimuth [Azim.]		steel instrument [Chalyb.]		
	93° 0′	25 0	28 38½		32 50

Time	Between Venus and the lower head of ♊ [Inter ♀ & inf. cap. ♊]	(no head)	(no head)	The Lesser Dog, west [Can. min. occ.]
7h 40½m [7 40½]	49° 9¼′		by the smallest quadrant [per minim. Q.]	22 35
7h 42⅝m [7 42⅝]	49° 8¾′	25 0	26 50	23 10
		24 59⅝		
7h 45½m [7 45½]	49° 8½′	25 0⅙	26 25	23 47½
		25 0¼		

30 March, in the afternoon [DIE 30 MARTIJ P. M.]

Time [Tempus]	Distance between Venus and the Sun [Dist. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Last column (no head at the table head)
12h 7½m [12 7½]		25° 6′		
		25° 6½′		
12h 16⅓m [12 16⅓]	39° 33′		50° 53⅔′	
12h 18m [12 18]	39° 33¼′		51° 4⅓′	

Time [Tempus]	Distance between Venus and the Sun [Dift. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Last column (no head at the table head)
12h 19⅓m [12h 19⅓]	39° 33′		51° 13′	
12h 20⅚m [12h 20⅚]	39° 32¾′			
12h 22⅙m [12h 22⅙]	39° 32⅚′	25° 6½′		Altitude of the Sun by the min. quadrant [Alt. ⊙ per min.Q.]
		25° 6¾′		
2h 14½m [2h 14½]	39° 31½′		59° 6⅓′	35° 20′
2h 16⅙m [2h 16⅙]	39° 31½′			35° 5′
2h 18⅙m [2h 18⅙]		25° 8′		
		25° 7¾′		

Time [Tempus]	Distance between Venus and the Sun [Dift. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Last column
2h 28¾m [2h 28¾]	Venus was crossing [Tranſibat ♀]			
	the meridian, having an altitude of [per Merid. habens Alt.]			
	by the steel instrument [per Chalyb.]		59° 11⅔′	
	by the revolving quadrant [per Volub.]		59° 11⅚′	
	by the mural quadrant [per Mural.]		59° 13′	
			59° 12⅚′	
	Declination [Decl.]	25° 7½′		The Sun, west [⊙ occid.]
	by the armillae [per Armill.]	25° 8′		37 2½
2h 41⅔m [2h 41⅔]	39° 31′			Altitude of the Sun [Alt. ⊙]
2h 44m [2h 44]	39° 30¼′			32° 10′
2h 48½m [2h 48½]	39° 30¼′			31° 50′
2h 51⅔m [2h 51⅔]		The Sun, west [⊙ occ.]	42 39	
2h 52⅚m [2h 52⅚]	39° 29½′	25° 8¼′		31° 0′
		25° 8½′		

Time	Azimuth of Venus [Azim. ♀]	(no head)	Altitude of Venus [Alt. ♀]	Instrument	(no head at the table head)
7^h $14\frac{1}{2}^m$ [7 14½]	89° 0′	25 10	31° 34¾′	revolving quadrant [Volub.]	
		25 9	31° 34⅚′	steel instrument [Chal.]	
7^h $19\frac{1}{3}^m$ [7 19⅓]	Venus was in the ninetieth degree [Erat ♀ in nonageſimo gradu]				
7^h $13\frac{5}{6}^m$ corrected [7 13⅚ corr.]		25 10	30° 54′	steel instrument [Chalyb.]	
	The Greater Dog, west [Can. mai. occ.]				
	29 36	25 9	30° 53¼′	revolving quadrant [Volub.]	
					Azimuth of Venus [Azim. ♀]
7^h 24^m [7 24]	30 47	25 9⅔	30° 13⅔′		91° 0′
		25 9⅓	30° 12⅓′		
7^h 29^m [7 29]	31 59	25 9¾	29° 32⅓′		92° 0′
			29° 32½′		
7^h 34^m [7 34]	33 16		28° 49⅔′		93° 0′
			28° 50′		
	Between Venus and the lower head of ♊ [Inter ♀ & inf. cap. ♊]	The Lesser Dog, west [Can. min. occ.]			
7^h 41^m [7 41]	48° 38¾′	22 21			
7^h 44^m [7 44]	48° 39′	23 5	27° 28¼′		95° 0′
7^h $47\frac{1}{2}^m$ [7 47½]	48° 38¾′	23 56½			
7^h $49\frac{1}{6}^m$ [7 49⅙]	48° 38⅓′	24 20	26° 46⅔′		96° 0′
7^h $52\frac{1}{2}^m$ [7 52½]	48° 38½′	25 8			
7^h $54\frac{1}{3}^m$ [7 54⅓]	48° 38¼′	25 37	26° 9⅓′		97° 0′
7^h 44^m [7 44]	Declination of Venus [Decl. ♀]	25° 9⅓′,	25° 9⅚′		
7^h $54\frac{1}{3}^m$ [7 54⅓]		25° 10′,	25° 9⅔′		

3 April[1], in the afternoon [DIE 3 APRILIS[1] P. M.]

Venus was observed again, as follows. [Obſeruabatur iterum ♀ vt ſequitur.]

Time [Tempus]	Distance between Venus and the Sun [Diſt. inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]
12h 7m [12 7]		25° 39⅚′	
		25° 40′	
12h 13m [12 13]	37° 22′		
12h 14⅚m [12 14⅚]	37° 22½′		52° 8⅔′
12h 17⅙m [12 17⅙]	37° 22½′		52° 25′
12h 19⅓m [12 19⅓]	37° 22′		52° 34½′

[1] Codices E and V give "Die 3 Martij", but V corrected the 3 to 31 (in a later hand); K has 31. [Codd. E et V præbent Die 3 Martij, ſed 3 in 31 correxit V (manu poſteriore); 31 K.]

14 April, in the afternoon [DIE 14 APRILIS P. M.]

Time	Label	Value	Value
1h 49m [H. 1 49]	Venus crossed [Tranſiuit ♀]		
	the meridian, having an altitude of [per Meridianum habens Alt.]		
	by the steel instrument [per Chalyb.]		60° 9¾′
	by the revolving quadrant [per Volub.]		60° 10⅙′
	by the mural quadrant [per Mural.]	60° 11′	60° 10⅚′
	Declination by the armillae [Declin. per Armillas]		26° 5′
			26° 4¾′
	repeated twice, with both pinnules [bis repetita vtroque pinn.]		

Time [Tempus]	Distance between Venus and the Sun [Inter ♀ & ⊙]	For the clock, the Sun, west [Pro horol. ⊙ occid.]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Vol.]	Altitude of the Sun by the min. quadrant [Alt. ⊙ per Q. min.]
2h 5⅓m [2 5⅓]	28° 43¼′	31 23		40° 50′
2h 8⅔m [2 8⅔]	28° 43½′	Declination of Venus [Decl. ♀]		40° 35′
2h 14⅓m [2 14⅓]	28° 43¾′	26° 5¾′	59° 48½′	40° 5′
		26° 5′		
2h 24m [2 24]	28° 43¼′		59° 26′	39° 10′
2h 29m [2 29]	28° 43′		59° 12′	38° 35′
2h 31⅚m [2 31⅚]	28° 42¾′			38° 0′
2h 34⅚m [2 34⅚]	28° 42½′	26° 5 1/12′		37° 40′

15 April, in the afternoon [DIE 15 APRILIS P. M.]

Time [H. M.]	Distance between Venus and the Sun [Inter ♀ & ☉]	Declination of Venus [Declinatio ♀]	Declination of Venus, second figure
0h 7m [0 7]	27° 49⅙′	26° 3′	26° 2½′
0h 19½m [0 19½]	27° 49′		
0h 21⅚m [0 21⅚]	27° 48½′		
0h 26m [0 26]	27° 48′		
0h 29⅔m [0 29⅔]	27° 48½′	26° 2¾′	26° 2½′

Time	Label	Alti-tude	Label	Value
1h 47⅚m [1 47⅚]	Venus was crossing [Tranſibat ♀]			
	the meridian, having an altitude of [per Merid. habens Altitud.]			
	by the revolving quadrant [per Volub.]	60° 8⅚′		The Sun, west [☉ occid.]
	by the steel instrument [per Chalyb.]	60° 8½′		26 12
	by the mural quadrant [per Mural.]	60° 8′	Declination [Decl.]	26° 2¼′
		60° 8⅙′		26° 2½′

Time [Tem-pus]	Distance between Venus and the Sun [Inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the steel instrument [Alt. ☉ per Chal.]
1h 59⅓m [1 59⅓]	27° 43½′			41° 46⅙′
2h 1⅓m [2 1⅓]	27° 44′		60° 0¼′	41° 36′
2h 5½m [2 5½]	27° 43⅚′		59° 55′	41° 14′
2h 12⅚m [2 12⅚]	27° 44⅚′		59° 47′	40° 34½′
2h 15m [2 15]	27° 44′		59° 35′	40° 1¼′
2h 19⅔m [2 19⅔]		26° 2½′	The Sun, west [☉ occ.]	34 0
		26° 2¾′	The Sun, west [☉ occ.]	34 25½

N.B. The clock had stopped here for some time. The clock was being corrected. [N. B. Horologium hic aliquandiu quieuerat. Horologium corrigebatur.]

Time [Tempus]	Distance between Venus and the Sun [Inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the steel instrument [Alt. ☉ per Chal.]
		26° 2½′	The Sun, west, 67 44 [☉ occ. 67 44]	
		26° 1½′		
4h 32½m [4 32½]			The Sun, west, 68 31 [☉ occ. 68 31]	
4h 41½m [4 41½]	27° 35¼′		46° 20′	21° 55′
4h 45⅔m [4 45⅔]	27° 35⅔′		45° 50′	21° 45′
4h 48½m [4 48½]	27° 35¾′		45° 29′	21° 5⅚′

Time [Tempus]	Distance between Venus and the Sun [Inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the steel instrument [Alt. ☉ per Chal.]
4h 51⅔m [4 51⅔]	27° 35¾′ or 35⅚′ [27 35¾ vel 35⅚]			20° 37½′
4h 56½m [4 56½]	27° 35′		44° 22′	19° 57¼′

Time	Label	Value	Value	Instrument
6h 26⅚m [6 26⅚]	Azimuth of Venus [Azim. ♀]	26 3	32 42⅓	by the steel instrument [per Chal.]
	89° 0′	26 2½	32 41⅓	by the revolving quadrant [per Vol.]
6h 32m [6 32]	Venus was in the 90th degree [Erat ♀ in 90 Gradu]			
		26 2½	32 0⅔	by the steel instrument [per Chal.]
		26 1¾	32 0	by the revolving quadrant [per Vol.]
6h 37m [6 37]	Azimuth of Venus [Azim. ♀]		31 20	by the steel instrument [per Chal.]
	91° 0′		31 19⅓	by the revolving quadrant [per Vol.]
6h 41½m [6 41½]	Azimuth [Azim.]	26 2⅔	30 42	by the steel instrument [per Chal.]
	92° 0′	26 3⅓	30 41⅔	by the revolving quadrant [per Vol.]

There follows an observation of Venus against the stars. [Sequitur obſeruatio ♀ ad ſtellas.]

Time	Distance of Venus from the Mer. head of ♊ [Diſt. ♀ a Mer. cap. ♊]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Spica ♍, east [Spica ♍ orient.]
8h 36¼m [8 36¼]		26° 2′	15° 17⅓′	37 55
		26° 1¾′		
8h 39⅔m [845° 12′ 39⅔]			14° 57′	35 0
8h 43⅙m [845° 11⅚′ 43⅙]		26° 2′	14° 28′	34 4½
		26° 2½′		
8h 46⅔m [845° 12′ 46⅔]			14° 3⅓′	33 16
8h 49⅓m [845° 12′ 49⅓]			13° 45′	32 32
8h 52½m [8 45° 12¼′ 52½]		26° 2½′	13° 21′	31 49
		26° 2¾′		

17 April [DIE 17 APRILIS.]

Time	Label	Value
1h 46m* [H. 1 46*]	Venus was crossing [Tranſibat ♀]	
	the meridian, having an altitude of [per Meridianum habens Alt.]	
	by the steel instrument [per Chalyb.]	59° 58¼′
	by the revolving quadrant [per Volub.]	59° 58⅔′
	The declination of Venus was then [Declinatio ♀ tunc erat]	25° 55′
		25° 56′

*N.B. The time here is not certain, because the interval was noted a little afterwards from the clock, as corrected at this noon. [*N. B. Tempus hic non eſt certum quia paulo poſt interuallum denotatum ex horologio in hoc Meridie correcto.]

On the same day, in the evening. [Eodem die veſperi.]

Time	Label	Value	Value
9h 27⅔m [9 27⅔]	Between Venus and [Inter ♀ &]		
	the lower head of ♊ [inferius caput ♊]		45° 25′
	Altitude of Venus [Altitudo ♀]	10° 34′	
9h 29m [9 29]	Distance [Diſtantia]		45° 25½′
	Declination of Venus [Declinatio ♀]	25° 53¾′	
		25° 53½′	
9h 32⅙m [9 32⅙]	The bright star of Hydra was west [Erat luc. Hydræ occid.]		33 20¾

20 April [DIE 20 APRILIS.]

Time	Distance between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Declin. ♀]	Remark
1h 53m [1 53]	22° 9⅚′	25° 32′	
		25° 33′	
2h 4⅓m [2 4⅓]	22° 9′		was not good. [non erat bona.]
2h 7m [2 7]	22° 8′		The Sun, west, 30 46 [⊙ occid. 30 46]

Time	Distance between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Declin. ♀]	Re-mark
2h 9½m [2 9½]	22° 6′		
2h 15½m [2 15½]	22° 7¼′	25° 32½′	32 50
		25° 33′	
2h 24⅙m [2 24⅙]	22° 4½′		
2h 27m [2 27]	22° 4¾′	25° 33′ with one [25 33 vno]	

Time	Label	Value	Remark
6h 10⅚m [6 10⅚]	Venus was in the 90th degree of the west, [Erat ♀ in 90 Gradu occidentis,]		
	Altitude [Alt.]	31° 23⅔	by the steel instrument [per Chal.]
		31° 23⅓	by the revolving quadrant [per Vol.]
	The declination at that time by the armillae [Decl. tum temporis per Armillas]		
		25° 32′	with one pinnule only [vno tantum pinnac.]

But it was seen with difficulty. [Sed difficulter conſpiciebatur.]

Time	Label	Value	Remark
6h 20½m [6 20½]	Declination of Venus [Declin. ♀]	25° 32½′	Altitude 30° 1′, by the steel instrument [Alt. 30 1 per Chal.]
	Azimuth of Venus 92° 0′ [Azim. ♀ 92 0]	25° 31′	

6 July, in the morning [DIE 6 JULIJ, MANE.]

The time of the clock corrected to the Sun. [Tempus horologij ad ⊙ correctum.]

Time	Label	Value	Label	Value
2^h 52^m 2^s [2 52′ 2″]	The azimuth of Venus was [Erat Az. ♀]	94° 30′,	Altitude [Altit.]	18° 55′
3^h 2^m 25^s [3 2 25]		92 32		20 10
	Declination of Venus [Declin. ♀]	18° 7⅔′		
3^h 16^m 4^s [3 16 4]	Venus was in the 90th, having an altitude [Erat ♀ in 90 habens Alt.]			21° 49′
	by the revolving quadrant; the declination of Venus was then [per Vol., Declin. ♀ erat tunc]			18° 7½′

The times here are corrected. [Tempora ſunt hic correcta.]

Time	Distance between Venus and the Sun [Diſt. inter ♀ & ☉]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	Altitude of the Sun by the min. quadrant [Alt. ☉ per Q. min.]
4^h 40^m 8^s [4 40 8]		18° 8′	31° 40′	
4^h 52^m 36^s [4 52 36]	45° 25¾′	uncertain [incerta]	33° 45′	9° 40′
4^h 57^m 35^s [4 57 35]	44° 28′			10° 20½′
5^h 1¼^m [5 1¼]	45° 28⅙′		34° 38′	10° 40′
5^h 4¼^m [5 4¼]		18° 7½′		
5^h 41^m 31^s [5 41 31]	Venus was east 45 35, for correcting the clock [Erat ♀ orientalis 45 35 pro corrigendo horologio]			
5^h 59^m 34^s [5 59 34]	45° 31′			17° 30′

Time	Entry
6^h 0^m [6 0]	At that time it was, on the equator, by the Sun, precisely the sixth hour. [Tunc erat in Æquatore ad ☉, Hora præciſe ſexta.]
6^h 2^m 56^s [6 2 56]	Between Venus and the Sun 45° 33′ [Inter ♀ & ☉ 45 33]
	Altitude of Venus 41° 38′, the Sun east 89 16[1] [Alt. ♀ 41 38, ☉ orient. 89 16[1]]
6^h 7^m 41^s [6 7 41]	Declination of Venus 18° 8⅙′, the Sun east 88 7 [Declinatio ♀ 18 8⅙, ☉ or. 88 7]
6^h 14^m 55^s [6 14 55]	Altitude of the Sun 19° 10′, the Sun east 86 25 [Alt. ☉ 19 10, ☉ orient. 86 25]
6^h 16^m [6 16]	Here the clock was corrected to the recorded time observed on the equator by the Sun, 86 0. [Hic corrigebatur Horologium ad aſcriptum tempus in Æquatore ad ☉ obſeruatum 86 0.]

9 July, in the morning [DIE 9 JULIJ, MANE.]

Label	Value
Venus was observed in the 90th degree, having [Obſeruabatur ♀ in 90 Gradu habens]	
an altitude by the revolving quadrant [Altitudinem per Vol.]	22° 22′
a declination by the armillae [Declinationem per Arm.]	18° 28½′
	18° 28′
Venus was east on the equator [♀ erat in Æquatore orient.]	83 11½

No stars were visible around that time except Capella, but it could not be observed because of the recurring clouds and the dawn. [Nullæ ſtellæ apparebant circa illud tempus præter Capellam, ſed non poterat obſeruari propter recurrentes nubes & auroram.]

10 July, in the morning [DIE 10 JULIJ, MANE.]

Distance between Venus and Aldebaran [Diſt. inter ♀ & Aldebor.]	Declination of Venus [Decl. ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	For the clock, the bright star of the Vulture, west [Pro horol. Luc. Vult. occ.]
7° 19⅙′		9° 19½′	36 11
7° 20½′		10° 25′	38 6
Between Venus and the bright star of ♈ [Inter ♀ & lucid. ♈]			
41° 21⅓′	18° 37′	11° 28⅓′	40 23
41° 19⅚′	18° 35′	12° 10′	41 34
41° 21⅙′	18° 35⅓′	12° 40′	42 32
Between Venus and Capella [Inter ♀ & Capellam]	18° 36′		
26° 58½′		14° 38⅙′	46 3
26° 58⅔′	18° 36′	15° 9′	47 4
	18° 35′		

No further observation could be made from the stars because of the dawn. [Non potuit a ſtellis vlterior fieri obſeruatio propter auroram.]

The clock showed the hour $3^h\ 43^m\ 18^s$ (the Sun rising at the same moment); Venus was in the 90th degree, [Horologium indicabat Horam 3 43′ 18″(☉ eodem momento exoriente)erat ♀ in 90 gradu,]

Label	Value
Altitude by the revolving quadrant [Alt. per Volubilem]	22° 35′
Declination [Declin.]	18° 36½′
	18° 36′

Time; the times are corrected [Tempora ſunt correcta]	Distance between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Altitude of the Sun by the min. quadrant [Alt. ⊙ per Q. min.]
$4^h\ 29^m\ 51^s$ [4 29 51]	45° 37′			5° 20′
$4^h\ 33^m\ 22^s$ [4 33 22]			29° 52′	
$4^h\ 36^m\ 12^s$ [4 36 12]	45° 38′			6° 10′
$4^h\ 37^m\ 21^s$ [4 37 21]			30° 24′	
$4^h\ 39^m\ 2^s$ [4 39 2]		18° 37′		
		18° 36′		
$4^h\ 43^m\ 48^s$ [4 43 48]	45° 38¼′			7° 5′
$4^h\ 45^m\ 37^s$ [4 45 37]			31° 35′	
$4^h\ 51^m\ 2^s$ [4 51 2]	45° 39′	18° 36½′		7° 55′
		18° 36′		
$5^h\ 3^m\ 25^s$ [5 3 25]	45° 39¼′			9° 25′
$5^h\ 5^m\ 52^s$ [5 5 52]			34° 27′	
$6^h\ 7⅔^m$ [6 7⅔]	The Sun was then east 88 5, for correcting the clock. The sky was covered with clouds. [Tunc erat ⊙ orientalis 88 5 pro corrigendo horologio. Cœlum nubibus obducebatur.]			

A little later Venus was observed again, as follows. The times here are corrected. [Paulo poſt iterum obſeruabatur ♀ vt ſequitur. Tempora ſunt hic correcta.]

[1] The codex has 90 44. [Codex habet 90 44.]

Time	Value	Value	Value	The Sun, east, on the equator [⊙ orient. in æquat.]
$7^h\ 29^m\ 12^s$ [7 29 12]	45 41½	18 37	29 40	
		18 36		67 42
$7^h\ 43^m$ [7 43]	45 42		31 50	64 15
$7^h\ 48^m\ 0^s$ [7 48 0]	45 42¼		32 25	63 0
$7^h\ 54^m\ 24^s$ [7 54 24]	45 41½	18 36	33 15	61 24

Time	Value	Value	Value	The Sun, east, on the equator [⊙ orient. in æquat.]
8^h 45^m 0^s [8 45 0]	Altitude of Venus in the meridian [Alt. ♀ in Merid.]	by the steel instrument [per Chal.]	52° 40⅔′	
		by the revolving quadrant [per Vol.]	52° 40′	
		18 37		48 45
		18 37¼		
8^h 53^m 52^s [8 53 52]	45 41			46 43
…	45 41½			45 32[1]
8^h 57^m 32^s [8 57 32]	45 41¾			45 37

13 July, in the morning [DIE 13 JULIJ, MANE.]

Time	Distance between Venus and the eye of ♉ [Inter ♀ & oculum ♉]	Declination of Venus [Declin. ♀]	Altitude of Venus [Altit. ♀]	The bright star of the Vulture, west [Luc.Vult. occ.]
	9° 58′	19° 7′	9° 26′	38 31

N.B. Here the altitude of the eye of ♉ appeared to be about 11°. [N. B. Hic altit. oculi ♉ 11° fere viſa eſt.]

Time	Distance between Venus and the eye of ♉ [Inter ♀ & oculum ♉]	Declination of Venus [Declin. ♀]	Altitude of Venus [Altit. ♀]	The bright star of the Vulture, west [Luc.Vult. occ.]
	10° 1′	19° 4′		40 18
	10° 3⅔′	19° 5′	11° 44′	42 48
	10° 4′	19° 4′		44 14
	Between Venus and the bright star of ♈ [Inter ♀ & luc. ♈]			
	43° 57′	19° 4′	13° 38⅓′	46 17
	43° 58′	19° 3⅔′	14° 27⅙′	47 48
	Between Venus and Capella [Inter ♀ & Capellam]			
	26° 38⅙′	19° 4′	16° 56⅙′	52 26
3^h $6⅙^m$ [H26° 38′ 3 6⅙′]			18° 27′	

With the clock showing 3^h $50⅙^m$, Venus was in the 90th degree, having an altitude [Horologio indicante 3H50⅙′ erat ♀ in 90 gradu habens altitudinem]

Label	Value
by the revolving quadrant [per Volubilem]	23° 7⅚′

Time	Distance between Venus and the Sun [Inter ♀ & ⊙]	Declination of Venus [Decl. ♀]	Altitude of the Sun by the min. quadrant [Alt. ⊙ per Q. min.]	Time on the equator by the Sun [Tempus in æquat. ad ⊙]
3h 57m [3 57]		19° 3⅚′		
		19° 3½′		
5h 19m [5 19]		19° 2½′		
5h 40⅚m [5 40⅚]	45° 42′		13° 50′	
5h 43m 4s [5 43 4]	45° 44′			
5h 46m 5s [5 46 5]	45° 45½′		14° 50′	
5h 51m 7s [5 51 7]	45° 46½′		15° 20′	
5h 58⅓m [5 58⅓]	45° 43½′		16° 20′	
6h 6m [6 6]		19° 3½′		88½
6h 17m [6 17]			18° 40′	
6h 21⅚m [6 21⅚]	45° 44′		19° 0′	
6h 27⅚m [6 27⅚]	45° 45¼′		19° 30′	
6h 32⅚m [6 32⅚]	45° 48′			
6h 35⅚m [6 35⅚]	45° 44½′			
6h 44⅙m [6 44⅙]	For correcting the clock, 81 30 [Pro corrigendo horologio 81 30]			

Around this time Venus could not be observed any further, because of the brilliance of the Sun's rays and the somewhat scattered clouds. [♀ circa hoc tempus non poterat vlterius obſeruari propter reſplendentiam radiorum ⊙ & rariuſculas nubes.]

15 July, in the morning [DIE 15 JULIJ, MANE.]

Venus was observed as follows. [Obſeruabatur ♀ vt ſequitur.]

Time	Distance between Aldebaran and Venus [Inter Aldeb. & ♀]	Altitude of Venus by the revolving quadrant [Alt. ♀ per Volub.]	The bright star of the Vulture, west, on the equator [Luc. Vult. occ. in æquat.]
	9° 54′	14° 35⅔′	49 50
Hours, minutes [H. M.]		15° 15½′	51 2
2^h 43^m [2 43]	9° 54⅙′	15° 37′	51 38
	Between Venus and Capella [Inter ♀ & Capellam]		
	26° 18′	17° 0′	54 11
	26° 17¼′	17° 23⅙′	54 55
	26° 18′	17° 48′	55 47

Time	Label	Value
5^h $48⅓^m$ [5 48⅓]	the time from the clock, which is to be corrected. [tempus ex horolog. corrigendo.]	
	The declination of Venus was then [Tunc erat Declinatio ♀]	19° 22⅓′
		19° 22′
6^h $24⅚^m$ [6 24⅚]	Venus was in the 90th degree [Erat ♀ in 90 Gradu]	
	having an altitude [habens Altitudinem]	
	by the revolving quadrant [per Volubilem]	23° 31¾′
	The declination of Venus was then [Declinatio ♀ tunc erat]	19° 22′
	by the armillae [per Armillas]	19° 21′

19 July, in the morning [DIE 19 JULIJ, MANE.]

Label	Value	Value
Between Venus and Aldebaran [Inter ♀ & Aldeboram]	15° 50⅙′	
The bright star of the Vulture was then west [Tunc erat lucida Vulturis occ.]		53 41
Between Venus and Capella [Inter ♀ & Capellam]	26° 19⅚′	
	26° 20′	
Declination of Venus [Declinatio ♀]	19° 52′	
	19° 53′	
The bright star of the Vulture was then west [Tunc erat Lucida Vult. occ.]		58 50½
Between Venus and Capella [Inter ♀ & Capellam]	26° 18½′, uncertain [26 18½ incerta]	
Declination of Venus afterwards [Decl. ♀ poſtea]	19° 51⅔′	
	19° 53⅓′	
Aldebaran was then east [Tunc erat Aldebora orient.]		70 21
Venus in the 90th degree, altitude [♀ in 90 gradu, Altitudo]	24° 9′	
Declination of Venus [Declinatio ♀]	19° 52⅙′	
Venus was then toward the rising [Tunc erat ♀ ad ortum]		76 2

Label	Value	Value

3 August, in the morning [DIE 3 AUGUSTI, MANE.]

Time	Label	Value	Remark
	The time of the clock [Tempus horologij]		
3^h $3½^m$ [H. 3 M. 3½]	Altitude of Venus in the 90th degree [Alt. ♀ in 90 gradu]		
	by the revolving quadrant [per Vol.]	25° 38⅙′	
	by the steel instrument [per Chal.]	25° 39½′	through the upper slit of the pinnule only [per ſuperiorem pinnacidij rimulam tantum]
	Declination of Venus [Declin. ♀]	21° 3⅓′, 21° 0⅙′	
3^h $10⅚^m$ [3 10⅚]	Venus was then east, 73 8, for correcting the clock. [Tunc erat ♀ orient. 73 8 pro corrigendo horologio.]		
3^h $35½^m$ [3 35½]	The Sun, rising above our horizon, was seen whole. [☉ oriens ſupra noſtrum Horizontem totus conſpiciebatur.]		
6^h 15^m [6 15]	The Sun was east, 87 0, for correcting the clock. [Erat ☉ orient. 87 0 pro corrigendo horologio.]		

[1] Thus in the codex. [Sic in codice.]

4 August, in the morning [DIE 4 AUGUSTI, MANE.]

Venus was observed as follows. [Obſeruabatur ♀ vt ſequitur.]

Distance between Venus and the eye of ♉ [Inter ♀ & oculum ♉]	Declination of Venus [Declinatio ♀]	Declination of Venus, second figure	Altitude of Venus [Alt. ♀]	Aldebaran, east [Aldeb. orient.]
32° 14⅔′	21° 2⅔′	21° 4½′	20° 18′	51 10
32° 15′	21° 4⅔′	21° 2½′		48 29

Venus in the 90th degree, having an altitude [♀ in 90 gradu habens altitudinem]

Label	Value	Value	Value
by the revolving quadrant [per Volubilem]	25° 38½′		
by the steel instrument [per Chalybeum]	25° 38⅓′		
	21 2	21 4½	48 12

1 September, in the morning [DIE 1 SEPTEMBRIS, MANE.]

With the clock showing 4^h 49^m [Horologio indicante H. 4 49′]

Label	Value
Venus was distant from the Lesser Dog [diſtabat ♀ a Cane minori]	23° 8½′
The declination of Venus was then [Tunc erat Declin. ♀]	18° 4½′
	18° 6⅓′

Time	Label	Value
4^h 52½^m [4 52½]	Between Venus and [Inter ♀ &]	
	Canicula [Caniculam]	23° 8′
3^h 58⅔^m, corrected [3 58⅔ corr.]	There was then [Tunc erat]	
	the eye of ♉, east [ocul. ♉ or.]	14 39⅚

Because of refraction, the altitude of Venus was [Propter refractionem erat Altitudo ♀]

Time	Altitude of Venus	Label / value
5^h 20½^m [5 20½]	23° 28′	Azimuth of Venus [Azim. ♀]
5^h 25⅚^m [5 25⅚]	24° 16⅓′	93° 20′ toward the west [93 20 verſ. occ.]

6 October [DIE 6 OCTOBRIS.]

Distance between Venus and the tail of ♌ [Inter ♀ & caudam ♌]	Declination of Venus [Declinatio ♀]	Declination of Venus, second figure	Altitude of Venus [Altit. ♀]	The bright star of ♈, west [Luc. ♈ occ.]
11° 21½′				72 20
11° 21½′				72 35
	5° 36′	5° 36⅔′	14° 57⅙′	72 53
Between Venus and the bright star of Hydra [Inter ♀ & Luc. Hydræ]	Vice versa [Viceverſa]			
35° 51¾′				74 22
35° 51¾′				74 40
	5° 35⅔′	5° 36′	16° 4¼′	75 1

9 October [DIE 9 OCTOBRIS.]

Time [Tempus]	Distance between the Sun and Venus [Diſt. inter ☉ & ♀]	Declination of the Sun [Decl. ☉]	Altitude of the Sun [Alt. ☉]	The Sun, east [☉ orient.]
10^h 47⅚^m [10 47⅚]	32° 38′	9° 55½′	22½	
	32° 37¾′	9° 56⅔′	22° 53′	15 32½
Declination of Venus [Decl. ♀]	32° 38′	9° 56½′	23° 3′	14 38
4° 6′	32° 38′	9° 56⅙′	23° 16′	13 26
4° 5⅙′		9° 56⅔′		

Time [Tempus]	Distance between the Sun and Venus [Dist. inter ☉ & ♀]	Declination of the Sun [Decl. ☉]	Altitude of the Sun [Alt. ☉]	The Sun, east [☉ orient.]
	32° 37⅓′	9° 56⅔′ 9° 57′	23° 22′	12 36
	32° 37′	9° 56⅔′ 9° 56¾′	23° 26′	12 3½
4° 4½′ 4° 4′	32° 36⅔′		23° 32′	11 10
Hours, minutes [H. M.]	Around noon [Circa Meridiem]			The Sun, west [☉ occid.]
12^h $8⅙^m$ [12 8⅙]	32° 37′			2 6⅔
12^h $13⅔^m$ [12 13⅔]	32° 36′			3 26½

A little after the last time recorded, the declination of Venus observed by the armillae: 4° 4′. [Paulo post vltimum tempus notatum obseruata Declin. ♀ per Armillas 4° 4′.]

10 October, in the morning [DIE 10 OCTOBRIS, MANE.]

The clock was corrected to the eye of ♉. [Horologium ad ocul. ♉ correctum est.]

Time on the clock [Tempus in horol.]	Distance between Venus and cor ♌ [Inter ♀ & cor ♌]	Declination of Venus [Decl. ♀]	Altitude of Venus by the Min. quadrant [Alt. ♀ per Min. Quad.]	The Lesser Dog, west [Can. min. occ.]
5^h $39⅚^m$ [5 39⅚]	29° 54′	3° 48′		0 13
		3° 47½′		
5^h 45^m [5 45]	29° 54⅓′		17	1 24
5^h $48⅙^m$ [5 48⅙]	29° 54′	3° 45⅓′, with both [3 45⅓ vtroq.]		2 9
5^h 51^m [5 51]				2 53

Afterwards[1] Venus was observed from the Sun, as follows, after the Sun was a little higher. [*Postea[1] ♀ a Sole obseruabatur vt sequitur, postquam ☉ paulo eßet eleuatior.*]

Time [*Tempus*]	*Equatorial distance, the Sun east* [*Dist. æquat. ☉ or.*]	*Distance of Venus and the Sun by the sextant* [*Dist. ♀ & Solis per Sext.*]	*Altitude of the Sun* [*Alt. ☉*]	*Declination of Venus* [*Decl. ♀*]
8^h $5⅔^m$ [8 5⅔]	*57° 41′*	*32° 20¾′*	*8° 33′*	
8^h 10^m [8 10]	56° 48′	32° 21′	9° 3′	3° 46′
				3° 45′
8^h $15¾^m$ [8 15¾]	55° 18′	32° 21½′	9° 42′	

Time [*Tempus*]	*Equatorial distance, the Sun east* [*Diſt. æquat.* ☉ *or.*]	*Distance of Venus and the Sun by the sextant* [*Diſt.* ♀ *& Solis per Sext.*]	*Altitude of the Sun* [*Alt.* ☉]	*Declination of Venus* [*Decl.* ♀]
8^h 22¼^m [8 22¼]	53° 50′	32° 20½′	10° 25′	3° 46⅙′
				3° 45′
8^h 27⅔^m [8 27⅔]	52° 21½′	32° 22′	10° 58′	
8^h 37⅙^m [8 37⅙]	50° 2′	32° 21½′	12° 3′	3° 41′
				3° 41′
8^h 44⅓^m [8 44⅓]	48° 20′	32° 22⅚′	12° 45′	
8^h 52⅚^m [8 52⅚]	46° 7′	32° 20½′	13° 36′	
9^h 05⅚^m [9 05⅚]	44° 13′	32° 25′	14° 29′	
9^h 11^m [9 11]	41° 47′	32° 20½′	15° 21′	
9^h 21^m [9 21]				3° 41½′
9^h 24^m 25^s [9 24 25]	38° 40′	32° 21½′	16° 34′	
9^h 40^m 50^s [9 40 50]	34° 32′	32° 32′	17° 54′	3° 41½′
				3° 40¾′
9^h 50^m 20^s [9 50 20]	32° 10′	32° 24′	18° 40′	
10^h 1¾^m [10 1¾]	29° 26′	Venus crossed [Tranſiit ♀]		
	the meridian, having an altitude of [Merid. habens Alt.]			
	by the revolving quadrant [per Volub.]	37° 44½′		3° 40′
	by the steel instrument [per Chalyb.]	37° 45¼′		3° 41′
10^h 14^m 40^s [10 14 40]	26° 19′	32° 23½′	20° 15′	
10^h 19^m 20^s [10 19 20]	25° 25′	32° 23½′	20° 36′	

31 October, in the morning [DIE 31 OCTOBRIS, MANE.]

Time, Cor ♌ east [Tempus Cor ♌ or.]	Distance between Venus and cor ♌ [Inter ♀ & cor ♌]	Declination of Venus [Declinatio ♀]	Declination of Venus, second figure	Altitude of Venus [Altit. ♀]
3^h 20^m [3 20]	55° 46′	6° 11⅓′	6° 12½′	13° 5′
2^h 32^m [2 32]	55° 46½′ Vice versa [Viceverſa]	6° 12½′	6° 11′	13° 28′

Time, Cor ♌ east [Tempus Cor ♌ or.]	Distance between Venus and cor ♌ [Inter ♀ & cor ♌]	Declination of Venus [Declinatio ♀]	Declination of Venus, second figure	Altitude of Venus [Altit. ♀]
	Distance from Arcturus [Dist. ab Arct.]			
1^h 21^m [1 21]	29° 19′	6° 10⅓′	6° 12⅔′	13° 58′
0^h 29^m [0 29] west [occid.]	29° 19⅙′	6° 10′		14° 22′
0^h 35^m [0 35]	29° 19′	6° 12′		14° 53′

[1] See above, p. 18, among the observations of the Moon. [Vide supra p. 18 inter obseruationes lunæ.]

14 November, in the morning [DIE 14 NOUEMBRIS, MANE.]

Time, Cor ♌ west [Tempus Cor♌occ.]	Distance between Venus and Spica [Inter ♀ & Spicam]	Declination of Venus [Declinatio ♀]	Declination of Venus, second figure	Altitude of Venus [Altit. ♀]
16^h 8^m [16 8]	19° 32¼′	12° 29⅙′	12° 30¼′	8° 50′
17^h 10^m [17 10]	19° 32⅔′	12° 29⅔′	12° 30⅙′	9° 16′
18^h 20^m [18 20]	19° 33⅙′	12° 29¾′	12° 30⅓′	9° 50′
19^h $14½^m$ [19 14½] Resp. 7^h 6^m [Resp. H. 7 M. 6.]	19° 34′	12° 30′	12° 30½′	10° 10′

18 December [DIE 18 DECEMBRIS.]

Time [Tempus]	Distance between Jupiter and Venus [Inter ♃ & ♀]	Declination of Venus [Declin. ♀]	Altitude of Venus [Alt. ♀]	For the clock, Jupiter east [Pro horol. ♃ or.]
7^h $53½^m$ [7 53½]	38° 6′	22° 29½′	3° 11′	
7^h $58⅔^m$ [7 58⅔]	38° 7′	22° 33½′	3° 23′	4 13
		22° 34⅙′		
8^h 2^m [8 2]	38° 7′	22° 32⅚′	3° 41′	3 14
8^h 3½^m [*8 3½*]	*38° 6½′*	*22° 32½′*	*3° 57′*	*2 44*
		22° 33′		

And from this the place of Venus can be verified, taking account of the refraction near the horizon, for Venus was close to the Sun. The place of Jupiter, from which it was taken[1], can be corrected from the observations of Jupiter made on the same day, [which] you have in their proper place. [*Atque hinc potest verificari locus ♀ris habito respectu refractionis iuxta Horizontem, erat enim prope Solem. Locus autem ♃ vnde capiebatur[1], poterit corrigi ex obseruationibus ♃ eadem die factis [quas] suo loco habes.*]

19 December [DIE 19 DECEMBRIS.]

With the clock showing 7^h 2⅔^m, Spica ♍ was crossing the meridian. [Horologio indicante H. 7 M. 2⅔ tranſibat Spica ♍ per Meridianum.]

Time [Tempus]	Venus from Jupiter [♀ a ♃]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	For the clock, Jupiter east [Pro horol. ♃ or.]
8^h 23^m 55^s [8 23 55]	39° 9⅚′	22° 35⅙′	2° 23′	5 18
		22° 36′		
8^h 26^m [8 26]	39° 9⅚′		2° 35′	
8^h 29⅚^m [8 29⅚]	39° 10¼′		2° 51′	4 8
8^h 33⅚^m [8 33⅚]	39° 11¼′	22° 37⅚′	3° 12′	3 17
		22° 39′		
8^h 37½^m [8 37½]	39° 12⅔′	22° 40½′	4° 0′	2 18
		22° 39⅚′		
8^h 55¼^m [8 55¼]	39° 13¼′	22° 41′	5° 5′	
		22° 40⅔′		

Afterwards Venus could no longer be observed, because the Sun was just about to rise. The variation in the distance from Jupiter that occurred did not arise from a fault in the observation but from the refraction, which changed progressively. This refraction must therefore be corrected by another method, so that the true place may be found, the parallax also being applied. [Poſtea non poterat ♀ amplius obſeruari ob ☉ iam iam exorientem, diuerſitas autem in diſtantia a ♃ quæ eueniebat non vitio obſeruationis ſed propter refractionem ſeſe ſucceßiue alterantem contigit, quare hæc refractio alia ratione corrigenda venit, vt verus locus pateat, adhibita etiam parallaxi.]

The Sun was seen to rise at 8^h 12^m by the clock. [Sol viſus eſt oriri hora 8 minuto 12 in horologio.]

20 December, in the morning [DIE 20 DECEMBRIS, MANE.]

Spica ♍ crossed the meridian with the clock showing 7^h 1½^m; from this you will correct the time of the clock. [Spica ♍ tranſibat Merid. horologio indicante H. 7 M. 1½, inde corriges tempus Horologij.]

Time (no head printed)	Venus from Jupiter [♀ a ♃]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]
8 51	40° 15 1/[numeral: ?]′	22° 42′	2° 45½′
8 55⅙	40° 15¼′	22° 42′	3° 8′
8 59⅓	40° 16′	22° 40′	
		22° 41′	

Altitudes and declinations of Venus in the meridian and in the 90th degree. In the month of March, in the year 1590[2]. [Altitudines & Declinationes ♀ in Meridie & gradu 90. MENSE MARTIO ANNI 1590[2].]

Day [Dies]	Hours, minutes [H. M.]	Meridian altitude of Venus [Alt. ♀ merid.]	Declination of Venus from the meridian altitude [Declin. ♀ ex alt. mer.]	Declination of Venus by the armillae [Decl. ♀ per Arm.]	Hours, minutes [H. M.]	Altitude of Venus in the 90th degree [Alt. ♀ in 90]	Declination of Venus from the altitude in the 90th degree [Declin. ♀ ex alt. in 90]	Declination of Venus by the armillae [Decl. ♀ per Arm.]
4	2h 46½m [2 46½]	25° 59′ 35″	17° 54⅓′	17° 54½′	7h 55½m [7 55½]	17° 55⅙′	18° 0½′	18° 1¾′
11	2h 45m [2 45]	24° 29′ 35″	20° 24⅓′	20° 25′	7h 50½m [7 50½]	17° 58½′	20° 27′ 55″	20° 31⅓′
15	2h 43¼m [2 43¼]	24° 55′ 24⅚′	21° 39′ 35″	21° 40½′	7h 40½m [7 40½]	17° 33¼′	21° 43⅚′	21° 46⅓′
18	2h 41m 22 [2 41 22]	26° 26⅓′	22° 30′ 55″	22° 31¾′	7h 32⅔m [7 32⅔]	17° 39′	22° 36½′	22° 35′
19	2h 41m 4 [2 41 4]	26° 52′	22° 46¾′	22° 48′	7h 31½m [7 31½]	17° 58′	22° 51⅙′	22° 51′
21	2h 39¼m [2 39¼]	27° 23⅓′	23° 18 1/12′	23° 19⅓′	7h 30⅓m [7 30⅓]	17° 37⅓′	23° 22⅓′	23° 21⅓′
26	2h 33⅔m [2 33⅔]	28° 30′	24° 24¾′	24° 24⅚′	7h 21½m [7 21½]	17° 1¼′	24° 28⅔′	24° 27⅔′
27	2h 32½m [2 32½]				7h 18¾m [7 18¾]	17° 12′	24° 37⅙′	24° 38½′
28	2h 31½m [2 31½]				7h 18⅓m [7 18⅓]	17° 29¼′	24° 50¾′	24° 50′
29	2h 29⅚m [2 29⅚]				7h 16¼m [7 16¼]	17° 42′	25° 0¾′	25° 0′
30	2h 28⅙m [2 28⅙]				7h 13⅚m [7 13⅚]	17° 54′	25° 10⅙′	25° 10′

[1] Compare above, p. 43. [Cfr. ſupra p. 43.] [2] Compare above, p. 52, at the end of the day 3 March, and p. 60, at the end of day 21. [Cf. ſupra p. 52 ad finem diei 3 Martii et p. 60 ad finem d. 21.]

Places of Venus [LOCA VENERIS.]

INVESTIGATION OF THE MOTION OF VENUS FOR 28 FEBRUARY[1] [INQUIſITIO MOTUS ♀ AD DIEM 28 FEBRUARIJ[1].]

Time	Label	Value
2h 0m [H. 2 0′]	Distance of Venus from the Sun [Diſt. ♀ a Sole]	46° 10½′
	Altitude of the Sun 25° [Altitudo ☉ 25°]	
	Declination of Venus [Declinatio ♀]	16° 18′
	Apparent declination of the Sun [Declin. ☉ viſa]	4° 4⅓′ south [4 4⅓ M.]

Time	Label	Value
	Angular difference of ascension [Ang. diff. aſcenſ.]	41° 55′ 6″
	Apparent right ascension of the Sun [Aſc. R. ☉ viſa]	350° 38′ 40″
	Therefore the right ascension of Venus [Ergo Aſc. Recta ♀]	32° 33¾′
	Reſp. longitude of Venus [Reſp. Longitudo ♀]	5° 54½′ ♉
	Latitude [Latitudo]	2° 56⅓′ north [2 56⅓ B.]

Time	Label	Value	Remark
7⅓^{h} [H. 7⅓]	Distance of Venus from Aldebaran [Diſt. ♀ ab Aldeb.]	29° 16¼′	
	Declination of Venus [Declin. ♀]	16° 24½′ north [16 24½ B.]	
	Declination of Aldebaran [Declin. Aldeb.]	15° 37′ north [15 37 B.]	
	Angular difference of ascension [Ang. Diff. aſcenſ.]	30° 28′ 10″	
	Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	32° 39′ 10″	
	For the right ascension of Aldebaran is [Nam Aſc. R. Aldeb. eſt]	63° 7′ 20″	
	Reſp. longitude of Venus [Reſp. Longitudo ♀]	6° 1′ 0″ ♉	
	Latitude [Latitudo]	3° 0′ 0″ north [3 0 0B.]	
	Altitude of Venus 20°, parallax of longitude [Alt. ♀ 20°, Parall. Long.]	3¼	to be added [add.]
	Latitude [Latit.]	2 53	

N.B. The parallax of Venus must be taken into account in both observations and applied to the apparent longitude on either side, according as Venus was on this side of or beyond the 90th degree; in this way the motion agrees more correctly with the interval of time. [N. B. Habenda eſt ratio parallaxeos ♀ in vtraque obſeruatione et Longitudini vtrinque viſæ applicanda, prout cis vltraque 90 grad. ♀ fuerit, ſicque motus interuallo temporis rectius congruit.]

Add the parallax of the later observation. [Adde parallaxin poſterioris obſeruationis.]

3 MARCH [DIE 3 MARTIJ.]

At 3^{h} 16^{m}1: distance between Venus and the Sun 46° 0′, declination of Venus 17° 30′ north, declination of the Sun 2° 51′ south. [H. 3 M. 16^{1} Diſt. inter ♀ et ☉ 46° 0′, Declin. ♀ 17°30′ B., Declin. ☉ 2°51′ M]

Right ascension of the Sun 353° 26′ 22″, place of the Sun 22° 51′ 4″ ♓. [Aſcenſio Recta ☉ 353°26′22″, Locus ☉ 22°51′ 4″ ♓.]

Therefore the right ascension of Venus 35° 17′, declination north 17° 30′. [Ergo Aſcenſio Recta ♀ 35°17′, Decl. B. 17 30.]

On the same day[2], at $6^h\ 37^m$: right ascension of the eye of ♉ 63° 7′, declination 15° 39′ 30″ north. [Eodem die[2] H. 6 37′ Oculi ♉ Aſc. R. 63 7, Declin. 15 39 30 B.]

Equatorial distance 27° 48′ 30″, right ascension of Venus 35° 18′ 30″, Reſp. longitude 8° 49′ ♉, [Diſtantia æquat. 27 48 30, Aſc. R. ♀ 35 18 30, Reſp. Long. 8° 49′ ♉]

latitude 3° 17′ 43″ S. [Latit. 3 17 43 S.]

At $6^h\ 38^m\ 50^s$: equatorial distance 27° 50′ 30″, right ascension 35° 16′ 30″, Reſp. longitude 8° 47′ 15″ ♉, [H. 6 38′ 50″ Diſt. æquat. 27 50 30, Aſc. R. 35 16 30, Reſp. Long. 8 47 15 ♉]

latitude 3° 18′ S. [Latit. 3 18 S.][4]

INVESTIGATION OF THE PLACE OF VENUS NEAR ITS STATION FROM THE OBSERVATIONS OF 14 AND 15 APRIL[3] [INQUIſITIO LOCI ♀ IUXTA ſTATIONEM EX OBſERUATIONIBUS DIEJ 14 & 15 APRILIS[3].]

Time	Label	Value
Day 14, $2^h\ 10^m$ [Die 14, H. 2 M. 10]	Distance of Venus from the Sun [Diſt. ♀ a ☉]	28° 43½′
	Observed declination of Venus [Declin. obſeruata ♀]	26° 4′ 45″
	Apparent declination of the Sun [Declin. viſa Solis]	12° 51′ 45″
	Angular difference of ascension [Ang. diff. aſcenſ.]	27° 9′ 45″
	Apparent right ascension of the Sun [Aſc. R. viſa $\odot^{lis}$]	31° 43′ 0″
	Therefore the apparent right ascension of Venus [Ergo Aſc. R. viſa ♀]	58° 52′ 45″

Label	Value
Reſp. longitude of Venus [Reſp. Longitudo ♀]	2° 12⅕′ ♊
Latitude [Latitudo]	5° 31⅖′
Altitude of Venus about 60°, parallax of altitude [Altit. ♀ 60° fere, Parall. alt.]	4′ 5″[4]
Longitude 1′ 10″, latitude [Long. 1′10″, Lat.]	3′ 45″
Reſp. true longitude [Reſp. vera Long.]	2° 13¼′ ♊
Latitude [Lat.]	5° 35⅙′ north [5 35⅙ B.]

Time	Label	Value
Day 15, $2\frac{1}{6}^h$ [Die 15, H. 2⅙]	Distance of Venus from the Sun [Diſt. ♀ a ☉]	27° 44′
	Declination of Venus [Decl. ♀]	26° 3′ 0″
	Apparent declination of the Sun [Decl. viſa ☉]	13° 9′ 0″
	Apparent right ascension of the Sun [Aſc. R. viſa ☉]	32° 39′ 20″
	Angular difference of ascension [Ang. diff. aſcenſ.]	26° 9′ 50″
	Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	58° 49′ 10″

[4]S. = Septentrionalis (north), consistent with the B. (north) latitudes on the same leaf

Label	Value
Reſp. longitude of Venus [Reſp. Longitudo ♀]	2° 8′ ♊
Latitude [Latitudo]	5° 39′ 35″ north [5 39 35 B.]
Altitude of Venus about 60° [Alt. ♀ 60 circiter]	
True longitude [Vera Longitudo]	2° 9¾′ ♊
Latitude [Latitudo]	5° 34′ 0″ north [5 34 0 B.]

[1] From codices V. and K. [E codd. V. et K.] [2] From codex M. [E codice M.] [3] From codices V. and K. [E codd. V. & K.] [4] Written in the margin: "The distance of Venus from the Earth around these days 425 semidiameters of the Earth". [Adcriptum eſt in margine: »Diſtantia ♀ a terra circa hos dies 425 ſemidiamet. terræ«.]

Time	Label	Value
On the same day, 15 April, 8^h 30^m [Eodem die 15 Aprilis H. 8 M. 30]		
	Distance of Venus from the lower head of ♊ [Diſt. ♀ ab inf. cap. ♊]	45° 12′
	Declination of Venus [Declinatio ♀]	26° 2′
	Declination of the lower head of ♊ [Decl. inf. cap. ♊]	28° 57′
	Right ascension of this star [Aſcenſ. R. huius]	110° 1′ 50″
	Angular difference of ascension [Ang. diff. aſcenſ.]	51° 14′ 45″
	Therefore the right ascension of Venus [Igitur Aſc. R. ♀]	58° 47′ 5″

Label	Value	Remark
Reſp. longitude [Reſp. Longitudo]	2° 6′ 30″ ♊	
Latitude [Latitudo]	5° 32′ 0″ north [5 32 0 B.]	
Altitude of Venus 15°, reſp. parallax [Alt. ♀ 15°, reſp. Parallaxis]	7′ 40″	
according to Copernicus [iuxta Copernicum]		
Refraction [Refractio]	3 0	
Difference [Differentia]	4 40	
Reſp. parallax of longitude [Reſp. Par. Long.]	3′ 20″	to be added [add.,]
Latitude [Lat.]	3′ 10″	to be added [add.]
Longitude [Longitudo]	2° 9 5/[numeral: ?]′ ♊	
Latitude [Latitudo]	5° 35′ north [5 35 B.]	

From this, among other things, one may reason that the parallax of Venus is even smaller than the Copernican theory supposes, since from $2\frac{1}{6}^h$ to 8½, if the parallax according to Copernicus is applied, the star Venus will be entirely

stationary, whereas the proportion of the daily motion requires at least one minute for the interval of time. But see the observations and make the test there. [Hinc inter alia ratiocinari licet parallaxin ♀ etiam minorem eße quam Theoria Copernicea ſupponit, dum a 2⅙ H. in 8½, ſi parallaxis ſecundum Copernicum adhibeatur, plane ſtationaria ſtella ♀ erit, cum tamen proportio motus diurni vnum ad minimum minutum iuxta interuallum temporis exigat. Sed vide obſeruationes & fac ibi periculum.]

COMPUTATION OF THE PLACE OF VENUS FOR 6 JULY, IN THE MORNING[1] [SUPPUTATIO LOCI ♀ AD DIEM 6 JULIJ MANE[1].]

Time	Label	Value
$6^h\ 0^m$ [H. 6 0′]	Distance of Venus from the Sun [Diſtantia ♀ a ☉]	45° 31′
	Apparent declination of the Sun [Declinatio ☉ viſa]	21° 36′ 0″
	Declination of Venus [Decl. ♀]	18° 7′ north [18 7 B.]
	Apparent longitude of the Sun, altitude of the Sun [Long. ☉ 23 3¼ ♋ viſa, Alt. ☉ 17¾]	23° 3¼′ ♋; altitude 17¾°

Label	Value	Remark
Angular difference of ascension [Ang. diff. aſcenſ.]	48° 26′ 20″	to be subtracted [ſubt.]
Apparent right ascension of the Sun [Aſc. R. ☉ viſa]	114° 52′ 10″	
Right ascension of Venus [Aſc. R. ♀]	66° 25′ 0″	
Reſp. longitude of Venus [Reſp. Longitudo ♀]	7° 37 1/12′ ♊	
Latitude [Latitudo]	3° 35¼′ south [3 35¼ M.]	

Reſp. refraction apart from the parallax: longitude 1′ 45″ to be subtracted, latitude 2½′ to be added. [Reſp. refractio extra parallaxin Long. 1′ 45″ ſubt., Lat. 2½′ add.]

Altitude of Venus 41°, parallax 2′ 40″; Reſp. in longitude 1′ 10″ to be subtracted, latitude 2′ 25″ to be added. [Altit. ♀ 41°, Parallaxis 2′ 40″ Reſp. in Long. 1′ 10″ ſubt., Lat. 2′ 25″ add.]

15 JULY, IN THE MORNING[1] [DIE 15 JULIJ, MANE[1].]

Time	Label	Value
$2^h\ 43^m$ [H. 2 M. 43]	Right ascension of Venus [Aſcenſio R. ♀]	72° 44½′
	Reſp. longitude [Reſp. Longitudo]	13° 43′ 3″ ♊
	Latitude [Latitudo]	3° 10½′ south [3 10½ M.]
	Altitude of Venus 15⅔°, reſp. refraction [Alt. ♀ 15⅔, reſp. Refract.]	2′ 45″

Time	Label	Value
	Parallax [Parall.]	4 0
	Difference [Differentia]	1 15

Label	Value	Remark
Reſp. in longitude [Reſp. in Long.]	0′ 25″	to be subtracted [ſubt.]
Latitude [Lat.]	1 10	to be added [add.]
True longitude [Vera Longitudo]	13° 42⅔′ ♊	
Latitude [Latitudo]	3° 9⅓′ south [3 9⅓ M.]	

COMPUTATION FOR THE LONGITUDE AND LATITUDE OF VENUS FROM THE MORNING OBSERVATION OF THE FIRST DAY OF SEPTEMBER, AT 3^{H} $58\frac{2}{3}^{M2}$ [SUPPUTATIO PRO LONGITUDINE & LATITUDINE ♀ EX OBſERUATIONE DIEJ PRIMI SEPTEMBRIS MATUTINA AD HORAM 3 MINUTUM $58\frac{2}{3}^{2}$.]

	From our own observation [Ex propria obſeruatione]	From the Copernican calculation [Ex Coperniceo calculo]	From the Alphonsine calculation [Ex Alphonſino calculo]
Longitude [Longitudo]	7° 48½′ ♌*	7° 0′ ♌	7° 50′ ♌
Latitude [Latitudo]	0° 18¼′ south [0 18¼ M.]	0° 22′ south [0 22 M.]	0° 51′ south [0 51 M.]

* This longitude and latitude are derived from our old table. [* Ex tabula noſtra veteri ſunt hæ longit. & lat. deductæ.]

10 OCTOBER, IN THE MORNING[1] [DIE 10 OCTOBRIS, MANE[1].]

Time	Label	Value
5^{h} $48\frac{2}{3}^{m}$ [H. 5 M. 48⅔]	Venus was distant from cor ♌ [Diſtabat ♀ a corde ♌]	29° 54′
	It is taken in the distance [Aßumitur in diſt.]	29° 55′
	for the correction of the refraction [pro Refr. emend.]	
	Declination of Venus [Declin. ♀]	3° 45′

Label	Value
Declination of cor ♌ [Declin. cordis ♌]	13° 57′
Right ascension of cor ♌ [Aſc. R. cordis ♌]	146° 37′ 10″
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	175° 8′ 0″
Declination [Declinatio]	3° 45′

[1] From codices V. and K. [E codd. V. et K.] [2] From codex E. [E codice E.]

INVESTIGATION OF THE PLACE OF VENUS A° 90, 14 NOVEMBER, IN THE MORNING[1] [INQUISITIO LOCI ♀ A° 90 DIE 14 NOUEMBRIS MANE[1].]

Time	Label	Value	Remark
7^h 6^m [H. 7 M. 6]	Distance of Venus from Spica [Dist. ♀ a Spica]	19° 34′	
	Declination of Venus [Declinatio ♀]	12° 30′ south [12 30 M.]	
	Declination of Spica [Decl. Spicæ]	8° 58′ south [8 58 M.]	
	Resp. longitude of Venus [Resp. Longitudo ♀]	7° 22′ 0″ ♏	
	Latitude [Latitudo]	1° 36⅓′ north [1 36⅓ B.]	
	Difference in longitude [Diff. in Long.]	2′ 20″	to be added [add.]
	Latitude [Lat.]	2 30	to be subtracted [subt.]

Label	Value
Angular difference of ascension [Ang. diff. ascens.]	19° 35′ 55″
Right ascension of Spica [Ascens. R. Spicæ]	195° 56′ 0″
Therefore the right ascension of Venus [Ergo Asc. R. ♀]	215° 31′ 55″
Altitude of Venus 10°, resp. parallax [Altit. ♀ 10°, resp. parallaxis]	2 10
refraction [refractio]	5 30
difference [differentia]	3 20
True observed longitude [Vera obseruata Long.]	7° 24⅓′ ♏
Latitude [Lat.]	1° 35⅚′ north [1 35⅚ B.]

INVESTIGATION OF THE PLACE OF VENUS FOR 18 DECEMBER, IN THE MORNING[1] [INQUISITIO LOCI ♀ AD DIEM 18 DECEMBRIS MANE[1].]

Time	Label	Value
8^h 0^m [H. 8 0′]	Distance of Venus from Jupiter [Dist. ♀ a ♃]	38° 7′
	Declination of Venus [Declinatio ♀]	22° 32½′
	Declination of Jupiter [Declinatio ♃]	14° 20½′
	Altitude of Venus [Altit. ♀ 3 [numeral: ?]/4]	3 [numeral: ?]/4°
	Parallax of altitude [Parall. altit.]	2′ 0″
	Refraction [Refractio]	11 40
		9 40

Resp. in longitude 4 30 to be added, latitude 8 30 to be subtracted. [Resp. in Long. 4 30 add., Lat. 8 30 subt.]

Label	Value
Angular difference of ascension [Angulus diff. ascens.]	39° 19′ 48″

Label	Value
Right ascension of Jupiter [Aſcenſio R. ♃]	219° 45¼′
Accordingly the right ascension of Venus [Idcirco Aſc. R. ♀]	259° 5′ 3″
Reſp. longitude [Reſp. Longitudo]	19° 55⅗′ ♐
Latitude [Latitudo]	0° 36′ 0″ north [0 36 0 B.]
True longitude of Venus [Vera ♀ Longitudo]	20° 0′ 5″ ♐
Latitude [Latitudo]	0° 27½′ north [0 27½ B.]

Observations of Mercury [OBSERUATIONES MERCURIJ.]

28 February [DIE 28 FEBRUARIJ.]

Mercury was observed at an altitude of about 2¼° with the Radius, taken by D. Tycho, but too hastily and not well enough. [Obſeruabatur ☿ in altitudine quaſi 2¼ graduum per Radium, a D. Tychone accepta, ſed nimis feſtinanter nec ſatis bene.]

Its declination 2° 16⅔′. [Declinatio eius 2 16⅔.]

1 March, in the evening [DIE 1 MARTIJ, VESPERI.]

Mercury was observed. [Obſeruabatur ☿.]

Time [Tempus]	Distance between Mercury and the bright star of ♈ [Diſt. inter ☿ & luc. ♈]	Altitude of Mercury by the lesser azimuthal quadrant [Altit. ☿ per Q. min. azim.]	Northern declination of Mercury [Declin. Bor. ☿]	Northern declination of Mercury, second figure
6h 25⅚m [6 25⅚]	27° 16′	6° 18½′		
6h 27⅙m [6 27⅙]	27° 18′	5° 30′	3° 6′	3° 6½′
6h 29m [6 29]	27° 15¾′	5° 8′	3° 6½′	
6h 30m 45s [6 30 45]	27° 16′	4° 57½′		
6h 32⅔m [6 32⅔]	27° 15′	4° 35′		
6h 34⅓m [6 34⅓]	27° 15′	4° 28′	3° 6⅔′	3° 6′
6h 36⅔m [6 36⅔]	27° 15¼′	4° 8′	3° 6⅓′	
6h 38⅔m [6 38⅔]	27° 14¾′	3° 56′	3° 6⅔′	3° 6⅙′
6h 43½m [6 43½]	*27° 13′*	*3° 25′*	*3° 7′*	*3° 6⅔′*
6h 46⅓m [6 46⅓]	*27° 11′*	*2° 56′*	*3° 7′*	*3° 7⅙′*
6h 49⅚m [6 49⅚]	*27° 9′*	*2° 17′*	*3° 7½′*	*3° 8′*

Time [Tempus]	Distance between Mercury and the bright star of ♈ [Dist. inter ☿ & luc. ♈]	Altitude of Mercury by the lesser azimuthal quadrant [Altit. ☿ per Q. min. azim.]	Northern declination of Mercury [Declin. Bor. ☿]	Northern declination of Mercury, second figure
6h 52m [*6 52*]	*27° 7¾′*	*2° 10′*	*3° 7′*	*3° 7⅚′*
6h 55m [*6 55*]	*27° 3½′*	*1° 32′*	*3° 7⅔′*	*3° 8′*
6h 58m [*6 58*]	*27° 2¾′*	*1° 14′*	*3° 8′*	*3° 8⅓′*

For the clock I observed last that the Greater Dog at this last time was 0° 50′ before the meridian[2]. [*Pro horolog. obſeruaui vltimo, quod Canis maior in hoc vltimo tempore fuerit ante Meridianum P. 0 M. 50*[2].]

N. B. Mercury appeared very conspicuously, like the stars of the first magnitude, so much so that in visible magnitude it resembled the one that is in the right shoulder of Orion. If, then, you make the visible diameter of Mercury 2½′, it will not be unfitting. [*N. B.* ☿ *admodum apparentei videbatur, inſtar ſtellarum primæ magnitudinis, adeo vt eam, quæ eſt in dextro humero Orionis, magnitudine viſibili repræſentaret. Si itaque* ☿ *Diametrum viſibilem feceris 2½′, non inconuenienter ſe habebit.*][5]

2 March, in the evening [DIE 2 MARTIJ, VESPERI.]

Time [Tempus]	Distance between Mercury and the bright star of ♈ [Dist. inter ☿ & luc. ♈]	Declination of Mercury [Decl. ☿]	Altitude of Mercury by the lesser azimuthal [Alt. ☿ per min. azim.]	For the clock, the Greater Dog east [Pro horol. Can. mai. or.]
6h 35m [6h 35]	♎ 25° 40′	3° 59′	6° 23′	5 26
6h 37⅙m [6h 37⅙]	♎ 26° 38⅓′		6° 4′	5 1½
		Azimuth of Mercury [Azim. ☿]	88° 5′	
6h 39½m [6h 39½]	♎ 25° 37′	4° 0′	5° 50′	4 26
		3° 59½′		
6h 43⅓m [6h 43⅓]	♎ 26° 37′		5° 15′	3 27
6h 45⅙m [6h 45⅙]	♎ 26° 36½′	4° 1′	4° 50′	3 2
6h 48⅔m [6h 48⅔]	♎ 26° 35⅙′	with both pinnules [vtroq. pinn.]	4° 30′	2 7
6h 49⅚m [6h 49⅚]	♎ 26° 34¾′	4° 2′	4° 27′	1 50

[5] the last sort of "apparentei" is printed as an undotted stem without the arm of an r; the word is construed as "apparenter".

Time [Tempus]	Distance between Mercury and the bright star of ♈ [Dist. inter ☿ & luc. ♈]	Declination of Mercury [Decl. ☿]	Altitude of Mercury by the lesser azimuthal [Alt. ☿ per min. azim.]	For the clock, the Greater Dog east [Pro horol. Can. mai. or.]
7^h 0½^m [7 0½]		the Greater Dog, west [Canis mai. occ.]		0 45

[1] From codices V. and K. [E. codd. V. et K.] [2] Written beside it in codices V and K: "Resp. 6 41, therefore subtract 17′ everywhere". [Adscriptum est in codd. V et K: »Resp. 6 41, subtrahe itaque vbique 17′«.]

At the following noon the clock showed 8^m too slow; but also use the fixed stars for the time. [*Horologium in Meridie sequente 8 M. iusto tardius monstrabat, sed adhibe & fixas pro tempore.*]

3 March, in the evening [DIE 3 MARTIJ, VESPERI.]

Time [Tempus]	Distance between Mercury and the eye of ♉ [Dist. ☿ & ocul. ♉]	Declination of Mercury [Declin. ☿]	Altitude of Mercury [Alt. ☿]	For the clock, the Greater Dog, west [Pro horol. Can. mai. occ.]
6^h 41^m [6 41]	54° 57′	4° 49½′		
		4° 50′		
6^h 44½^m [6 44½]	54° 57⅙′	4° 50′	5° 46′	
		4° 49¾′		
6^h 48^m 35^s [6 48 35]	54° 57¼′	4° 51′	5° 15′	
		4° 51⅙′		
7^h 0^m 35^s [7 0 35]	*54° 52½′*	*4° 54¼′*	3° 35′	2 8
	doubtful [*dubia*]			
7^h 5⅚^m [7 5⅚]	*54° 52′*		*2° 54′*	*3 25½*
7^h 9^m [7 9]	*54° 49¾′*	4° 58′	*2° 24′*	*4 11*
		4° 57½′		
7^h 13⅚^m [7 13⅚]	*54° 46⅔′*	5° 0′[1]	*1° 37′*	*5 25*

4 March, in the evening [DIE 4 MARTIJ, VESPERI.]

Mercury was observed as follows. [Obseruabatur ☿ vt sequitur.]

N.B. On this day the clock ran 0^m 40^s too fast, and that from the immediately preceding noon. [N.B. Horologium mouebatur hoc die iusto celerius 0′ 40″ idque a Meridie proxime antecedenti.]

Time [Tempus]	Distance of Mercury from Aldebaran [Dist. ☿ ab Aldeb.]	Declination of Mercury [Decl. ☿]	Altitude of Mercury [Alt. ☿]	For the clock, the Greater Dog, east [Pro horol. Can. mai. or.]
6^h $34\frac{5}{6}^m$ [$34\frac{5}{6}$]	[63° 26′	5° 35′	8° 1½′	3 27
		5° 35½′		
6^h $38\frac{1}{6}^m$ [$38\frac{1}{6}$]	[63° 26¾′	5° 35⅔′	7° 36¼′	2 35
		5° 36′		
6^h $42\frac{5}{6}^m$ [$42\frac{5}{6}$]	[63° 25½′			1 24½
6^h $43\frac{2}{3}^m$ [$43\frac{2}{3}$]	[6	5° 37½′	6° 49¼′	
		5° 37′	Azimuth 90° [Azim. 90°]	
6^h 48^m 5^s [48 5]	[63° 25′	5° 40′	6° 3′	0 4
		5° 40½′	by the lesser azimuthal quadrant [Per Q. min. azim.]	west [occid.]
6^h $51\frac{1}{2}^m$ [$51\frac{1}{2}$]	[653° 24¼′	5° 40′	5° 32′	0 47
		5° 39¾′		
6^h $59\frac{1}{3}^m$ [$59\frac{1}{3}$]	[63° 23⅚′		4° 32′	2 44
7^h $0\frac{1}{3}^m$ [$0\frac{1}{3}$]	[7	5° 41′ with both [5 41 vtroque]		
7^h $16\frac{5}{6}^m$ [$16\frac{5}{6}$]	[73° 17¾′	5° 45′	2° 17′	7 7
		5° 45½′		

6 March [DIE 6 MARTIJ.]

Time (no head printed)	Between Mercury and Aldebaran [Inter ☿ & Aldeb.]	Northern declination [Decl. B.]	Altitude of Mercury by the revolving quadrant [Alt. ☿ per Volub.]	The Greater Dog, east [Can. mai. or.]
6 39	50° 39′		9° 10′	0 43
		Azimuth of Mercury [Azim. ☿]	89° 10′	
				west [occid.]
6 $43\frac{1}{6}$	50° $39\frac{1}{3}$′			0 17
6 43½		7° 7¼′	8° 34′	0 27
		7° $6\frac{5}{6}$′	Azimuth [Azim.] 90° 0′	
6 $51\frac{1}{3}$	50° 38′	7° 7½′	7° 35½′	2 20
		7° 8′	Azimuth [Azim.] 91° 34′	
			Altitude by the lesser azimuthal quadrant [Alt. per Q. min. azim.]	
6 $56\frac{5}{6}$	50° 37′	7° 8′	6° 46′	3 41½

Time (no head printed)	Between Mercury and Aldebaran [Inter ☿ & Aldeb.]	Northern declination [Decl. B.]	Altitude of Mercury by the revolving quadrant [Alt. ☿ per Volub.]	The Greater Dog, east [Can. mai. or.]
		7° 8⅓′		
7 0½	50° 36⅚′	7° 8½′	6° 10′	4 38
		7° 9′		
7 12⅚	50° 34′	7° 10⅚′	4° 46′	7 42
		7° 11⅙′		
7 15¾	50° 34′		4° 6′	8 27
7 20¾	50° 31⅚′	7° 14′	3° 30′	9 43
		7° 13¾′		
7 30	50° 29½′	7° 19′	2° 14′	12 5⅓
7 35⅓	50° 28½′	7° 21½′	2° 0′	13 21½

11 March, in the evening [DIE 11 MARTIJ, VESPERI.]

Time (no head printed)	Between Mercury and Aldebaran [Inter ☿ & Aldeb.]	Northern declination of Mercury [Decl. ☿ B.]	Altitude of Mercury [Alt. ☿]	The Lesser Dog, west [Can. min. occ.]
7 37⅚	45° 21¼′	10° 8½′	4° 34′	3 53
		10° 9′		
7 43	45° 20⅓′	10° 12′	4° 7′	
		10° 11⅔′		
7 46⅓	45° 18½′	10° 12′	3° 40′	
		10° 12½′		

14 March, in the evening [DIE 14 MARTIJ, VESPERI.]

7 49½: declination of Mercury 11° 21½′. The altitude of Mercury was then about three degrees. [7 49½ Decl. ☿ 11 21½. Erat tunc altitudo ☿ quasi trium graduum.]

15 March, in the evening [DIE 15 MARTIJ, VESPERI.]

Time (no head printed)	Between Mercury and Aldebaran [Inter ☿ & Aldeb.]	Declination of Mercury [Decl. ☿]	Altitude of Mercury by the lesser azimuthal quadrant [Alt. ☿ per Q. min. azim.]	The Greater Dog, west [Can. mai. occ.]
7 19½	43° 11′	11° 29½′	6° 12′	16 40
		11° 30′		
7 26⅙	43° 10½′	11° 29⅚′	5° 58′	
		11° 30⅓′		
7 29½			5° 24′	
7 33½		11° 30½′		
		11° 31′		
7 35⅓	43° 8¾′		4° 38′	20 35½

Time (no head printed)	Between Mercury and Aldebaran [Inter ☿ & Aldeb.]	Declination of Mercury [Decl. ☿]	Altitude of Mercury by the lesser azimuthal quadrant [Alt. ☿ per Q. min. azim.]	The Greater Dog, west [Can. mai. occ.]
9 11½		the bright star of Hydra, west [Luc. Hydræ occ.]		0 4

[1] You will find the observation of the bright star of Lyra for finding the refraction below, among the northern stars, p. 85. [Obſeruationem lucidæ ſtellæ Lyræ ad refractionem inueniendam infra inter ſtellas boreales reperies, p. 85.]

Places of Mercury[1] [LOCA MERCURIJ[1].]

1 MARCH, FOR THE PLACE OF MERCURY [DIE 1 MARTIJ PRO LOCO ☿.]

Time	Label	Value
6¼[h] [H. 6¼]	Distance of Mercury from the bright star of ♈ [Diſt. ☿ a luc. ♈]	27° 16′
	Declination of Mercury [Declinatio ☿]	3° 6½′
	Declination of the bright star of ♈ [Decl. lucidæ ♈]	21° 29½′
	Right ascension of the bright star of ♈ [Aſcenſio R. luc. ♈]	26° 4′ 0″
	Angular difference of ascension [Ang. diff. aſcens.]	20° 43′ 7″
	Set the right ascension of Mercury [Pone Aſc. R. ☿]	5° 21′ 0″

Label	Value	Remark
Reſp. longitude [Reſp. Longitudo]	6° 8⅔′ ♈	
Latitude [Latitudo]	0° 43⅙′ north [0 43⅙ B.]	
Altitude 5⅙°, reſp. refraction [Altit. 5⅙, reſp. Refr.]	9′ 50″	
Parallax [Parall.]	3 0	
	6 50	
Reſp. longitude [Reſp. Long.]	5′ 30″	latitude 3 50 [Lat. 3 50]
True longitude of Mercury [Vera Longitudo ☿]	6° 3⅙′ ♈	
Latitude [Latitudo]	0° 39⅓′ north [0 39⅓ B.]	

6 MARCH, FOR THE PLACE OF MERCURY [DIE 6 MARTIJ PRO LOCO ☿.]

Time	Label	Value
6[h] 50[m] [H. 6 50′]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldebora]	50° 38′
	Northern declination [Declinatio B.]	7° 8′
	Declination of Aldebaran [Decl. Aldeboræ]	15° 37′
	Right ascension of Aldebaran [Aſcenſio R. Aldeb.]	63° 7′ 15″
	Angular difference of ascension [Ang. diff. aſcenſ.]	51° 48′ 33″

Time	Label	Value
	Therefore the right ascension of Mercury [Ergo Aſcenſ. R. ☿]	11° 18′ 42″

Label	Value	Remark
Reſp. longitude [Reſp. Longitudo]	13° 11½′ ♈	
Latitude [Latitudo]	2° 4′ 23″ north [2 4 23B.]	
Refraction 7′ 30″; Reſp. in longitude [Refr. 7′30″ Reſp. in Long.]	3 15	to be subtracted [ſ.]
Parallax 3 30; latitude [Parall. 3 30 Lat.]	2 15	to be subtracted [ſ.]
	4 0	
True longitude of Mercury [Vera ☿ Longitudo]	13° 8¼′ ♈	
Latitude [Latitudo]	2° 2⅙′ north [2 2⅙ B.]	

11 MARCH [DIE 11 MARTIJ.]

Time	Label	Value
7½^{h} [H. 7½]	Distance between Mercury and Aldebaran [Diſt. ☿ & Aldeb.]	45° 21¼′
	Declination of Mercury [Declinatio ☿]	10° 9′
	Declination of Aldebaran [Declinatio Aldeb.]	15° 37′
	Angular difference of ascension [Ang. diff. aſcenſ.]	46° 16′ 25″
	Therefore the right ascension of Mercury [Ergo Aſc. R. ☿]	16° 50′ 50″

Label	Value	Remark
Reſp. longitude [Reſp. Longitudo]	19° 24½′ ♈	
Latitude [Latitudo]	2° 22′ 30″	
Altitude 4⅗°, refraction 10 25, in longitude [Alt. 4⅗, Refr. 10 25, in Long.]	5 40	to be subtracted [ſub.]
3 35; latitude [3 35 Lat.]	3 45	to be subtracted [ſub.]
	6 50	
True longitude of Mercury [Vera ☿ Longitudo]	19° 18⅝′ ♈	
Latitude [Latitudo]	2° 18¾′ north [2 18¾ B.]	

15 MARCH [DIE 15 MARTIJ.]

Time	Label	Value
7¼^{h} [H. 7¼]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	43° 11′
	Declination of Mercury [Declinatio ☿]	11° 30′
	Angular difference of ascension [Ang. diff. Aſcenſ.]	44° 17′ 40″

Time	Label	Value
	Therefore the right ascension of Mercury [Igitur Aſc. R. ☿]	18° 49′ 35″

Label	Value	Remark
Reſp. longitude [Reſp. Longitudo]	21° 44′ 3″ ♈	
Latitude [Latitudo]	3° 51′ 37″ north [3 51 37 B.]	
Reſp. refraction [Reſp. Refr.]	4′ 0″	
Parallax [Par.]	2 50	in longitude and latitude [in long. & lat.]
True longitude of Mercury [Vera ☿ Longitudo]	21° 40′ ♈	
Latitude [Latitudo]	3° 48¾′ north [3 48¾ B.]	

Observations of the fixed stars in the zodiac [OBSERUATIONES STELLARUM FIXARUM IN ZODIACO.]

5 January, in the morning [DIE 5 JANUARIJ, MANE.]

Observation of the stars of ♌ that are lacking. [Obſeruatio ſtellarum ♌ quæ deſiderantur.]

Number in the figure [Numerus figuræ]	Between the Merid. head of ♊ and [Inter Merid. caput ♊ &]	(no head printed)
29	29, in the preceding foot of ♌ [29 in præced. pede ♌]	30° 41¼′
		30° 42′
28	28 ♌	30° 59¼′
		30° 59¾′
12	12 ♌	29° 59′ twice [29 59 bis]
14	14 ♌	37° 32′ twice [37 32 bis]
16	16 ♌	40° 58′
		40° 58¾′
17	17 ♌	44° 6′
		44° 6¾′
18	18 ♌	46° 23′
		46° 23¾′
24	24 ♌	18° 52′ twice [18 52 bis]

[1] From codices V. and K. [E codd. V. et K.]

25	Between cor ♌ and 25 ♌ [Inter cor ♌ & 25 ♌]	21° 40′

		21° 40½′
26	26 ♌	25° 23¾′
		25° 24′
	Vice versa [Viceverſa]	
25	Between Spica ♍ and 25 ♌ [Inter Spicam ♍ & 25 ♌]	32° 20⅓′ twice [32 20⅓ bis]
26	26 ♌	25° 50′ twice [25 50 bis]
25	Its declination, in the leg of the foot of ♌, north [Declin. eius in crure pedis ♌ B.]	5° 7′ twice [5 7 bis]
26	Declination of the end of the hind foot, north [Declin. extremæ pedis poſterioris B.]	1° 27½′ twice [1 27½ bis]
	Between the tail of ♌ and Vindemiatrix [Inter caudam ♌ & Vindem.]	18° 9½′ twice [18 9½ bis]
	and 15 ♍ [& 15 ♍]	30° 11½′
		30° 12′

Meridian altitude of Spica ♍ [Altit. Spicæ ♍ Merid.]	
by the steel instrument [per Chal.]	25° 8⅙′
by the revolving quadrant [per Volub.]	25° 7⅚′

18 January, in the morning [DIE 18 JANUARIJ, MANE.]

Meridian altitude of Spica ♍ [Alt. Spicæ ♍ mer.]	
by the steel instrument and the revolving quadrant [per Chalyb. & Volub.]	25° 7⅔′

20 January [DIE 20 JANUARIJ.]

Between Aldebaran and 24 ♊ [Inter Aldeb. & 24 ♊]	42° 1′
	42° 0½′
4 ♊	37° 57′ doubtful [du-bia]
	37° 56⅔′
22 ♊	46° 46⅔′
	46° 46½′
11 ♊	35° 19′
	35° 18¾′
9 ♊, which is near 5 (they are two very small stars joined together) [9 ♊ quæ eſt prope 5 (ſunt duæ paruulæ conjunctæ)]	41° 34′
	41° 33⅚′
Declination of 24 ♊ [Declin. 24 ♊]	32° 32′

	32° 32⅓′
Declination of the bright star of the foot of ♊, with both [Decl. luc. pedis ♊ vtroque]	16° 40⅔′

26 January [DIE 26 JANUARIJ.]

	Altitude by the revolving quadrant [Altit. per Volub.]	Declination by the armillae [Declin. per Armillas]
Of cor ♌ [Cordis ♌]	8° 56½′	14° 0¼′
		14° 0′
Of the tail of ♌ [Caudæ ♌]	7° 13⅙′	16° 58′ with one [16 58 vno]
	8° 41′	16° 57′
		16° 57½′
	10° 30⅚′	16° 57′
		16° 56¾′
	12° 44½′	16° 56⅔′

29 January [DIE 29 JANUARIJ.]

Meridian altitude of the eye of ♉, by the steel instrument [Altit. merid. oculi ♉ per Chal.]	49° 41⅙′
by the revolving quadrant [per Volub.]	49° 41¾′

Declination of cor ♌ towards its rising [Cordis ♌ ad ortum Declinatio]

Altitude [Altit.]	with one pinnule [vno pin.]	with the other [altero]
11° 7′	14° 0′	14° 0′
11° 45′	14° 0′	14° 0¼′
12° 53¼′	13° 59⅚′	14° 0′

5 February [DIE 5 FEBRUARIJ.]

Meridian altitude of the southern scale-pan of ♎ [Alt. Merid. auſt. lancis ♎]	
by the steel instrument [per Chalyb.]	19° 51′
by the revolving quadrant [per Volub.]	19° 51$\frac{1}{12}$′
Between Spica ♍ and the fainter star in the southern claw of ♎ [Inter Spicam ♍ & obſcuriorem in chele auſtrina ♎]	20° 40¼′
	20° 41′
5, in the southern claw of ♎ [5 in auſtrali chele ♎]	25° 9¾′
	25° 9′

4, which is at the beam of the balance of ♎ [4 quæ eſt ad trutinam ♎]	23° 40′
	23° 40⅙′
7 ♎	31° 53′
	31° 53⅚′
Meridian altitude of the northern scale-pan [Alt. merid. bor. lancis]	
by the steel instrument [per Chalyb.]	26° 18⅓′
by the revolving quadrant [per Volub.]	26° 18½′
Between Spica ♍ and 8 ♎ [Inter Spicam ♍ & 8 ♎]	34° 2½′
	34° 3′
9 ♎	31° 27′
	31° 28′
10 ♎	29° 13½′ twice [29 13½ bis]
Between the southern scale-pan of ♎ and the uppermost star in the northern claws of ♏, no. 22 [Inter auſtralem lancem ♎ & ſupremam in branchis borealibus ♏ num. 22]	18° 24⅚′
	18° 25′
Between the southern scale-pan and cor ♏, no. 8 [Inter. auſt. lancem & cor ♏ num. 8]	25° 2′
	25° 3′

Uncertain because of the dawn. [Incertæ propter auroram.]

6 February, in the morning [DIE 6 FEBRUARIJ, MANE.]

Num-ber [Num.]		
22	Repeated distance between the southern scale-pan of ♎ and the uppermost star in the northern claws of ♏ [Repetita diſt. inter auſtral. lancem ♎ & ſupremam in branchis Borealibus ♏]	18° 25′
		18° 25½′
5	Between the southern scale-pan and the very small star that is in the forehead of ♏, at the point, forming a triangle in which it is the more northerly [Inter auſt. lancem & paruulam quæ eſt in fronte ♏ in cuſpide, conſtituens triangulum in quo eſt borealior]	19° 32½′
		19° 33¼′
6	Between the southern scale-pan and the one that is more southerly, at the base of the triangle [Inter auſt. lancem & eam quæ eſt meridionalior in baſi trianguli]	18° 32⅓′
		18° 33¼′
1	Between the southern scale-pan and the uppermost of the three brighter stars in the forehead of ♏ [Inter auſt. lancem & ſupremam trium lucidiorum in fronte ♏]	18° 4½′
		18° 5′
2	Between the southern scale-pan and the middle one of the three bright stars in the forehead of ♏ [Inter auſt. lanc. & mediam trium lucid. in fronte ♏]	17° 36⅙′
		17° 36¾′

3	Between the southern scale-pan and the lowest of the three bright stars in the forehead of ♏ [Inter auſt. lanc. & infimam trium lucidarum in fronte ♏]	18° 43½′
		twice [18 43½ bis]
7	Between the southern scale-pan and the brighter star in the breast of ♏, which precedes cor [Inter auſt. lanc. & lucidiorem in pectore ♏ quæ præcedit cor]	23° 2½′
		23° 3′
8	Between the southern scale-pan of ♎ and cor ♏ [Inter auſt. lancem ♎ & cor ♏]	25° 3½′
		25° 4′
	The altitude of cor ♏ was then 8° 30′ by the revolving quadrant. [Fuit tunc. alt. cordis ♏ 8°30′ per Volub.]	
9	Between the southern scale-pan and the very small star that follows cor ♏ [Inter auſt. lanc. & paruulam quæ ſequitur cor ♏]	27° 3′
		27° 4′
	Its altitude was then 6°. [Altit. eius tunc erat 6 Grad.]	

Meridian altitude of the uppermost star in the forehead of ♏ [Alt. merid. ſupremæ in fronte ♏]	
by the revolving quadrant [per Volub.]	15° 32⅓′
Meridian altitude of cor ♏ [Alt. merid. cordis ♏]	
by the revolving quadrant [per Volub.]	8° 45⅙′
by the steel instrument [per Chalyb.]	8° 45$\frac{1}{12}$′

25 February, in the morning [DIE 25 FEBRUARIJ, MANE.]

Between 17 in the tail of the Serpent of Ophiuchus and the lowest of the three in the forehead of ♏, no. 3 [Inter 17 in cauda Serpentis Ophiuchi & infimam trium in fronte ♏ num. 3]	41° 21′
	41° 21½′
Between the same 17 and the middle one in the forehead of ♏, no. 2 [Inter eandem 17 & mediam in fronte ♏ num. 2]	39° 31½′
Between the same 17 and the uppermost in the forehead of ♏, no. 1 [Inter eandem 17 & ſupremam in fronte ♏ num. 1]	37° 18½′
	37° 19⅓′

At dawn. [Sub auroram.]

22 March [DIE 22 MARTIJ.]

Meridian altitude of cor ♌ [Alt. cordis ♌ Merid.]	
by the steel instrument and the revolving quadrant [per Chalyb. & Volub.]	48° 2′
Meridian altitude of the bright star in the neck of ♌ [Alt. merid. lucidæ in collo ♌]	
by the steel instrument [per Chalyb.]	55° 59′

by the revolving quadrant [per Volub.]	55° 58¾′

27 March [DIE 27 MARTIJ.]

Between cor ♌ and the ninth of ♊ [Inter cor ♌ & nonam ♊]	40° 27′
	40° 26½′
Its declination, north [Declinatio eius Borea]	28° 45½′
	28° 45′

30 March [DIE 30 MARTIJ.]

Between the left knee of Ophiuchus and 10 ♎ [Inter ſiniſtrum genu Ophiuchi & 10 ♎]	17° 55½′
	17° 55¾′
Between the left knee of Ophiuchus and 4 ♎ [Inter ſin. genu Ophiuchi & 4 ♎]	23° 46½′
	23° 47′
Declination of 9 ♎ [Declin. 9 ♎]	15° 20½′
	15° 20⅔′
Declination of 8 ♎ [Declin. 8 ♎]	14° 18½′
	14° 18′

Meridian altitude of 5 ♏ by the revolving quadrant [Alt. merid. 5 ♏ per Volub.]	15° 48⅔′
Between 17 in the tail of the Serpent and [Inter 17 in cauda Serpentis &]	
10 ♏	39° 39½′
	39° 40′
22 ♏	35° 0′
	35° 1′
4 ♏	43° 11⅔′
	43° 12⅓′
6 ♏	37° 18′
	37° 18¾′
5 ♏	35° 43′
	35° 43⅔′ twice [35 43⅔ bis]
7 ♏	36° 45′
	36° 45½′
a third time [tertio]	36° 46′
9 ♏	35° 43⅔′
	35° 43½′

The altitude of the ninth was then about 6½°. [Erat eius nonæ altit. tunc circiter 6½.]

Declination of 1 ♏ [Declin. 1 ♏]	with one [vno] 18° 36⅔′	alt. 18° 36¼′
6 ♏	19° 30′	19° 30⅓′
3 ♏	24° 46′	24° 46½′
7 ♏	24° 25⅔′	24° 25½′
9 ♏	27° 9½′	27° 8⅔′

31 March [DIE 31 MARTIJ.]

Declination of 16 ♍ [Decl. 16 ♍]	3° 33′	3° 32½′
Between the northern scale-pan of ♎ and 18 ♍ [Inter bor. lancem ♎ & 18 ♍]		23° 34′
		23° 34½′
Between the northern scale-pan of ♎ and 19 ♍ [Inter bor. lancem ♎ & 19 ♍]		23° 34′
		23° 35′
Between the northern scale-pan and...[1] [Inter bor. lancem &...[1]]		21° 55′
		21° 55⅓′
Between the northern star of the left hand of Ophiuchus and 21 ♍ [Inter boreal. finiſt. manus Ophiuchi & 21 ♍]		28° 43′
		28° 42′
Between the northern star of the left hand of Ophiuchus and 24 ♍ [Inter bor. finiſtræ manus Ophiuchi & 24 ♍]		26° 32½′
		26° 33′
Declination of the 22nd of ♍, the upper one in the hem [Decl. 22æ ♍ ſuperioris in fimbria]		3° 57½′ south [3 57½A.]
		3° 58¼′

In the year 82 the distance between Spica ♍ and the uppermost star of the left hand of Ophiuchus was found to be 42° 33⅙′. [Anno 82 inuenta eſt diſtantia inter Spicam ♍ & ſupremam finiſtræ manus Ophiuchi 42 33⅙]

Declination of the left hand of Ophiuchus [Decl. finiſtræ manus Oph.]	2° 33¼′ south [2 33¼ M.]

For the beginning of the year 90 [Ad initium anni 90]

Declination of the left hand of Ophiuchus from the meridian altitude [Declin. finiſtræ manus Ophiuchi ex Altit. Merid.]	2° 37′ 20″
Right ascension [Aſcenſio Recta]	238° 11⅓′

[1] Afterwards there was added in writing: "It is believed to be 20." [Poſtea adſcriptum eſt: »Creditur 20 eße«.]

10 August, in the evening [DIE 10 AUGUSTI, VESPERI.]

Declination of the star in the arrow of Sagittarius [Decl. ſtellæ in telo Sagittarij]	25° 27½′
	25° 27⅔′
Its altitude was then [Tunc erat Altit. eius]	6° 0′

13 August [DIE 13 AUGUSTI]

Declination of the fourth in the preceding horn of ♍; it is nebulous [Declinatio quartæ in cornu præcedenti ♍, eſt nebuloſa]	14° 17½′
	14° 17⅔′

Counting backwards, it was about the meridian when it was observed. [Retro numerando erat circa merid. cum obſeruabatur.]

Meridian altitude of 20 in ♍ by the revolving quadrant [Altit. merid. 20 in ♍ per Volub.]	15° 36⅔′
Meridian altitude of 14 ♍, which is in the belly [Alt. merid. 14 ♍ quæ eſt in ventre]	10° 2⅓′
Declination of 7 ♍; it is the uppermost in the triangle in the head of ♍ [Declin. 7 ♍, eſt ſuprema in triangulo in capite ♍]	19° 0⅔′
	19° 1¼′
Meridian altitude of 21, which is in the flanks of ♍ [Alt. merid. 21 quæ eſt in ilijs ♍]	12° 53½′
Meridian altitude of 23 ♍ [Alt. merid. 23 ♍]	15° 42′
Declination of 5 ♍ [Declinatio 5 ♍]	19° 51½′
	19° 52¼′
Meridian altitude of 24 ♍ [Alt. merid. 24 ♍]	16° 10½′
Declination of 6 ♍ [Declinatio 6 ♍]	19° 40′
	19° 41′
Declination of 8 ♍ in the forehead [Declinatio 8 ♍ in fronte]	20° 26′
Declination of 9 ♍ [Declinatio 9 ♍]	16° 17⅔′
	16° 18½′
Declination of 8 in ♒ [Declinatio 8 in ♒]	10° 56½′
	10° 56′
Declination of 6 ♒, above the back [Declinatio 6 ♒ ſupra dorſum]	12° 57⅓′
	12° 58½′

N. B. These two were observed earlier. [N. B. Sunt antea hæ duæ obſeruatæ.]

Between 4 ♍ and the one that is at the right hand of Ophiuchus, 10 [Inter 4 ♍ & illam quæ eſt ad dextram manum Ophiuchi 10]	32° 45′
	32° 47′
Between 8 ♍ and 10 in the hand [Inter 8 ♍ & 10 in manu]	35° 9′

	35° 11′
Between 6 ♑ (it is the one that precedes in the small triangle) and 10 of Ophiuchus [Inter 6 ♑ (eſt quæ præcedit in paruo triangulo) & 10 Ophiuchi]	36° 48½′
	36° 50′
Between the uppermost in the same said triangle, namely in the forehead of ♑ (which is 7), and 10 of Ophiuchus [Inter ſupremam in eodem dicto triangulo videlicet in fronte ♑ (quæ eſt 7) & 10 Ophiuchi]	37° 9⅔′
	37° 10′
Between the 5th in number of ♑, which is in the said triangle, and 10 of Ophiuchus [Inter 5^{am} numero ♑ quæ eſt in dicto triangulo & 10 Oph.]	37° 40′ twice [37 40 bis]
Between 10 ♑ and the penultimate star in the tail of the serpent of Ophiuchus [Inter 10 ♑ & penultimam in cauda Oph. ſerpentis]	37° 16′
	37° 14½′
Between 9 in the neck of ♑ and... of Ophiuchus [Inter 9 in collo ♑ &... Ophiuchi]	36° 6′
	36° 5⅔′

15 August [DIE 15 AUGUSTI.]

Meridian altitude of the star in the knee of ♑, no. 11 [Alt. merid. ſtellæ in genu ♑ n. 11]	7° 31¾′
Declination of the star in the other knee of ♑, which is number 12, at an altitude of 5° 20′, about the meridian [Declin. ſtellæ in altero genu ♑ quæ numero eſt 12 in altitudine 5°20′ circa meridianum]	28° 21½′
	28° 23′

8 September, in the evening[1] [DIE 8 SEPTEMBRIS, VESPERI[1].]

Meridian altitude of 10 in ♑ [Alt. merid. 10 in ♑]	14° 35′
Between the more easterly star of the head of ♐ and 11 ♑ in the right knee, 6 mag. [Inter orientaliorem capitis ♐ & 11 ♑ in dextro genu 6 mag.]	22° 40⅔′
	22° 42′
Between the more easterly star of the head of ♐ and 12 ♑ [Inter orient. cap. ♐ & 12 ♑]	23° 47′
	23° 48′
Declination of 27 in the tail of ♑ [Declinatio 27 in cauda ♑]	15° 23⅔′
	15° 23′

9 September, in the evening [DIE 9 SEPTEMBRIS, VESPERI.]

Declination of the star in the bow of ♐, no. 4 [Declinatio ſtellæ in arcu ♐ num. 4]	25° 24½′
	25° 23⅔′
The altitude of this star was then [Huius ſtellæ altitudo tunc erat]	3° 50′

Between the same 4 ♐ and the lower horn of ♑ [Inter eandem 4 ♐ & inferius cornu ♑]	28° 26′
	28° 25½′
Declination of the star in the bow of ♐, no. 5 [Decl. ſtellæ in arcu ♐ num. 5]	20° 59⅓′
Its altitude is 10°. [Eſt altitudo 10 g.]	
Between the bright and more easterly star of the tail of ♑ and 10 ♑, which is faint [Inter lucidam & orientaliorem caudæ ♑ & 10 ♑ quæ eſt obſcura]	16° 12′
	16° 11⅓′

This one was about the meridian. [Hæc erat circa meridianum.]

Between the bright star in the tail of ♑ and 13 of the same [Inter lucidam in cauda ♑ & 13 eiusdem]	13° 4′
	13° 3½′
Declination of 13 in ♑; it is faint [Decl. 13 in ♑, eſt obſcura]	26° 35½′
	26° 36½′

It was about 2 from the meridian, towards the west. [Erat ad 2 circiter a meridie verſus occ.]

21 September, in the evening [DIE 21 SEPTEMBRIS, VESPERI.]

Between the lower horn of ♑ and 5 in ♐, magnitude 5 [Inter inferius cornu ♑ & 5 in ♐, 5 magnit.]	30° 49′
	30° 48⅙′

The altitude of 5 ♐ was then 7⅔°. [Altitudo 5 ♐ tunc erat 7⅔.]

Between the bright star of the tail of ♑ and 12 ♐ [Inter lucidam caudæ ♑ & 12 ♐]	35° 36½′
	35° 37⅔′
Declination of the same 12 [Declinatio eiusdem 12]	19° 47½′
	19° 46⅓′

The altitude of the same 12 was then 12¼°, by the smallest quadrant. [Altitudo eiusdem 12 tunc erat 12¼ per minimum Quadrantem.]

Between the bright star of the tail of ♑ and 17 ♐, a faint one [Inter lucidam caudæ ♑ & 17 ♐, obſcuram]	28° 49½′
	28° 50⅙′
The altitude of the same, faint, was then [Altitudo eiusdem tunc erat obſcura]	12° 50′

[1] Compare below, among the northern stars observed on 6, 7, 8 September. [Cf. infra inter ſtellas boreales diebus 6, 7, 8 Sept. obſervatas.]

Between the bright star of the tail of ♑ and 29 in the right elbow [Inter lucid. caudæ ♑ & 29 in dextro cub.]	31° 34′
	31° 34¾′

Altitude of the same 29, 6½°. [Altitudo eiusdem 29 6½.]

Between the bright star of the tail of ♑ and 15 ♐, a faint one [Inter lucidam caudæ ♑ & 15 ♐, obſcuram]	29° 48¼′
	29° 50′

Its altitude 14⅚°, faint. [Altitudo eius 14⅚, obſcura.]

Between the bright star of the tail of ♑ and 16 ♐, magnitude 6 min. [Inter luc. caud. ♑ & 16 ♐ magnit. 6 min.]	26° 12′
better [melior]	26° 12½′
The altitude of the same was then [Altit. eiusdem tunc erat]	15⅔°
Declination of the 16th of ♐ [Declinatio 16æ ♐]	16° 27½′
	16° 28′

22 September, in the morning [DIE 22 SEPTEMBRIS, MANE.]

Between the bright star of ♈ and 37 in the forehead of ♉ [Inter lucidam ♈ & 37 in fronte ♉]	34° 0′
	34° 0½′
Its declination [Declinatio eius]	13° 42′
	13° 43½′
Between the bright star of ♈ and 29, the following one in the □ of the back of ♉ [Inter lucid. ♈ & 29 ſequentem in □ dorſi ♉]	30° 14′
	30° 15′
Its declination [Declinatio eius]	26° 20′
	26° 19⅔′
Between 22 in the line of ♓ and 42 ♉ in the intersection [Inter 22 in lino ♓ & 42 ♉ in interſectione]	30° 8¼′
	30° 9′
Its declination [Declinatio eius]	7° 54′
	7° 55′
Between 22 in the line of ♓ and 34 in the foot of ♉, magnitude 4 [Inter 22 in lino ♓ & 34 in pede ♉ 4 magnit.]	38° 20′ twice [38 20 bis]
Its declination [Declinatio eius]	4° 46′

	4° 47½′
Between the bright star of ♈ and 31 in the Pleiades, magnitude 6 [Inter lucid. ♈ & 31 in pleiadibus 6 magnit.]	22° 42′
	22° 43′
Its declination [Declinatio eius]	22° 43′
Between Aldebaran and 9 in the left elbow of the upper ♊ (it is doubtful whether it is in the left elbow) [Inter Aldeboram & 9 in ſiniſtro cubito ſuperioris ♊ (dubitatur an in ſin. cubito ſit)]	41° 32¾′
	41° 32′
Its declination [Declinatio eius]	28° 44½′
	28° 45½′
Between Aldebaran and the faint little star in the right arm of the following ♊ [Inter Aldeb. & ſtellulam obſcuram in dextro brachio ſequentis ♊]	39° 56′
	39° 57½′

Diagram. A small figure set at the left of the left column, beside the lines "ſequentis ♊ 39 57½" and "Ponitur ab / Arato 9 / numero.": four dots in two pairs, an upper pair and a lower pair, the right-hand dot of each pair standing slightly lower than the left. Two labels are printed in small type:

- "9 nobis" (above the upper left-hand dot): 9 for us
- "9 (Arato)" (below the lower right-hand dot): 9 (Aratus)

It is set down by Aratus [Arato] as number 9. [Ponitur ab Arato 9 numero.]

Between cor ♌ and the little star already mentioned, which is the ninth for Aratus [Inter cor ♌ & prædictam ſtellulam quæ Arato nona eſt]	41° 1′
	41° 2½′
Declination of the same [Declinatio eiusdem]	with the better pinnule [meliori pinn.] 25° 46′
	25° 47′

From the declination and the position it appears to be the eighth. [Ex declinatione & ſitu apparet eße octaua.]

Between Aldebaran and 11 in the left knee of the lower ♊ [Inter Aldeboram & 11 in ſin. genu inferioris ♊]	35° 16½′
	35° 15⅚′
Its declination [Declinatio eius]	21° 5½′
	21° 6⅙′

22 September, in the evening [DIE 22 SEPTEMBRIS, VESPERI.]

Between 5 in the bow of ♐ and 14 in the Serpent [Inter 5 in arcu ♐ & 14 in Serpente]	10° 12′
	10° 13¼′

Altitude of the same 5th of ♐ by the min. quadrant, 8½°. [Altit. eiusdem 5^{tæ} ♐ per min. quad. 8½.]

Altitude of 14 in the Serpent [Altitudo 14 in Serpente]	10° 35′
Between 4 ♐ and the bright star of the tail of ♑ [Inter 4 ♐ & lucidam caudæ ♑]	47° 7¼′
Altitude of 4 ♐, 3° 50′ [Altitudo 4 ♐ 3 50]	47° 8½′
Altitude of 7 ♐, 3° 10′ [Altitudo 7 ♐ 3 10]	
Between the bright star of the tail of ♑ and 7 ♐ [Inter lucid. caudæ ♑ & 7 ♐]	43° 16′
Between 12 ♐ and 10 in the right hand of Ophiuchus [Inter 12 ♐ & 10 in manu dextra Ophiuchi]	21° 3′
	21° 4¼′

It was at a moderate altitude. [Erat in mediocri altitudine.]

Between 10 in the right hand of Ophiuchus and 13 ♐ [Inter 10 in dextra manu Ophiuchi & 13 ♐]	21° 35′
	21° 37′
Within 10 in the right hand of Ophiuchus and 14 in the contact of ♐ [Intra 10 in dextra manu Oph. & 14 in contactu ♐]	21° 5′
	21° 6′
Between the same in Ophiuchus and 17 in the contact of ♐ [Inter eandem in Oph. & 17 in contactu ♐]	27° 45½′
Declination of the same 17 ♐ [Declinatio eiusdem 17 ♐]	20° 42⅚′
	20° 43′
Between 19 in ♐ and the more westerly one in the head of ♐ [Inter 19 in ♐ & occidentaliorem in capite ♐]	9° 37½′
Between the penultimate star in the tail of the Serpent and 15 ♐; it is in the small triangle in the leg, towards the east [Inter penultimam in cauda Serpentis & 15 ♐, eſt in paruo triangulo in crure ad ortum]	23° 53′
	23° 54′
Declination of the same 15 [Declinatio eiusdem 15]	17° 4½′
	17° 5′
Between the same penultimate star and 16 ♐ [Inter eandem penultimam & 16 ♐]	26° 50⅔′
	26° 49′
Declination of 16 in ♐ [Declinatio 16 in ♐]	25° 28′

Its altitude was then about 3°. [Erat tunc eius altit. circiter 3 graduum.]

Between the lower horn of ♑ and 16 ♑, faint [Inter inferius cornu ♑ & 16 ♑, obſcura]	14° 10′
	14° 10¾′

Between the lower horn of ♑ and 17 ♑, faint [Inter inferius cornu ♑ & 17 ♑, obſcura]	12° 55½′
	12° 57′

It had passed the meridian by nearly 4°. [Erat meridianum prætergreßa fere 4 gradibus.]

Declination of 27 in the tail of ♑ [Declinatio 27 in cauda ♑]	10° 55′
	10° 56′
Declination of 16 ♑, twice with one pinnule [Decl. 16 ♑, bis vno pinnacidio]	22° 13¼′

It had passed the meridian by about 4°. [Erat prætergreßa merid. circiter 4 gradibus.]

Declination of 17 ♑ [Declinatio 17 ♑]	22° 45′
	22° 43¾′

Vice versa. [Viceverſa]

Between 4 ♑ and the bright star of the tail of ♑ [Inter 4 ♑ & lucid. caud. ♑]	22° 59′
	22° 59½′
Between 9 ♑ and the bright star of the tail of ♑ [Inter 9 ♑ & lucid. caud. ♑]	16° 16′
	16° 17⅔′
Between 15 ♑ and the lower horn of ♑ [Inter 15 ♑ & inferius cornu ♑]	17° 26¾′
	17° 26⅚′

23 September, in the evening [DIE 23 SEPTEMBRIS, VESPERI.]

Between the bright star of the tail of ♑ and 17 ♑, 6 mag. min. [Inter lucidam caudæ ♑ & 17 ♑, 6 mag. min.]	19° 27½′ twice [19 27½ bis]
Declination of the same[1] [Declinatio eiusdem[1]]	19° 32½′
	19° 33¼′
Between the bright star of the tail of ♑ and 16 ♑, a faint one [Inter lucid. caudæ ♑ & 16 ♑, obſcuram]	18° 40′
	18° 42′
Declination of the same[1] [Declinatio eiusdem[1]]	19° 48′
	19° 49½′
Between 21 ♑ and the lower horn of ♑ [Inter 21 ♑ & inferius cornu ♑]	18° 48′
	18° 47½′

Between 22 ♑ and the lower horn of ♑ [Inter 22 ♑ & inferius cornu ♑]	19° 51½′ twice [19 51½ bis]
Between the lower horn of ♑ and the star in a triangle with 19 and 20 ♑, of the 6th magnitude, unknown to Aratus [Inter inferius cornu ♑ & ſtellam in triangulo cum 19 & 20 ♑, 6magnit.,Aratoignotam]	13° 45⅔′
	13° 46⅓′
Between the lower horn² of ♑ and 20 ♑ [Inter inferius cornu² ♑ & 20 ♑]	14° 51⅚′
	14° 52′
Between the lower horn of ♑ and 19 ♑ [Inter inferius cornu ♑ & 19 ♑]	11° 6′
	11° 6⅙′

25 September, in the evening [DIE 25 SEPTEMBRIS, VESPERI.]

Between 16 and the lower horn of ♑ [Inter 16 & inferius cornu ♑]	12° 54⅓′
	12° 55′
Between the same 16 ♑ and 18 ♒ [Inter eandem 16 ♑ & 18 ♒]	25° 40′ twice [25 40 bis]
Declination of the same 16 [Declinatio eiusdem 16]	22° 37½′

Once, with one pinnule, by Aurifaber. [Semel vno pinnacidio, per Aurifab.]

The altitude by the min. quadrant was then 7° 0′. [Erat tunc Altit. per Quad. min. 7 g 0′.]

Between the lower head of ♊ and the eleventh in its left knee, magnitude 3 [Inter inferius caput ♊ & vndecimam in ſiniſtro genu eius magnit. 3]	12° 2½′
	12° 2⅔′

6 October, in the evening [DIE 6 OCTOBRIS, VESPERI.]

Between 12 in ♑ and the bright star in the leg of the right foot of ♒, no. 18 [Inter 12 in ♑ & lucid. in crure dextri pedis ♒ num. 18]	30° 30¾′
	30° 30⅔′
Between 13 ♑ and the bright star in the leg of the right foot of ♒ [Inter 13 ♑ & lucidam in crure dextri pedis ♒]	26° 42′
	26° 43′
Between the bright star in the right foot of ♒ and 18 in the body of ♑ [Inter lucidam in dextro pede ♒ & 18 in corpore ♑]	26° 27′
	26° 28′

7 October, in the evening [DIE 7 OCTOBRIS, VESPERI.]

Between the upper horn of ♍ and 25 ♍ [Inter ſuperius cornu ♍ & 25 ♍]	20° 22¾′
	20° 24¼′
Between 26 ♍ and the upper horn of ♍ [Inter 26 ♍ & ſuperius cornu ♍]	23° 8¾′
	23° 10¼′
Between the bright star in the leg of ♒, no. 18, and 16 ♍ [Inter lucidam in crure ♒ num. 18 & 16 ♍]	11° 49′
	11° 49⅙′

8 October [DIE 8 OCTOBRIS.]

Between 22 ♒ in the hinder part of the left thigh and the lower horn of ♍ [Inter 22 ♒ in poſteriori parte ſiniſtri femoris & inferius cornu ♍]	34° 28½′
Declination of the same 22 [Eiusdem 22 declinatio]	20° 51⅔′
	20° 52⅓′
Between 12 ♍ and no. 18 in the leg of ♒ [Inter 12 ♍ & 18 num. in crure ♒]	30° 33′ twice [30 33 bis]
Between 13 ♍ in the left thigh and 18 ♒ [Inter 13 ♍ in femore ſiniſtro & 18 ♒]	26° 47′
	26° 47⅔′
Between 26 in the tail of ♍ and 18 ♒ [Inter 26 in cauda ♍ & 18 ♒]	15° 1⅔′
	15° 2⅓′
Between 21 in the left knee of ♒ and the lower horn of ♍ [Inter 21 in genu ſiniſtro ♒ & inferius cornu ♍]	32° 12⅙′
	32° 12½′
Meridian altitude of 14 in the knee of ♍ [Altit. Merid. 14 in genu ♍]	10° 3⅚′
Meridian altitude of 15 ♍ [Altit. Merid. 15 ♍]	10° 37′

Vice versa. [Viceverſa]

Between the bright star of the tail of Cetus and 22 ♒ [Inter lucidam caudæ Ceti & 22 ♒]	25° 20¼′
	25° 19′
Between 21 in the left knee of ♒ and the bright star in the tail of Cetus [Inter 21 in genu ſiniſtro ♒ & lucidam in cauda Ceti]	27° 57⅓′
	27° 59′
Between 20 ♒ and the bright star of the tail of Cetus [Inter 20 ♒ & lucidam caudæ Ceti]	24° 43′
	24° 45′

	Declination [Declinatio]		Altitude by the revolving quadrant [Alt. per Volub]
22 ♒	20° 53′	20° 54′	13° 11½′
21 ♒	22° 43′	22° 42′	11° 30′
20 ♒	21° 39′	21° 39⅚′	12° 0′

Meridian altitude of 22 [Altitudo Meridiana 22]	13° 12⅔′
Declination of 25 ♒ [Declinatio 25 ♒]	9° 54′
	9° 54¾′

9 October [DIE 9 OCTOBRIS.]

Between the bright star of the tail of ♌ and 8, at the eye of the same [Inter lucidam caudæ ♌ & 8 ad oculum eiusdem]	20° 50′ twice [20 50 bis]
Meridian altitude of 18 ♌ [Altitudo Meridiana 18 ♌]	12° 43′
Its declination [Declinatio eius]	21° 27½′
	21° 28′
Meridian altitude of 19 ♌ [Altitudo Meridiana 19 ♌]	15° 22′ 30″
Its declination [Declinatio eius]	18° 45⅔′
	18° 46⅓′

[1] Struck through with fine lines. [Lineis tenuibus inducta.] [2] The codex has *caput* ("head"). [Codex habet caput.]

Between the lower horn of ♌ and 21, the preceding one of the two about the flanks or groin [Inter inferius cornu ♌ & 21 præcedentem duarum circa ilia vel inguina]	18° 42′
	18° 43′
Declination of 14 in the knee of ♌ [Declinatio 14 in genu ♌]	24° 6⅔′
	24° 7⅓′
Its meridian altitude [Altitudo eius Meridiana]	10° 3½′
Between the bright star of ♈ and 9, a faint one in the line of ♓, *limitata* [Inter lucidam ♈ & 9 obſcuram in lino ♓ limitata]	23° 18′
Meridian altitude of 23 in the tail of ♌ [Altit. Merid. 23 in cauda ♌]	15° 38′
Its declination [Declinatio eius]	18° 22⅚′
	18° 23⅔′
Meridian altitude of the bright star of the tail of ♌ [Alt. Merid. luc. caudæ ♌]	16° 12′
Its declination [Declinatio eius]	17° 54′
	17° 53⅙′
Between the bright star of ♈ and 10 in the line of the southern ♓, *limitata* [Inter lucidam ♈ & 10 in lino ♓ auſtralis limitata]	29° 44′

The same, vice versa. [Eadem viceverſa.]

Between the mouth of Pegasus and the ninth in the line of the southern ♓ [Inter os Pegaſi & nonam in lino auſtralis ♓]	34° 11¼′
	34° 8¾′
Its declination [Declinatio eius]	6° 7½′
	6° 10½′

Between the mouth of Pegasus and 10 in the line of the southern fish [Inter os Pegaſi & 10 in lino auſtralis piſcis]	38° 45¼′
	38° 45¾′
Between 30 in the northern fish and the bright foot of Andromeda [Inter 30 in piſce Boreo & lucidum pedem Androm.]	17° 36′ twice [17 36 bis]
Declination [Declinatio]	25° 6′
	25° 6½′
Between the bright star of ♑ and 20 in ♒ [Inter lucidam ♑ & 20 in ♒]	13° 46′
	13° 47′
Declination of 10 at the tail auſtr. ♓ [Declin. 10 ad caudam auſtr. ♓]	5° 56′

10 November, in the evening [DIE 10 NOUEMBRIS, VESPERI.]

Declination of 27 ♑ [Declinatio 27 ♑]	15° 25′
	15° 26′

14 November, in the morning [DIE 14 NOUEMBRIS, MANE.]

Between the lower head of ♊ and 11 ♌ [Inter inferius caput ♊ & 11 ♌]	30° 47′
	30° 48′

23 November, in the evening [DIE 23 NOUEMBRIS, VESPERI.]

Meridian altitude of the brighter star in the small unformed triangle above the head of ♈ [Altitudo meridiana ſtellæ lucidioris in paruo triangulo informi ſupra caput ♈]	59° 37′

6 December, in the evening [DIE 6 DECEMBRIS, VESPERI.]

Meridian altitude of 4 in the intersection of ♉ [Altitudo meridiana 4 in interſectione ♉]	
by the revolving quadrant [per Volub.]	41° 37⅚′
by the new sextant [per nouum Sext.]	41° 38⅙′
by the steel instrument [per Chalyb.]	41° 37⅚′
Meridian altitude of 3 in the intersection of ♉ [Alt. mer. 3 in interſectione ♉]	
by the steel instrument [per Chalyb.]	42° 20⅚′
by the revolving quadrant [per Volub.]	42° 20⅔′
by the new sextant [per nouum Sext.]	42° 20$^{11}/_{12}$′
Between the bright star of ♈ and Aldebaran [Inter lucidam ♈ & Aldeboram]	
by the new sextant [per nouum Sextantem]	35° 32′

Repeated [Repetita]	35° 32′ 25″

19 December, in the morning [DIE 19 DECEMBRIS, MANE.]

Declination of Spica ♍ by the armillae [Declinatio Spicæ ♍ per Armillas]	8° 58½′
	8° 58⅔′
With the clock showing 7^h $2⅔^m$, Spica ♍ was crossing the meridian, having an altitude [Horologio indicante H.7 M.2⅔ tranſibat Spica ♍ per Merid. habens altitudinem]	
by the steel instrument [per Chalyb.]	25° 7⅚′
by the revolving quadrant [per Volub.]	25° 7½′

20 December, in the morning [DIE 20 DECEMBRIS, MANE.]

At 7^h $21½^m$ Spica ♍ was crossing the meridian, having an altitude [H. 7 21½′ Spica ♍ tranſibat per merid. habens altit.]	
by the revolving quadrant [per Volub.]	25° 7 ⅔[numeral: ?]′
by the steel instrument [per Chalyb.]	25° 8′
Declination of Spica [Declinatio Spicæ]	8° 58′ with both [vtroque]

28 December, in the evening [DIE 28 DECEMBRIS, VESPERI.]

Between the bright star of ♈ and Aldebaran by the new brass sextant [Inter lucidam ♈ & Aldeboram per nouum Sext. orichalcicum]	25° 32½′ twice [25 32½ bis]
Repeated distance [Iterata diſt.]	25° 33′
Between Aldebaran and the bright head of ♊ by the new brass sextant [Inter Aldeb. & lucidum caput ♊ per nouum Sext. orich.]	45° 5′
	45° 5⅔′
Between the bright star of ♈ and Aldebaran by the new wooden sextant [Inter lucidam ♈ & Aldeboram per nouum Sext. ligneum]	25° 32 ⅔[numeral: ?]′
Between Aldebaran and the lower head of ♊ by the same new wooden sextant [Inter Aldeboram & inferius caput ♊ per eundem nou. ligneum Sext.]	45° 5′

Observations of stars in the northern constellations outside the zodiac [OBSERUATIONES STELLARUM IN ASTERISMIS BOREALIBUS EXTRA ZODIACUM.]

4 January [DIE 4 JANUARIJ.]

Minimum altitude of the second star in the Greater Bear [Altitudo ſecundæ in Vrſa maiore minima]	
by the steel instrument [per Chalyb.]	23° 1⅙′
by the revolving quadrant [per Volub.]	23° 1½′
Minimum altitude of the last star in the tail of the Greater Bear, by the steel instrument [Alt. min. extremæ in cauda Vrſæ maioris per Chalyb.]	17° 20½′
Minimum meridian altitude...[1] of the Lesser Bear [Alt. merid... [1]Vrſæ minoris minima]	
by the revolving quadrant [per Volub.]	41° 44′
by the steel instrument [per Chalyb.]	41° 44⅓′
Altitude of the following, less bright star in the square of the Lesser Bear, below the pole [Alt. ſequentis minus lucidæ in □ Vrſæ min. infra Polum]	
by the revolving quadrant [per Volub.]	39° 11⅚′
by the steel instrument [per Chal.]	39° 12′
Meridian altitude of the head of Medusa [Alt. merid. capitis Meduſæ]	
by the revolving quadrant [per Volub.]	73° 23½′
by the steel instrument [per Chalyb.]	73° 23¾′
Meridian altitude of the brighter star of the shoulder of Perseus [Altit. merid. lucidioris humeri Perſei]	
by the revolving quadrant [per Volub.]	85° 54′
Meridian altitude of the brighter star of the side of Perseus [Alt. merid. lucidioris lateris Perſei]	
by the steel instrument [per Chal.]	82° 23⅔′
by the revolving quadrant [per Vol.]	82° 24⅓′

Note. Here the Moon's brightness was a hindrance. [Nota. Hic impedimentum ſplendoris ☾æ.]

Meridian altitude of the brighter star in the right hip of Perseus [Alt. merid. lucidioris in coxendice dextra Perſei]	
by the steel instrument [per Chal.]	80° 28½′
by the revolving quadrant [per Vol.]	80° 28⅔′

The same evening, for refraction. [Eodem Veſpere pro refractione]
At the rising of the Lesser Dog [Ad ortum Canis minoris]

Declination [Decl.]	Azimuth [Azim.]	Altitude by the lesser quadrant [Alt. per Q. min.]
6° 21′	87° 5′	5° 18′
6° 20½′		
6° 19′	89° 10′	6° 43⅔′
6° 18½′		
6° 17½′	91° 40′	8° 31′
6° 17⅙′		
6° 16¾′	94°	10° 9⅓′
6° 17′		
6° 16′	97° 48′	12° 41′
6° 16′		

Declination [Decl.]	Azimuth [Azim.]	Altitude by the lesser quadrant [Alt. per Q. min.]
6° 15¼′	14° 10′	
6° 15′		
6° 14½′	15° 25′	
6° 14½′		

At the setting of the Vulture [Ad occaſum Vulturis]

Declination [Decl.]	Altitude by the lesser quadrant [Alt. per Q. min.]
7° 55¾′	9° 0′
7° 55⅓′	
7° 56¾′	7° 10′
7° 56½′	
7° 57⅙′	6° 20′
7° 57′	
7° 58′	5° 50′
7° 57¾′	
7° 58′	4° 40′
7° 57⅔′	
8° 2′	3°
8° 4′	2° 10′
8° 5′	2°

Then, the next morning, the Vulture was observed again in the east, on account of refraction, as follows. [Deinde ſequenti mane rurſus obſeruabatur Vultur in Oriente propter refractionem vt ſequitur.]

At the rising: Declination [Ad Ortum / Declin.]	Altitude [Altit.]	At the setting: Declination [Ad Occaſum / Declin.]	Altitude [Altit.]
7° 54′	12° 30′	7° 53¾′	13° 55′
7° 54′		7° 54′	
7° 54′	12° 53′		

Therefore at an altitude of 12 degrees the declination, at the rising as much as at the setting, is to be set at 7° 53′ 50″. The true declination is 7° 52′ 15″. The refraction of the declination at an altitude of 12 degrees is 1′ 35″. [Ergo in altitudine 12 Graduum ponatur declinatio tam ad ortum quam occaſum 7° 53′ 50″. Declinatio vera 7° 52′ 15″. Refractio declinationis in altit. 12 graduum 1′ 35″.]

[1] It should be "lucidioris in quadrato" ("of the brighter star in the square"). [Debet eße »lucidioris in quadrato«.]

5 January, in the morning [DIE 5 JANUARIJ, MANE.]

Minimum meridian altitude of the pole star [Stellæ polaris alt. minima merid.]	
by the steel instrument [per Chalyb.]	53° 0′ twice [53 0 bis]
	or 53° 0 1/12′ [vel 53 0 1/12]
by the revolving quadrant [per Volub.]	53° 0′ three times [53 0 ter]
Maximum altitude of the middle star in the tail of the Greater Bear [Mediæ in cauda Vrſæ maioris alt. max.]	
by the revolving quadrant [per Volub.]	88° 48¾′
Declination of Capella by the armillae [Declinatio Capellæ per Armillas]	45° 29½′
	45° 30′

For examining the setting of the armillae: this declination agrees well enough with the one observed on 30 December, in the evening. [Pro ſitu armillarum examinando, quæ declinatio ſatis conuenit cum ea, quæ obſeruata eſt 30 Decembris Veſperi.]

Meridian altitude below the pole [Alt. merid. infra polum]	6° 15 1/12′

13 January [DIE 13 JANUARIJ.]

Minimum altitude of the bright star in the square of the Lesser Bear [Altit. min. Lucid. in □ Vrſæ min.]	
by the steel instrument [per Chalyb.]	41° 42⅚′
by the revolving quadrant [per Volub.]	41° 43′
Minimum altitude of the lower of the two preceding stars in the square of the Lesser Bear [Alt. min. inferioris duarum præcedentium in □ Vrſæ minoris]	
by the steel instrument [per Chalyb.]	39° 11½′
by the revolving quadrant [per Volub.]	39° 11′

15 January, in the morning [DIE 15 JANUARIJ, MANE.]

Maximum altitude of the less bright star in the square of the Lesser Bear [Alt. max. minus luc. in □ Vrſæ min.]	
by the steel instrument [per Chal.]	72° 36⅚′
by the revolving quadrant [per Volub.]	72° 36⅔′
Minimum altitude of the bright star in the side of Perseus [Alt. min. lucidæ in latere Perſei]	
by the steel instrument [per Chal.]	14° 18′
by the revolving quadrant [per Volub.]	14° 17¼′

	uncertain [incerta]

16 January, in the morning [DIE 16 JANUARIJ, MANE.]

Minimum altitude of the brighter star of the right shoulder of Perseus [Alt. min. lucidioris dextri hum. Perſei]	
by the steel instrument [per Chal.]	17° 46′ 40″
by the revolving quadrant [per Volub.]	17° 47′
Minimum altitude of the bright star in the side of Perseus [Alt. min. lucidæ in latere Perſei]	
by the steel instrument [per Chal.]	14° 18⅔′
by the revolving quadrant [per Volub.]	14° 17⅔′
Maximum meridian altitude of the brighter of the two in the square of the Lesser Bear [Alt. max. Merid. lucidioris duarum in □ Vrſæ min.]	
by the steel instrument [per Chal.]	70° 4⅔′
by the revolving quadrant [per Volub.]	70° 4⅔′
Of the following, less bright star in the square of the Lesser Bear, maximum meridian altitude [Sequentis minus lucidæ in □ Vrſæ min. Alt. mer. max.]	
by the steel instrument [per Chal.]	72° 36½′
by the revolving quadrant [per Volub.]	72° 36⅚′

18 January, in the morning [DIE 18 JANUARIJ, MANE.]

Minimum meridian altitude of the pole star [Alt. mer. minima ſtellæ Polaris]	
by the steel instrument [per Chal.]	53° 0′
by the revolving quadrant [per Volub.]	53° 0⅙′
Maximum meridian altitude of the last star in the Greater Bear [Alt. max. merid. extremæ in Vrſa maiore]	
by the revolving quadrant [per Volub.]	85° 27⅔′

19 January [DIE 19 JANUARIJ.]

Distance between the pole star and Schedar [Diſtantia inter ſtellam polarem & Schedir]	32° 49′ twice [32 49 bis]
Between the pole star and the one in the girdle of Cassiopeia [Inter ſtellam polarem & illam quæ eſt in cing. Caßiop.]	28° 36⅚′
	28° 37′
Between the pole star and the bright star of the Chair [Inter ſtellam polarem & lucidam Cathedræ]	30° 13¼′
	30° 13½′
Between the pole star and the eleventh of Cassiopeia [Inter polarem & vndecimam Caßiopeæ]	26° 25½′

	26° 26′

20 January, in the morning [DIE 20 JANUARIJ, MANE.]

Altitude of the bright star in the square of the Lesser Bear [Alt. lucidæ in □to Vrſæ minoris]	
by the steel instrument [per Chalyb.]	70° 5⅓′
by the revolving quadrant [per Volub.]	70° 5′
Maximum altitude of the following, less bright star in the square [Sequentis minus luc. in □to alt. max.]	
by the steel instrument [per Chalyb.]	72° 37′
by the revolving quadrant [per Volub.]	72° 36⅚′

In the evening. [Veſperi]

Between the Bend of Cassiopeia and the pole star [Inter flexuram Caßiopeæ & Polarem]	28° 36⅔′
Between Schedar and the eleventh of Cassiopeia [Inter Schedir & vndecimam Caßiopeæ]	6° 24¾′
	6° 24⅚′
Minimum altitude of the following and last star in the triangle of Perseus, no. 3 [Alt. min. ſequentis & vltimæ in triangulo Perſei N. 3]	
by the steel instrument [per Chalyb.]	17° 47¼′
by the revolving quadrant [per Volub.]	17° 47⅓′
Minimum altitude of the head of Medusa [Alt. min. capitis Meduſæ]	
by the steel instrument [per Chalyb.]	5° 22⅓′
by the revolving quadrant [per Volub.]	5° 21⅚′
Minimum altitude of the bright star in the side of Perseus [Alt. min. lucidæ in latere Perſei]	
by the steel instrument [per Chalyb.]	14° 17½′
Minimum altitude of the following one of the bright stars in the side of Perseus [Alt. min. ſequentis lucidarum in latere Perſei]	
by the steel instrument [per Chalyb.]	12° 18′
	uncertain [incerta]
Minimum altitude of the preceding star in the square of the Lesser Bear [Alt. min. prioris in □ vrſæ min.]	
by the steel instrument [per Chal.]	41° 45′
by the revolving quadrant [per Vol.]	41° 45 1/12′

21 January, in the morning [DIE 21 JANUARIJ, MANE.]

Meridian altitude of the bright star of the shoulder of Perseus [Alt. merid. lucidæ humeri Perſei]	
by the steel instrument [per Chalyb.]	17° 47⅙′

by the revolving quadrant [per Volub.]	17° 46¾′

Meridian altitude of the head of Medusa below the pole [Alt. merid. cap. Meduſæ infra polum]	
by the steel instrument [per Chal.]	5° 21⅚′
by the revolving quadrant [per Vol.]	5° 22′
Meridian altitude of the bright star in the side of Perseus below the pole [Alt. mer. luc. in lat. Perſ. infra Polum]	
by the steel instrument [per Chal.]	14° 17¾′
by the revolving quadrant [per Vol.]	14° 17⅚′
Meridian altitude of the one in Perseus that is at the flanks, the brighter, following the side, below the pole [Alt. merid. eius in Perſeo quæ eſt ad ilia lucidior ſequens latus, infra polum]	
by the steel instrument [per Chal.]	12° 12¼′
by the revolving quadrant [per Vol.]	12° 12⅙′
Maximum altitude of the preceding one of the two bright stars in the square of the Lesser Bear [Alt. max. præced. lucid. duar. in □to Vrſæ min.]	
by the steel instrument [per Chal.]	70° 5⅙′
by the revolving quadrant [per Vol.]	70° 4¾′
Of the following min. bright star in the square, maximum altitude [Sequentis min. luc. in □to alt. max.]	
by the steel instrument [per Chal.]	72° 36⅚′
by the revolving quadrant [per Vol.]	72° 36½′

22 January [DIE 22 JANUARIJ.]

Altitude of the hinder star in the square of the Lesser Bear [Alt. poſterioris in □to Vrſæ min.]	
by the steel instrument [per Chalyb.]	72° 36⅚′
by the revolving quadrant [per Volub.]	72° 36⅚′

23 January, in the evening [DIE 23 JANUARIJ, VESPERI.]

Minimum altitude of the brighter star in the square of the Lesser Bear [Alt. min. lucris in □to Vrſæ min.]	
by the steel instrument [per Chalyb.]	41° 44¼′
by the revolving quadrant [per Volub.]	41° 44½′
Of the following min. bright star in the square of the Lesser Bear [Sequentis min. luc. in □to Vrſæ min.]	
by the steel instrument [per Chal.]	39 12⅓
by the revolving quadrant [per Vol.]	39 12
Meridian altitude of Lyra below the pole [Altit. meridiana Lyræ infra polum]	
by the revolving quadrant [per Volub.]	4° 32⅓′

Maximum meridian altitude of the one following the bright star in the side of Perseus [Altit. merid. maxima ſequentis lucidam in latere Perſei]	
by the steel instrument [per Chal.]	80° 31′
Between the lower head of ♊ and the northern star of the left foot of the Greater Bear [Inter inferius caput ♊ & Borealem ſiniſtri pedis vrſæ maioris]	33 52½
Between cor ♌ and the same star in the left foot of the Greater Bear [Inter cor ♌ & eandem in pede ſiniſtro vrſæ maioris]	31 1
	31 1½
	31 0½

This discrepancy arose because of a rather strong wind, which shook the instrument this way and that. [Hæc diſcrepantia contingebat ob ventum validiorem, qui inſtrumentum huc illuc agitabat.]

Declination of the northern star in the left hind foot of the Greater Bear [Declin. ſtellæ Borealis in ſiniſtro pede poſteriori Vrſæ mai.]	44° 56′ vtr.
Between the bright star of ♈ and the eighth of Cepheus, which is in the left arm, the distance by the sextant [Inter lucid. ♈ & octauam Cephei, quæ eſt in ſiniſtro brachio, diſtantia per Sextantem]	52° 44¾′
	52° 45′
Between the calf of Cassiopeia and the left arm of Cepheus [Inter ſuram Caßiop. & ſiniſtrum brachium Cephei]	19 13¾
	19 14
Declination of the eighth of Cepheus [Declinatio octauæ Cephei]	64° 4′
	64° 3⅔′

24 January, in the morning [DIE 24 JANUARIJ, MANE.]

Minimum altitude of the bright star of the shoulder of Perseus [Alt. min. luc. humeri Perſei]	
by the steel instrument [per Chal.]	14° 17⅚′
by the revolving quadrant [per Vol.]	14° 17⅓′
Maximum altitude of the bright star in the square of the Lesser Bear [Alt. max. luc. in □to Vrſæ min.]	
by the steel instrument [per Chal.]	70° 5¼′
by the revolving quadrant [per Vol.]	70° 3⅚′
Minimum altitude of the one next below the brighter star in the side of Perseus [Alt. min. proximæ infra lucidiorem in latere Perſei]	
by the steel instrument [per Chal.]	12° 18′
by the revolving quadrant [per Vol.]	12° 22⅓′
Maximum altitude of the smallest star in the square of the Lesser Bear [Alt. max. minimæ in □to Vrſæ min.]	
by the steel instrument [per Chal.]	72° 37′
by the revolving quadrant [per Vol.]	72° 36⅔′

25 January [DIE 25 JANUARIJ.]

Between the calf of Cassiopeia and the left arm of Cepheus [Inter ſuram Caßiopeæ & ſiniſtrum brachium Cephei]	
by the new sextant [per Sext. nouum]	19 15 twice [19 15 bis]

26 January, in the morning [DIE 26 JANUARIJ, MANE.]

Between the breast of Cepheus and the tail of the Swan [Inter pectus Cephei & caudam Cygni]	18 4½
	18 5¼
Between Arcturus and the smallest star in the square of the Greater Bear [Inter Arcturum & minimam in □to Vrſæ mai.]	43 43
	43
	44¼

Small clouds were passing across. [intercurrebant nubeculæ.]
In the evening. [Veſperi]

Minimum altitude of the brighter star in the square of the Lesser Bear [Alt. min. lucidioris in □to Vrſæ min.]	
by the steel instrument [per Chal.]	41° 44½′
by the revolving quadrant [per Vol.]	41° 44⅓′
Between the tail of the Swan and the head of Andromeda [Inter caudam Cygni & caput Andromedæ]	43 23¼
	43 23½
Between the tail of the Swan and the bright star of the Chair [Inter caudam Cygni & lucidam cathedræ]	33 34
	33 33⅚
Between the head of Andromeda and the bright foot of the same [Inter caput Andromedæ & lucidum pedem eiusdem]	26 41½
	26 41¾
Between the eye of ϑ and the left foot of Andromeda [Inter oculum ϑ & pedem ſiniſtrum Andromedæ]	41 23⅙
	41 23⅓
Between the eye of ϑ and the head of Medusa [Inter oculum ϑ & caput Meduſæ]	30 52½
	30 53
Between the head of Medusa and the head of Andromeda [Inter caput Meduſæ & caput Androm.]	
	23 44 twice [23 44 bis]
	Repeat [Repete]
Between the head of Andromeda and the more northern one in the △ [Inter caput Androm. & borealiorem in △]	26 13½

	26 14
Between the eye of ♉ and the more northern one in the △ [Inter oculum ♉ & borealiorem in △]	37 28
	37 28¼
Between the head of Andromeda and the tenth in the tiara of Cepheus [Inter caput Androm. & decimam in tiara Cephei]	35 25½
	35 26
Between the tenth in the tiara of Cepheus and the head of Medusa [Inter decimam in tiara Cephei & caput Meduſæ]	48 19⅓
	48 19¾
Between cor ♌ and the upper of the following stars in the square of the Greater Bear [Inter cor ♌ & ſuperiorem ſequentium in □ vrſæ maioris]	51 11 twice [51 11 bis]
Between the upper of the following stars in the square of the Greater Bear and the merid. head of ♊ [Inter ſuperiorem ſequentium in □ Vrſæ mai. & merid. cap. ♊]	54 37
	54 37⅙
Between the northern star in the left hind foot of the Greater Bear and the lower head of ♊ [Inter Borealem in poſteriore ſiniſtro pede Vrſæ maioris & inferius caput ♊]	33 53¾
	33 54⅙
Between the same northern star in the left foot and cor ♌ [Inter eandem Borealem in ſiniſtro pede & cor ♌]	31 0⅙
Between the left arm of Cepheus and the calf of Cassiopeia [Inter ſin. brach. Cephei & ſuram Caßiopeæ]	19 15⅓
	19 15
Between the left arm of Cepheus and the bright star of ♈ [Inter ſin. brach. Cephei & lucidam ♈]	52 43⅓
	52 44
Declination of the brighter star in the tiara of Cepheus, no. 10 [Declin. lucidioris in tiara Cephei no. 10]	56° 12½′
	56° 13′
Declination of the northern one of the following stars in the square of the Greater Bear [Declin. Borealis ſequentium in □ Vrſæ maioris.]	59° 19′
	59° 19¼′

28 January [DIE 28 JANUARIJ.]

Between the lower head of ♊ and the northern star of the left foot of the Greater Bear [Inter inferius caput ♊ & borealem ſiniſtri pedis Vrſæ maioris]	33 52½

29 January, in the evening [DIE 29 JANUARIJ, VESPERI.]

Declination of the two northern stars in the base of the △, which is in the right-angled triangle [Declin. duarum Boreal. in △ baſi, quæ eſt in orthogonio]	33° 1½′
	33° 1¾′
Declination of the brighter of the two in the right foot of Andromeda, which is of about the 3rd magnitude [Declin. lucidioris duarum in pede dextro Androm, quæ eſt fere 3 magn.]	46° 30⅙′
	46° 31′

4 February [DIE 4 FEBRUARIJ.]

Between the bright star of ♈ and the head of Andromeda [Inter lucid. ♈ & caput. Androm.]	27 7½
	27 7⅓
Between the head of Andromeda and the head of Medusa [Inter caput Androm. & caput Meduſæ]	38 10 twice [38 10 bis]
	38 10⅔
Between the bright star of ♈ and the brighter one in the right foot of Andromeda [Inter lucid. ♈ & lucidiorem in dextro pede Andromedæ]	25 47
	25 46½
	25 46⅓
Between the brighter and preceding star in the right foot of Andromeda and the eye of ♉ [Inter lucidiorem & præcedentem in dextro pede Andromedæ & ocul. ♉]	48 15½ doubtful [48 15½ dub.]
	48 17 twice [48 17 bis]
	48 16¾
Declination of the preceding star in the upper foot of Andromeda [Decl. ſtellæ præced. in ſuperiori pede Androm.]	46° 31¾′
	46° 31⅓′
Minimum meridian altitude of the one that is in the back of the head of the Dragon [Alt. merid. minima eius quæ eſt in occipite Draconis]	
by the revolving quadrant [per Volub.]	17° 22½′
by the steel instrument [per Chalyb.]	17° 22⅙′

5 February, in the morning [DIE 5 FEBRUARIJ, MANE.]

Maximum meridian altitude of the brighter star in the square of the Lesser Bear [Alt. merid. max. lucidioris in □ Vrſæ minoris]	
by the steel instrument [per Chalyb.]	70° 5′
by the revolving quadrant [per Volub.]	70° 4⅓′
Altitude of the shoulder of Perseus[1], but it had passed the meridian slightly [Alt. humeri Perſei[1], ſed erat Meridianum parum transgreßa]	
by the steel instrument [per Chalyb.]	17° 47′
by the revolving quadrant [per Volub.]	17° 46′
Meridian altitude of the bright star of Perseus [Alt. mer. lucidæ Perſei]	
by the steel instrument [per Chalyb.]	14° 17⅓′
by the revolving quadrant [per Volub.]	14° 17′

Meridian altitude of the following bright star of Perseus [Alt. mer. ſequentis luc. Perſei]	
by the revolving quadrant [per Vol.]	12° 20⅙′
by the steel instrument [per Chal.]	12° 21′
Maximum altitude of the other one in the square of the Lesser Bear [Alt. max. alterius in □ Vrſæ min.]	
by the steel instrument [per Chalyb.]	72° 36¾′
by the revolving quadrant [per Volub.]	72° 36′
Meridian altitude of the foremost and brighter star in the left hand of Ophiuchus [Alt. merid. anterioris & lucidioris in ſin. manu Ophiuchi]	
by the steel instrument [per Chalyb.]	31° 28⅙′
by the revolving quadrant [per Volub.]	31° 27⅚′
Between Spica and the left hand of Ophiuchus [Inter Spicam & ſiniſtram manum Opiuchi]	42 32⅙
	42 32½

12 February, in the evening [DIE 12 FEBRUARIJ, VESPERI.]

Between the girdle of Cepheus, which is the third in number, and Schedar of Cassiopeia [Inter cingulum Cephei quæ eſt tertia numero & Schedir Caßiopeæ]	24 33¼
	24 33½
Between the girdle of Cepheus and the bright star in the square of the Lesser Bear [Inter cingulum Cephei & lucidam in □ vrſæ minoris]	26 52 twice [26 52 bis]
Declination of that star in Cepheus, northern [Declin. eius in Cepheo bor.]	68° 47½′
	68° 46⅚′
Between Schedar and the bright star in the square of the Lesser Bear [Inter Schedir & lucid. in □ vrſæ min.]	47 29½
	47 29¼
Between the bright star of the side of Perseus and the bright star of ♈ [Inter lucid. lateris Perſei & lucidam ♈]	30 22¾
	30 23
Between the bright star of the side of Perseus and Aldebaran [Inter luc. lat. Perſei & Aldeb.]	36 21½ twice [36 21½ bis]

Altitude of Arcturus [Altit. Arcturi]	Declination [Declin.]
4° 38½′	21° 30⅓′
5° 8½′	21° 29⅚′
5° 25⅚′	21° 28⅙′
7° 27½′	21° 27⅙′
7° 56½′	21° 27′

Minimum altitude of Lyra, by the revolving quadrant [Altit. Lyræ min. per Volub.]	4° 32½′

[1] That is, of the right shoulder. [Id eſt, humeri dextri.]

18 February, in the evening [DIE 18 FEBRUARIJ, VESPERI.]

Between the pole star and the girdle of Cepheus [Inter ſtellam Polarem & cingulum Cephei]	19° 15⅓′
	19° 15¾′
Between the girdle of Cepheus and the bend of Cassiopeia [Inter cingulum Cephei & flexuram Caßiopeæ]	22° 41¼′
	22° 42′
Between 8 of Cepheus and the bend of Cassiopeia [Inter 8 Cephei & flex. Caßiop.]	15° 0½′ twice [15 0½ bis]
Between the girdle of Cepheus and 8 of the same, in the left shoulder [Inter cingulum Cephei & 8 eiusdem in ſin. humero]	8° 31⅝′
	8° 31¾′
Declination of the girdle of Cepheus [Declin. cinguli Cephei]	68° 47⅙′
	68° 47½′
Between 1 in the root of the tail of the Greater Bear and the bright star of the square of the Lesser Bear [Inter 1 in radice caudæ Vrſæ mai. & lucidam □ Vrſæ minoris]	21° 25¼′
	21° 25½′
Between 1 of the tail of the Greater Bear and the following, less bright star in the square of the Lesser Bear [Inter 1 caudæ Vrſæ mai. & ſequminus luc. in □ vrſæ min.]	22° 0′
	22° 0⅓′
Declination of 8 of Cepheus, namely in the left shoulder [Declin. 8 Cephei, ſcilicet in ſiniſtro humero]	64° 3½′
	63° 3⅝′
Of the brighter star in the head of the Dragon, which is the lower of the following ones in the square [Lucidioris in capite Draconis, quæ eſt inferior ſequentium in □,]	
by the revolving quadrant [per Volub.]	17 32
Minimum meridian altitude of Lyra [Altit. Lyræ merid. min.]	
by the revolving quadrant [per Vol.]	4° 32½′

25 February, in the morning [DIE 25 FEBRUARIJ, MANE.]

Between 17 in the tail of the Serpent of Ophiuchus and the more northern scale-pan of ♎ [Inter 17 in cauda Serpentis Ophiuchi & Borealiorem lancem ♎]	46° 16¾′
Declination of the star just mentioned [Declin. prædictæ ſtellæ]	2° 53′
	2° 53½′
Between the same 17 and the bright star of the Vulture [Inter eandem 17 & luc. Vultur.]	25° 3¾′
Repeated [Repetita]	25° 4′
Between the same in the tail of the Serpent and the lowest of the three in the forehead of ♏, no. 3 [Inter eandem in cauda Serpentis & infimam trium in fronte ♏, num. 3]	41° 21′
	41° 21½′
Between the same 17 and the middle one in the forehead of ♏, no. 2 [Inter eandem 17 & mediam in fronte ♏, num. 2]	39° 31½′
Between the same 17 of the Serpent and the uppermost in the forehead of ♏, no. 1 [Inter eandem 17 Serp. & ſupremam in fronte ♏, num. 1]	37° 18½′
	37° 19⅓′

Towards dawn. [ſub auroram]
For the refractions. [Pro refractionibus.]

Minimum altitude of Capella [Alt. min. Capellæ]	*11° 26½'*1

In the evening. [Veſperi.]

Minimum altitude of the tail of the Swan [Alt. min. caudæ Cygni]	*9° 47⅔'*

Both by the revolving quadrant. [ambæ per Quadrantem Volubilem.]

1 March [DIE 1 MARTIJ.]

Minimum altitude of the tail of the Swan, by the revolving quadrant [Alt. min. caudæ Cygni per Vol.]	9° 47¾'

It had passed the meridian slightly. [paululum pertranſierat meridiem.]

Declination[2] of the brighter star in the base of the Triangle [Declin.[2] lucidioris in baſi Trianguli]	33° 1½'
	33° 1¾'
Declination of the head of Medusa [Declinatio capitis Meduſæ]	39° 20¼'
	39° 20⅙'

Afterwards, with the instrument corrected, the declination 33° 2½' by one; of the head of Medusa 39° 21', by the other 20¾. [Poſtea correcto inſtrumento declinatio 33 2½ vno cap. Meduſæ 39 21, altero 20¾]

Declination of the head of Medusa by the armillae [Declin. capitis Med. per Armillas]	39° 20'
Declination of the same from the meridian altitude [Declin. eiusdem ex alt. merid.]	39° 19'
Therefore subtract [Ergo ſubtrahe]	1

2 March, after midnight [DIE 2 MARTIJ, POST M. N.]

Minimum altitude of the bright foot of Andromeda [Alt. lucidi pedis Andromedæ minima] by the revolving quadrant [per Volub.]	6° 21'

by the steel instrument [per Chalyb.]	6° 21⅓′

3 March, in the morning [DIE 3 MARTIJ, MANE.]

Maximum altitude of the hinder, less bright star in the square of the Lesser Bear, by the steel instrument [Alt. max. poſterioris minus lucidæ in □ Vrſæ min. per Chalyb.]	72° 36¾′

In the evening. [VESPERI.]

The bright star of Lyra on the meridian below the pole, altitude [Lucida lyræ in Meridiano infra polum, alt.]	*4° 30⅙′*
At 6^h $55⅔^m$ the same was at altitude [H. 6 M. 55⅔ fuit eadem alt.]	*4° 32′*
azimuth [azim.]	*0° 30′*
At 7^h $0½^m$, when Sirius was 0 45 west, the azimuth of Lyra 1° 30′, altitude [H. 7 M. 0½ quando Sirius erat 0 45 occ., lyræ azim. 1 30, alt.]	*4° 32¼′*

These for the refractions both of the comet and of the stars. [Hæc pro refractionibus tam cometæ quam ſtellarum.]

4 March, in the evening [DIE 4 MARTIJ, VESPERI.]

For investigating the refraction of the comet. [Pro indagatione refractionis cometæ.]

Altitude of the bright star of Lyra, by the revolving quadrant [Lucidæ Lyræ alt. per Volub.]	4° 32¾′

But it was 1¼° beyond the meridian, to the north. [Sed erat vltra meridianum ſeptentrion. grad. 1¼.]

At 8^h $48¼^m$ the bright star of Hydra was 10° 0′ east. And the tail of the Swan was then on the northern meridian, having an altitude by the revolving quadrant of 9° 50⅚′, standing in the 90th degree. One degree before, it was 51′ beyond the degree. At the second degree before the meridian it was 52½′ beyond 9°. [H. 8 48¼′ Erat lucida Hydræ orientalis 10°0′. Eratque tunc cauda Cygni in Meridiano Boreali habens altit. per Volub. 9 50⅚ exiſtens in 90 gradu. Vno gradu ante erat minutorum 51 vltra grad. Secundo gradu ante Meridiem erat Minutorum 52½ vltra 9 gradus.]

[1] Thus in codex D, fol. 268v. But on f. 277r II 26⅓ is written in another hand. [Sic. in codice D. fol. 268 v. Sed f. 277 r alia manu II 26⅓ conſcriptum eſt.] [2] From here to the end of this day, from codex O. [Hinc usque ad finem hujus diei e codice O.]

6 March [DIE 6 MARTIJ.]

Names of the stars [Nomina ſtellarum]	Alti-tude [Al-ti-tudo]	Azimuth from the globe, from the meridian towards the setting [Azimuth ex globo a mer. ad occaſ.]	Declination observed by the armillae [Declin. obſerv. per Armillas]	Declination from the meridian altitude [Decl. ex alt. mer.]	Dif-fer-ence [Dif-ferен-tia]
The right shoulder of Erichthonius [Dexter hum. Ericht.]	56° 20′	92° 35′	44° 50′	44° 49⅚′	
Repeated [Repetita]	55° 40′	93° 36′	44° 50′	44° 49⅚′	
The brilliant star of Capella [Clara Capellæ]	51° 0′	101° 18′	45° 30¾′	45° 29½′	1 20
The right shoulder of Erichthonius [Dext. hum. Ericht.]	46° 15′	105° 40′	44° 50′	44° 49¾′	
The bright star of Perseus [Lucida Perſei]	41° 0′	118° 32′	48° 22⅓′	48° 22′ 48° 19⅔′	2 30
Capella	40° 45′	113° 53′	45° 30½′	45° 30¼′ 45° 29½′	0 50
The bright star of Perseus [Lucida Perſei]	40° 0′	119° 43′	48° 22⅓′	48° 22′ 48° 19⅔′	2 30
The head of Medusa [Caput Meduſæ]	33° 20′	112° 11′	39° 21′	39° 20¾′ 39° 18½′	2 20
The brilliant star of Perseus [Clara Perſei]	32° 50′	129° 0′	48° 21⅓′	48° 21¼′ 48° 19⅔′	1 40
The head of Medusa [Caput Meduſæ]	31° 0′	115° 21′	39° 21′	39° 20⅝′ 39° 18½′	2 30
The bright star of the Triangle [Lucid. Triang.]	29° 0′	106° 44′	33° 3′	33° 3¼′	
The head, Algol [Caput Algol]	24° 20′	124° 43′	39° 21¼′	39° 18½′	2 45
Aldebaran [Aldeboram]	22° 30′	82° 54′	15° 39⅝′	15° 39¾′ 15° 37′	2 45
Towards the rising [Verſus Ortum]					

Names of the stars [Nomina ſtellarum]	Alti-tude [Al-ti-tudo]	Azimuth from the globe, from the meridian towards the setting [Azimuth ex globo a mer. ad occaſ.]	Declination observed by the armillae [Declin. obſerv. per Armillas]	Declination from the meridian altitude [Decl. ex alt. mer.]	Dif-fer-ence [Dif-feren-tia]
Arcturus	28° 0′	87° 7′	21° 20¼′	21° 21′ 21° 22′	1 30
Repeated [Repetita]			21° 20½′	21° 21½′	

6 March, in the evening [DIE 6 MARTIJ, VESPERI.]

For correcting the instrument with respect to the declinations. [Pro correctione inſtrumenti ratione Declinationum.]

At 7^{h} 47^{m}, the bright star of the Triangle, declination [7^{H}47^{M} Luc. Trianguli, Decl.]	*33° 3′*
Altitude 29° 0′ [Altit. 29 0]	*33° 3¼′*
At 8 43 25″ the declination of the head of Medusa was [8 43 25″ Erat declin. cap. Meduſæ]	39° 21′
	39° 20¾′
The altitude of the head of Medusa at that time, by the lesser quadrant azim. [Altit. cap. Meduſæ erat tunc temporis per Quad. min. azim.]	33° 24′
At 7 47½, declination of the same [7 47½ Declin. ead.]	*39° 21′*
Repeated [Repetita]	*39° 20′ 50″*
	39° 20¾′
	39° 18½′
At 8 49½, the brilliant star of Perseus; its altitude was then about 41°. [8 49½ Clara Perſei, alt. tunc erat quaſi 41.]	
Declination of the bright star of Perseus [Decl. lucidæ Perſei]	*48° 22¼′*
	48° 22′
Repeated [Repetita]	*48° 22⅓′*
	48° 22′
Altitude 40° [Altit. 40]	*48° 22⅓′*
	48° 22′

		Altitude [Altit.]	Declination [Declin.]
9 1	*The head of Medusa* [Caput Meduſæ]	*31°*	*39° 21′*
	Repeated [Repetita]	*30¾°*	*39° 20⅚′*
9 6	*The brilliant star of Capella* [Clara Capellæ]	*51°*	*45° 31′*
			45° 30¾′
9 10	*The right shoulder of Erichthonius* [Dextri hum. Ericht.]	*56⅓°*	*44° 50′*
			44° 49⅚′
9 15	*Repeated* [Repetita]	*55⅔°*	*44° 50′*
			44° 49⅚′
9 18	*Aldebaran* [Aldeboram]	*22½°*	*15° 39⅚′*
			15° 39¾′
9 22½	*Towards the rising, Arcturus* [Verſus ortum Arcturus]	*27½°*	*21° 20¼′*

		Altitude [Altit.]	Declination [Declin.]
			21° 21′
		28°	*21° 20½′*
			21° 21½′
	The bright star in the square of the Lesser Bear [Lucid. in □ Vrſæ min.]		75° 49¾′
			75° 49¼′
	…		73° 19′[1]
			73° 18¾′
			73° 18½′
			73° 18½′
9 *54⅓*	*The head of Medusa* [Caput Meduſæ]	*24⅓°*	*39° 21¼′*
	with one pinnule at least [vno ſaltem pinnac.]		
10 0	*The bright star of Perseus* [Lucida Perſei]	*32⅚°*	*48° 21⅓′*
	Repeated [Repetita]	*32½°*	*48° 21¼′*
	The right shoulder of Erichthonius [Dextri hum. Ericht.]	46¼°	44° 50′
			44° 49¾′
	Capella [Capellæ]	40° 46′	45° 30½′
			45° 30¼′

Because of the clouds the instrument could not be corrected. [Propter nubes non poterat corrigi inſtrumentum.]

Around the 10th hour D. Tycho saw that there was a halo around ☾, whose middle extended to the Lesser Dog, and he observed the distance of the centre of ☾ to the medi- [Circa horam 10 vidit D. Tycho, quod halo circa ☾ erat, cuius medium ſe extendebat ad canem minorem, obſeruauitque diſtantiam centri ☾ ad medi-]

[1] The name of the star is missing. It is the less bright star in the square of the Lesser Bear (γ). [Nomen ſtellæ deeſt. Eſt ſtella minus lucida in quadrato urſæ min. (γ).]

an point of the circumference, and found about 23° 25′, with the Radius. [tullium circumferentiæ & inuenit part. 23 25′ quaſi, per radium.]

10 March, in the evening [DIE 10 MARTIJ, VESPERI.]

For the position of the armillae. [Pro ſitu Armillarum.]

N.B. These were observed while the Moon was shining. [N.B. Hæc obſeruabantur ſplendente luna.]

Declination of the bright star in the square of the Lesser Bear [Declin. lucidæ in □ Vrſæ min.]	75° 49¼′
by the armillae [per Armillas]	75° 49½′
Repeated [Repetita]	75° 49¾′
	75° 49½′
Declination of the less bright star in the square of the Lesser Bear [Declin. minus luc. in □ Vrſæ minoris]	73° 18′

	73° 18⅙′
Altitude of Arcturus by the revolving quadrant [Altit. Arcturi per Volub.]	22° 48′
The declination of Arcturus at that time was [Declin. Arcturi tunc erat]	21° 20¼′
	21° 21′
Repeated declination of Arcturus [Repetita Declin. Arcturi]	21° 20½′
	21° 21′
Declination of Aldebaran [Declin. Aldeboræ]	15° 39⅙′
	15° 39½′
The altitude of Aldebaran at that time was [Tunc erat Altit. Aldeboræ] by the azimuthal quadrant [per Quadr. Azim.]	24° 8′
Declination of the Lesser Dog [Declin. Canis minoris]	7° 46½′
	7° 47′
The altitude of the Lesser Dog at that time was [Altit. tunc erat Canis min.]	36° 10′
Declination of cor ♌ when it was around the meridian [Declin. cordis ♌ cum eßet circa merid.]	13° 55½′
	13° 56′
The altitude of cor ♌ at that time was [Altit. tunc erat cordis ♌]	47° 20′

11 March, in the evening [DIE 11 MARTIJ, VESPERI.]

Declination of the 1st in the tail of the Greater Bear [Declin. 1æ in cauda Vrſæ maioris]	58° 11¼′
	58° 11′
Declination of the middle one in the tail of the Greater Bear, uncertain because of clouds [Declin. mediæ in cauda vrſæ maioris, incerta propter nubes]	57° 5′
	57° 4⅓′
Repeated [Repetita]	57° 5′
	57° 4½′

14 March [DIE 14 MARTIJ.]

Minimum altitude of the tail of the Swan [Alt. min. caudæ Cygni] by the revolving quadrant [per Volub.]	9° 50′

15 March [DIE 15 MARTIJ.]

For the position of the armillae. [Pro ſitu Armillarum.]

The declination of the bright star in the square of the Lesser Bear was observed [Obſeruabatur declinatio lucidæ in □ Vrſæ minoris]	75° 49⅝′
by the armillae [per Armillas]	75° 49¾′
The meridian altitudes give [Altitud. meridianæ præbent]	75° 49⅝′

Therefore it agrees quite well with this. [Ergo cum hac ſatis bene conſentit.]

The following, less bright star of the square of the Lesser Bear [Sequentis minus lucidæ □ vrſæ min.]	73 17¼
	73 17
Repeated [Repetita]	73 17½
	73 17⅙
Declination of the head of Medusa [Declin. capitis Meduſæ]	39° 21′
	39° 21½′
Repeated [Repetita]	39° 21′
	39° 21⅙′
Declination from the meridian altitude [Decl. ex merid. altit.]	39° 18′ 30″
The difference, at the least [Differentia ad minimum]	2 30
Declination of the bright star of Perseus by the armillae [Decl. luc. Perſei per Armill.]	48° 22′ 30″
From the meridian altitude [Ex altit. merid.]	48 19 40
Difference [Differentia]	2 50
Declination of Capella by the armillae [Decl. Capellæ per Armillas]	45° 29½′
	45° 30′
Declination from the meridian altitude [Decl. ex altit. merid.]	45° 29½′
Declination of Arcturus [Declin. Arcturi]	21° 20¼′
	21° 21′

16 March [DIE 16 MARTIJ.]

Declination of the bright star in the square of the Lesser Bear [Declin. lucidæ in □ Vrſæ minoris]	75° 49⅚′
	75° 49½′
The following, less bright star in the square of the Lesser Bear [Seq. min. luc. in □ Vrſæ min.]	…
Meridian altitude of the head of Medusa [Alt. merid. capitis Meduſæ]	73° 23′ 40″
Meridian altitude of the bright star of the side of Perseus [Luc. lateris Perſei alt. mer.]	82° 24′ 45″
Declination from the altitude [Declin. ex altit.]	48° 19′ 30″

From this the instrument was corrected until the declination by the armillae came out 48° 19′ 30″. [Ex hac corrigebatur inſtrumentum vsquedum proueniebat declinatio per Armillas 48 19 30.]

Meridian altitude of the brighter star in the right hip of Perseus [Lucidioris in coxendice dextra Perſei Alt. mer.]	80° 28′ 30″
Declination from the meridian altitude [Decl. ex alt. merid.]	46° 23′ 15″
Declination by the armillae [Declin. per Armillas]	46° 23½′
	46° 22¾′
Meridian altitude of Capella [Altit. Capellæ merid.]	79° 34′ 45″
Declination from the altitude [Decl. ex altit.]	45° 29′ 30″
Declination by the armillae, with both [Declin. per Armill., vtroque]	45° 27¾′
Meridian altitude of Arcturus [Altit. merid. Arcturi]	55° 27′ 15″

Declination from the altitude [Decl. ex altit.]	21° 22′ 0″
Declination by the armillae [Declin. per Armillas]	21° 22¾′
	21° 23½′

17 March, in the evening [DIE 17 MARTIJ, VESPERI.]

Declination of the bright star in the square of the Lesser Bear [Declin. lucidæ in □ Vrſæ minoris]	75° 53′
	75° 52¾′
Declination of the less bright star in the square of the Lesser Bear [Declin. minus lucidæ in □ Vrſæ min.]	73° 20½′
	73° 20¾′
Declination of the head of Medusa [Declin. capitis Meduſæ]	39° 16½′
	39° 17′

Having set the true declination of the bright star of the side of Perseus at 48° 19½′, with both pinnules, the instrument was directed precisely to it. [Poſita declinatione lucidæ lateris Perſei vera 48 19½ vtroque pinnac., dirigebatur inſtrumentum præciſe in eandem.]

From here the declinations of the following stars were observed afresh. [Hinc denuo obſeruabantur declinationes ſtellarum ſequentium.]

Declination of the head of Medusa [Declin. capitis Meduſæ]	39° 19′
	39° 18¾′
Declination of the bright star in the square of the Lesser Bear, observed again [Decl. lucidæ in □ Vrſæ minoris denuo obſeruata]	75° 50⅔′
	75° 51′
Declination of Arcturus towards the rising [Declinatio verſus ortum Arcturi]	21° 22′
	21° 22¼′
Declination of the brighter star in the hip of Perseus [Declin. lucidioris in coxendice Perſei]	46° 23½′
	46° 23¾′

18 March, in the evening [DIE 18 MARTIJ, VESPERI.]

Declination of the bright star in the square of the Lesser Bear [Declin. lucidæ in □ Vrſæ minoris]	75° 50⅚′
	75° 50½′
Declination of the less bright star in the square of the Lesser Bear [Declin. minus lucidæ in □ Vrſæ min.]	73° 19′
	73° 19⅙′
Declination of the bright star in the Triangle [Declin. lucidæ in △]	33° 0¾′

	33° 0⅝′
Its altitude at that time was [Erat tunc eius altitudo]	
by the revolving quadrant [per Volubilem]	20⅛°
Declination of Capella [Declinatio Capellæ]	45° 28¾′
	45° 28½′
Declination of the right shoulder of Erichthonius [Declinatio dextri humeri Erichtonij]	44° 46¾′
	44° 47′
Minimum meridian altitude of the tail of the Swan [Alt. mer. min. caudæ Cygni]	
by the revolving quadrant [per Vol.]	9° 51′

22 March, in the morning [DIE 22 MARTIJ, MANE.]

Minimum meridian altitude of the bright star of Erichthonius [Altitudo meridiana minima lucidæ Erichtonij]	
by the revolving quadrant [per Volub.]	11° 27⅓′

30 March [DIE 30 MARTIJ.]

Meridian altitude of the more southern one in the left hand of Ophiuchus [Altit. merid. auſtralioris in ſiniſtra manu Ophiuchi]	30° 28′

By the revolving quadrant, to test the instrument. [per Volub. pro examine inſtrumenti.]

10 August, in the evening [DIE 10 AUGUSTI, VESPERI.]

Meridian altitude [Altitudo meridiana]	
Of the first of the Dolphin [Primæ Delphini]	44° 4′
Of the fourth of the Dolphin [Quartæ Delphini]	47° 19½′
Of the ninth of the Dolphin [Nonæ Delphini]	47° 21′
Of the fifth of the Dolphin [Quintæ Delphini]	48° 36½′
Of the sixth of the Dolphin [Sextæ Delphini]	47° 45½′
Of the seventh of the Dolphin [Septimæ Delphini]	48° 48⅓′
Declination of the head of Ophiuchus [Declin. cap. Ophiuchi]	12° 55⅙′
better, by the old pinnule [melior per vetus pinnacid.]	12° 57′
Declination of the one which is fifth in number in the Vulture [Declin. eius, quæ numero quinta eſt in Vulture]	9° 40′
	9° 39¾′

ii August, in the evening [DIE ii AUGUSTI, VESPERI.]

Meridian altitude of the bright star of the left wing of the Swan, no. 6 [Altit. merid. lucidæ ſiniſtræ alæ Cygni n. 6]	78° 15′
Declination of the beak of the Swan [Declinatio roſtri Cygni]	27° 8⅙′
	27° 8⅔′
Meridian altitude of the second in the neck of the Swan, no. 3 [Altit. mer. ſecundæ in collo Cygni n. 3]	68° 7′
Declination of the first in the neck of the Swan, no. 2 [Declinatio primæ in collo Cygni n. 2]	29° 15⅙′
	29° 15′
Meridian altitude of the preceding one in the left foot of the Swan, no. 15 [Altit. merid. præcedentis in ſiniſtro pede Cygni num. 15]	79° 36½′
Declination of the ninth of the Dolphin, a lesser one of the 6th magnitude [Declin. nonæ Delphini magn. 6^{tae} minor.]	11° 41½′
	11° 42⅙′
Meridian altitude of the following one in the left foot of the Swan, no. 16 [Altit. merid. ſequentis in ſiniſtro pede Cygni num. 16]	80° 35′
Meridian altitude of the breast of the Swan, no. 4 [Altit. mer. pectoris Cygni n. 4]	73° 4⅙′
Meridian altitude of the unformed one near the left wing of the Swan [Altit. merid. informis circa ſiniſtram alam Cygni]	65° 8½′
Declination of 10 of the Dolphin, nebulous [Declinatio 10 Delphini, nebuloſa]	11° 57⅙′
	11° 57½′
Meridian altitude of the tail of the Swan, no. 5 [Alt. merid. caudæ Cygni num. 5]	77° 56′
	77° 55⅔′
Declination of the head of Equuleus, the preceding one, no. 1 [Declin. capitis Equulei præcedentis num. 1]	3° 37⅚′
	north [B.]
	3° 38⅙′
Meridian altitude of the bright star of the right wing of the Swan, no. 10 [Altit. merid. lucidæ dextræ alæ Cygni num. 10]	66° 33½′
Declination of the little star which follows the Vulture most closely, a lesser one of the sixth magnitude [Declin. paruulæ ſtellæ, quæ ſequitur Vulturem proxime, ſextæ magn. min.]	7° 30⅙′
	with both [vtroque]
Meridian altitude of the preceding one in the right foot of the Swan, no. 13 [Alt. merid. præcedentis in dextro pede Cygni num. 13]	73° 42⅔′
Between the beak of the Swan and Lyra [Inter roſtrum Cygni & Lyram]	15° 31⅚′
	15° 32½′
The second of the Swan, a lesser one of the 6th magnitude, is distant from Lyra [Secunda Cygni 6^{tae} magnit. minor diſtat a Lyra]	15° 24⅙′
	15° 25′
The third in the neck of the Swan, of the fifth magnitude, is distant from Lyra [Tertia in collo Cygni magnit. quintæ diſtat a Lyra]	16° 14′ 10″ twice [16 14′ 10″bis]

On the same day, ii August, in the evening [Eodem die ii Auguſti, Veſperi.]

Meridian altitude of the one in the right knee of the Swan, no. 14 [Alt. merid. eius in dextro genu Cygni num. 14]	76° 24⅔′
Declination of the one which is in the right side of Antinous [Declin. eius quæ eſt in dextro latere Antinoj]	1° 58′
	1° 57½′
Meridian altitude of the outermost of the right wing of the Swan, no. 12 [Alt. merid. extremæ dextræ alæ Cygni n. 12]	62° 40′

Meridian altitude of the preceding one of the two unformed ones near the right wing of the Swan, magnitude 5 [Alt. merid. præcedentis duarum informium circa dextram alam Cygni magnit. 5]	70° 24¾′
Meridian altitude of the following one of the two unformed ones near the right wing of the Swan, magnitude 6 [Alt. merid. ſequentis duarum informium circa dextram alam Cygni magnit. 6]	71° 48¼′
Declination of the lower one of the left arm of Antinous, mag. 4 [Declin. inferioris brachij ſiniſtri Antinoi mag. 4]	2° 26¾′
	2° 27⅙′

12 August, in the evening [DIE 12 AUGUSTI, VESPERI.]

Between the southern one in the right shoulder of Ophiuchus and the eleventh of the Serpent [Inter Auſtralem in dextro humero Ophiuchi & vndecimam Serpentis]	30° 5′
	30° 4⅔′
The altitude of this eleventh at about this time was approximately [Altitudo huius vndecimæ erat circa hoc tempus circiter]	11° 25′
Declination of 11 of the Serpent, magnitude 4 [Declinatio 11 Serpentis 4 magnit.]	2° 2⅓′ north [Bor.]
	2° 3′
Between the northern one in the right shoulder of Ophiuchus and 10 of the Serpent, magnitude 3 [Inter Borealem in dextro humero Ophiuchi & 10 Serpentis 3 magnit.]	28° 3′
	28° 2⅚′
Declination of the tenth [Declinatio decimæ]	5° 47′
	5° 48′
Between the northern one in the right shoulder of Ophiuchus and the ninth of the Serpent, magnitude 2 [Inter Borealem in dextro humero Ophiuchi & nonam Serpentis 2 magnit.]	29° 41′
	29° 41⅙′
Declination of the same ninth [Declinatio eiusdem nonæ]	7° 48½′
	7° 50′
Declination of the northern one in the right shoulder of Ophiuchus [Declin. Borealis in dextro humero Ophiuchi]	4° 49½′
	4° 49′
Declination of the southern one in the right shoulder of Ophiuchus [Declin. Auſtr. in dextro humero Ophiuchi]	2° 55⅙′
	2° 56′

Between the northern one in the right shoulder of Ophiuchus and the seventh in the neck of the Serpent [Inter Borealem in dextro humero Ophiuchi & ſeptimam in collo Serpentis]	32° 23⅚′
	32° 24⅔′
Declination of the same 7 of the Serpent [Declinatio eiusdem 7 Serpentis]	11° 59⅙′
	11° 59⅔′
Between the fourth of the Serpent and the northern one in the right shoulder of Ophiuchus [Inter quartam Serpentis & Bor. in dextro hum. Oph.]	30° 48′
	30° 49′
Declination of the same fourth of the Serpent [Declinatio eiusdem quartæ Serpentis]	16° 48½′
	16° 49⅚′
Between the third of the Serpent, in the head, and the northern one in the right shoulder of Ophiuchus [Inter tertiam Serpentis in capite & Borealem in dextro humero Ophiuchi]	28° 37½′
	28° 37¾′
Declination of the same third of the Serpent [Declin. eiusdem tertiæ Serpentis]	17° 4⅓′
	17° 4½′

15 August [DIE 15 AUGUSTI.]

Declination of the star in the right hand of Ophiuchus [Declin. ſtellæ in dextra manu Ophiuchi]	9° 36′
	9° 37¼′ south [A.]
Declination of the penultimate in the tail [Declin. penultimæ in cauda]	2° 55′
The one which is no. 10 in the hand of Ophiuchus is distant from the lower horn of ♉ [Quæ eſt num. 10 in manu Ophiuchi ab inferiore cornu ♉ diſtat]	34° 58½′ twice [bis]
The penultimate in the tail of the Serpent [Penultima in cauda Serpentis]	30 21¾
from the upper horn of ♉ [a ſuperiori cornu ♉]	30 22
The same one, which is in the hand of Ophiuchus, is likewise distant from the left shoulder of ♒ [Ipſa item quæ in manu Ophiuchi a ſiniſtro humero ♒ diſtat]	52° 44¼′
	52° 45′
The more southern and lower one in the right shoulder of Ophiuchus, no. 3, is distant from the bright star of the Vulture [Auſtralior & inferior in dextro humero Ophiuchi n. 3 a lucida Vulturis diſtat]	31° 3′
	31° 2⅚′
The same is distant from the upper horn of ♉ [Eadem a ſuperiore cornu ♉ diſtat]	40° 13½′
	40° 14⅓′

30 August, in the evening [DIE 30 AUGUSTI, VESPERI.]

Between the Vulture and the head of Ophiuchus [Inter Vulturem & caput Ophiuchi]	33° 30½′
Declination of the head of Ophiuchus [Declin. capitis Ophiuchi]	12° 56′
	12° 56⅓′
The same distance repeated [Eadem diſt. repetita]	33° 30¼′

Meridian altitude of the bright star of the Vulture [Altit. merid. lucidæ Vulturis]	
by the revolving quadrant [per Volub.]	41° 57⅔′
Between the head of Andromeda and Marcab [Inter caput Androm. & Marcab.]	20° 10⅚′
The same distance [Eadem diſtantia]	20° 11′
The same distance a third time [Eadem diſt. tertio]	20° 11′

Declinations of certain other stars, observed on the same 30 August, in the evening. [Declinationes quarundam aliarum ſtellarum eodem 30 Auguſti veſperi obſeruatæ.]

Of the star at the point of the Triangle [Stellæ in cuſpide Trianguli]	27° 34′ north [B]
	27° 35′
Of the northern one in the leg of the Triangle [Borealis in crure Trianguli]	33° 0½′
	33° 1′
Of the lower and more southern one in the leg of the Triangle [Inferioris & auſtralioris in crure Trianguli]	31° 55⅚′
	31° 56½′
Of the highest and northern one in the girdle of Andromeda [Supremæ & borealis in cingulo Andromedæ]	38° 48′
Of the middle one in the girdle of Andromeda [Mediæ in cingulo Andromedæ]	37° 16⅔′
	37° 17⅙′
Of the bright star in the girdle of Andromeda [Lucidæ in cingulo Andromedæ]	33° 27½′
	33° 28⅙′
Of the bright foot of Andromeda; it is not certain [Lucidi pedis Androm., non eſt certa]	40° 17½′
	40° 17¾′
Meridian altitude of the knee of Pegasus [Alt. merid. genu Pegaſi]	
by the revolving quadrant [per Volub.]	62° 12′
by the steel instrument [per Chalyb.]	62° 12⅙′
Declination with both pinnules[1] [Declin. vtroque pinn.[1]]	40° 19½′

[1] This is the declination of the southern, or bright, foot of Andromeda (γ). [Hæc eſt declinatio auſtralis ſeu lucidi pedis Andromedæ (γ).]

1 September, in the evening [DIE 1 SEPTEMBRIS, VESPERI.]

Meridian altitude of the lowest of the three in the Vulture in a straight line; it is the second in number [Alt. merid. infimæ trium in Vulture in recta linea, eſt numero ſecunda,]	
by the revolving quadrant [per Volub.]	39° 35′
Meridian altitude of the hand of Antinous [Alt. mer. manus Antinoi]	
by the revolving quadrant [per Vol.]	32° 9′
Between the highest of the three in a straight line in the Eagle (which is number 5) and the head of Ophiuchus [Inter ſupremam trium in recta linea in Aquila (quæ eſt numero 5) & caput Ophiuchi]	32° 12⅓′ twice [bis]

Vice versa [Viceverſa]

Between the same 5 of the Eagle and the mouth of Pegasus [Inter eandem 5 Aquilæ & os Pegaſi]	28° 58⅓′
The same distance repeated (good) [Eadem diſt. repet. (bona)]	28° 57⅚′
Between the head of Ophiuchus and the fifth of the unformed ones around Ophiuchus in the Milky Way; it is in a straight line with the head of Hercules and the head of Ophiuchus, towards the rising [Inter caput Ophiuchi & quintam informium circa Ophiuchum in via lactea, eſt in linea recta cum capite Herculis & caput Ophiuchi ad ortum]	8° 30⅔′
	8° 31⅙′
Declination of this star 5 [Declinatio huius 5 ſtellæ]	9° 33½′
	9° 34⅓′

6 September [DIE 6 SEPTEMBRIS.]

By the zodiacal armillae, and for their correction. [Per Armillas Zodiacales proque earum correctione.]

With the longitude of the Eagle set at [Poſita longitudine Aquilæ in]	26° 0′ ♑
the longitude of the first of the wing of Pegasus came out [proueniebat longitudo primæ alæ Pegaſi]	17° 45′
Declination of the outermost of the wing of Pegasus [Declinatio extremæ alæ Pegaſi]	12° 54′
	12° 54½′
Longitude of the mouth of Pegasus from the Eagle [Longitudo ab Aquila oris Peg.]	26° 10¼′
From the same place of the Eagle, the longitude of the left shoulder of ♒ [Ab eodem loco Aquilæ longitudo ſiniſtri humeri ♒]	17° 40′ twice [bis]
From the same place of the Vulture, the longitude of the bright star of ♈ [Ab eodem loco Vulturis longitudo lucidæ ♈]	1° 54¼′
Declination of the left knee of Pegasus [Declin. ſiniſtri genu Pegaſi]	23° 22⅔′

From the meridian altitude, 23 23; to be retained. [Ex altit. merid. 23 23, retinenda.]

7 September, in the evening [DIE 7 SEPTEMBRIS, VESPERI.]

Declination of the mouth of Pegasus [Declinatio oris Pegaſi]	7° 59½′
with the better pinnule [meliori pinnacidio]	8° 1′
Declination of the head of Pegasus [Declinatio capitis Pegaſi]	4° 13′
	4° 13½′

On the same evening [Eodem Veſperi.]

By the zodiacal armillae, the longitude of the bright star of ♈ from 26 of the Vulture[1] [Per Zodiacales armillas longitudo lucidæ ♈ a 26 Vulturis[1]]	1° 54½′
Longitude of the right shoulder of ♒ from the said place of the Vulture [Longitudo dextri humeri ♒ a dicto loco Vulturis]	27° 36¼′ ♒
Longitude of 2 ♓ from the said place of the Eagle [Long. 2 ♓ a dicto loco Aquilæ]	15° 41⅙′
Declination of the one in the neck of Pegasus which most closely precedes Marcab [Declinatio eius quæ in collo Pegaſi proxime præcedit Marcab,]	
with one, the better, pinnule [vno meliori pinnacidio]	10° 5′ 0″
with the same better pinnule [eodem meliori pinnac.]	10° 5⅔′
Between the Vulture and the head of Pegasus [Inter Vulturem & caput Pegaſi]	34° 39½′
	34° 39′
Meridian altitude of 2 in the neck of Pegasus [Alt. mer. 2 in collo Pegaſi]	44° 11⅓′
Meridian altitude of the left knee of Pegasus [Alt. mer. ſiniſtri genu Peg.]	57° 28½′

8 September, in the evening [DIE 8 SEPTEMBRIS, VESPERI.]

By the zodiacal armillae [Per Armillas Zodiacales]

Longitude of the bright star of ♈ from 26 of the Vulture [Longitudo luc. ♈ a 26 Vulturis]	1° 55⅓′ twice [bis]
Longitude of 11 in the right hand of ♒ [Longit. 11 in manu dextra ♒]	4° 38′
	4° 38½′
Longitude of 2 ♈ from 26 of the Vulture [Longit. 2 ♈ a 26 Vulturis]	28° 15⅓′
Declination of the upper of the three in the breast of Andromeda [Declinatio ſuper. trium in pectore Androm.]	31° 24⅚′
	31° 24⅔′
Declination of the middle, or brighter, one in the breast of Andromeda [Decl. med. ſiue clarioris in pectore Androm.]	28° 37½′
	28° 37⅓′
Between Scheat and the bright star of the girdle of Andromeda [Inter Scheat & lucidam cinguli Andromedæ]	27° 35⅔′
	27° 35⅚′
Between the bright star of ♈ and the bright star of the breast of Andromeda [Inter lucid. ♈ & lucid. pectoris Andromedæ]	20° 47½′
Between the bright star of the girdle of Andromeda and the bright star in the foot of Andromeda [Inter luc. cing. Androm. & luc. in pede Androm.]	12° 28⅔′
	12° 29′

9 September, in the evening [DIE 9 SEPTEMBRIS, VESPERI.]

Declination of the lower of the three in the breast of Andromeda [Declin. inferioris trium in pectore Andromedæ]	27° 6½′
with the same better pinnule [Eodem meliori pinnacid.]	27° 7′
The little star forming an acute-angled triangle with the two lower ones in the breast of Andromeda is distant from Marcab of Pegasus [Stellula conficiens triangulum oxygonicum cum duabus inferioribus in pectore Andromedæ, a Marcab Pegaſi diſtat]	24° 25½′

	24° 25¾′
The lowest of the three in the breast of Andromeda is distant from Marcab of Pegasus [Infima trium in pectore Andromedæ a Marcab Pegaſi diſtat]	25° 49′ twice [bis]
Declination of the faint star which forms, as it were, a triangle with the two lower ones of the three in the breast of Andromeda, with one, the better, pinnule [Declinatio obſcuræ ſtellæ conſtituentis cum duabus inferioribus trium in pectore Andromedæ quaſi triangul., vno meliori pinn.]	27° 11′
Between Marcab and the highest of the three in the breast of Andromeda [Inter Marcab & ſupremam trium in pectore Androm.]	27° 49′
	27° 50′
The lowest in the tail of the Dolphin, no. 3, is distant from Marcab of Pegasus [Infima in cauda Delphini num. 3ª diſtat a Marcab Peg.]	35° 50⅓′
	35° 50½′
Declination of the same in the Dolphin [Declinatio eiusdem in Delphino]	8° 42¾′
	8° 42½′
Declination, north, of the faint one in the tail of the Dolphin, no. 2 [Obſcuræ in cauda Delphini num. 2 declin. B.]	10° 0⅙′
	10° 0′

[1] That is, from the bright star of the Vulture, which he placed at 26° 0′ ♑. [Id eſt, a Lucida Vulturis, quam in 26° 0′ ♑ poſuit.]

10 September, in the evening [DIE 10 SEPTEMBRIS, VESPERI.]

The second of the neck of Pegasus is distant from its mouth [Secunda colli Pegaſi ab ore eiusdem diſtat]	15° 29⅙′ twice [bis]
Between the lowest of the tail of the Dolphin (which is no. 3) and the tail of the Vulture [Inter infimam caudæ Delphini (quæ eſt 3 num.) & caudam Vulturis]	23° 8½′
	23° 8⅔′
Between the second in the tail of the Dolphin and the tail of the Vulture [Inter ſecundam in cauda Delphini & caudam Vulturis]	22° 40½′
	22° 41⅔′
Between the more western of the two faint ones below the rhomboid (it is no. 9) and the tail of the Vulture [Inter occidentaliorem duarum obſcurarum ſub rhomboide (eſt num. 9) & caudam Vulturis]	21° 31¾′
	21° 33′
Between Lyra and the more eastern of the said two faint ones below the rhomboid of the Dolphin, no. 10 [Inter Lyram & orientaliorem dictarum duarum obſcurarum infra rhomboidem Delphini num. 10]	37° 2′
	37° 2⅔′
Between the star which is next to the lowest of the 4 bright ones in the Dolphin, of the sixth magnitude or a little greater, and Lyra [Inter ſtellam quæ iuxta infimam 4 lucidarum in Delphino eſt, ſextæ magn. vel paulo maior, & lyram]	35° 7⅔′
	35° 8′

With this lowest, or more southern, one of the rhomboid it is, as it were, at the same declination. [Eſt cum hac infima ſiue auſtraliori rhomboidis quaſi in eadem declinatione.]

The little star below the right knee of Pegasus, towards the setting, no. 14, of the sixth magnitude, is distant from the head of Andromeda [Stellula infra dextrum genu Pegaſi ad occaſum num. 14, ſextæ magn., diſtat a cap. Andr.]	18° 49⅙′
	18° 49½′
The outermost in the right foot of Pegasus from the head of Andromeda [Extrema in dextro pede Pegaſi a capite Andromedæ]	25 31¼
	25 32
The one which is no. 12 below Scheat, magnitude 5, is distant from the head of Andromeda [Quæ numero 12 infra Scheat, 5 magn., a capite Andr. diſtat]	18° 2′
	18° 1′
Declination of the star at the right knee of Pegasus, no. 14 [Declinatio ſtellæ ad dextrum genu Pegaſi num. 14]	27° 10½′
north [B.]	27° 11′
Between the bright star of ♈ and the small one below Scheat of Pegasus, no. 11, I think a lesser one of the sixth magnitude [Inter luc. ♈ & paruam infra Scheat Peg. num. 11 puto ſextæ magnit. minor.]	40° 45⅙′
	40° 46′
Declination of the tenth in number, in the right foot of Pegasus [Declin. decimæ numero in dextro pede Pegaſi]	31° 11½′
	31° 11⅓′
Declination of the one which is nearest below Scheat; it is the upper of these two, no. 12 [Declinatio eius quæ proxima eſt infra Scheat, eſt ſuperior iſtarum duarum num. 12]	22° 28¼′
	22° 28⅙′
Between the bright star of ♈ and 15 in the upper part of the right wing of Pegasus [Inter lucidam ♈ & 15 in ſuperiori parte dextræ alæ Pegaſi]	37° 58′ twice [bis]
Declination of the same [Declinatio eiusdem]	21° 32′
	21° 31¼′
The following one of the two in the upper wing of Pegasus, no. 16, is distant from the bright star of ♈ [Quæ ſequitur ex duabus in ſuperiore ala Pegaſi num. 16 a lucida ♈ diſtat]	36° 55⅚′
	36° 56′
Declination [Declinatio]	21° 15′ 0″
	21° 13⅚′

12 September, in the evening [DIE 12 SEPTEMBRIS, VESPERI.]

With the bright star of the Vulture set at 26 ♑, the longitude of the northern one in the hand of Ophiuchus [Poſita lucida Vulturis in 26 ♑ longitudo bor. in manu Ophiuchi]	26° 37¼′

At about this time this star of Ophiuchus was raised almost 4° above the horizon. [Erat hæc ſtella Ophiuchi circa hoc tempus fere 4 grad. ab Horizonte eleuata.]

The longitude from the book, reduced to this year 90, is [Longitudo ex libro reducta ad hunc annum 90 eſt]	26° 35′ 0″
Longitude of the left shoulder of ♒ [Longitudo ſiniſtri humeri ♒]	17° 40¼′
Reduced to this year [Reducta ad hunc annum]	17 42
Longitude of Marcab [Longitudo Marcab]	17° 48′ ♓
And the same, reduced, exactly. [Eademque reducta præciſe.]	
Longitude of the preceding one in the tail of ♍ [Longitudo præcedentis in cauda ♍]	16° 6½′ ♒
Reduced [Reducta]	16 5 ♒
Longitude of the bright star in the junction of the cord of ♓, observed [Longitudo Lucidæ in connexu lini ♓ obſeruata]	23° 40′
Reduced [Reducta]	23 38⅙
Observed longitude of 1 ♈ [Longitudo obſeruata 1 ♈]	27° 27¾′ ♈
Reduced [Reducta]	27 28 0
Declination of the preceding star in the triangle, no. 4, in the right arm of Andromeda [Declinatio ſtellæ præcedentis in triangulo num. 4 in brachio dextro Andromedæ]	34° 30½′
	34° 31′
Observed longitude of the second of ♈ [Longit. ſecundæ ♈ obſeruata]	28° 13′
Reduced [Reducta]	28 14½
Declination of the following and highest one in the same triangle in the right arm of Andromeda [Declinatio ſequentis & ſupremæ in eodem triangulo in brachio dextro Andromedæ]	36° 24′
	36° 25′
Between Scheat of Pegasus and the fourth in the right arm of Andromeda, no. 4, magnitude 5 [Inter Scheat Pegaſi & quartam in dextro brachio Andromedæ num. 4, 5 magnit.]	17° 56′
	17° 55¾′
Between Scheat of Pegasus and the highest in the right arm of Andromeda, which is no. 5, a lesser one of magnitude 5 [Inter Scheat Pegaſi & ſupremam in dextro brachio Andromedæ, quæ num. 5 eſt, magnit. 5 min.]	18° 34⅚′
	18° 35½′
Between Scheat of Pegasus and the lesser one of magnitude 6 which is sixth in number in the right arm of Andromeda [Inter Scheat Pegaſi & eam magnit. 6 min., quæ numero ſexta eſt in dextro brachio Andromedæ]	18° 56½′
	18° 56′
Declination of the tenth in number in the left arm of Andromeda [Declinatio decimæ numero in ſiniſtro brachio Andromedæ]	22° 1½′
	22° 0⅔′
Declination of the eleventh in number, in the left elbow of Andromeda [Declinatio vndecimæ numero in cubito ſiniſtro Andromedæ]	21° 15′
	21° 16′
Between the tail of the Swan and the faint one in the right hand of Andromeda, no. 9 [Inter caudam Cygni & obſcuram in dextra manu Andr. num. 9]	31° 40′
Between the tail of the Swan and the one which is no. 23 in the ring of the chain of Andromeda [Inter caudam Cygni & eam quæ eſt 23 num. in annulo catenæ Andromedæ]	30° 12′
	30° 12⅓′

It will be (I suppose) the one which is the highest in the right hand; whether it is that one is to be examined. [Erit ea (opinor) quæ eſt ſuprema in manu dextra; an illa ſit, examinandum.]

Between the tail of the Swan and no. 8 in the right hand of Andromeda [Inter caudam Cygni & num. 8 in manu dextra Andromedæ]	31° 18⅙′ twice [bis]
Between the tail of the Swan and the one which is in the right hand of Andromeda, no. 7 [Inter caudam Cygni & eam quæ eſt in manu dextra Andromedæ num. 7]	31° 14¼′
	31° 14½′
Between Marcab and the one which is in the left elbow of Andromeda, no. 11, a greater one of magnitude 5 [Inter Marcab & eam quæ eſt in cubito ſiniſtro Andromedæ num. 11, 5 magn. maior.]	27° 43½′
	27° 43⅔′
Between Marcab and no. 10 in the left arm of Andromeda, magnitude 5 [Inter Marcab & num. 10 in ſin. brachio Andr., 5 magn.]	25° 44¼′
	25° 44⅓′

14 September, in the evening [DIE 14 SEPTEMBRIS, VESPERI.]

Between Scheat and the one which is the lower in the calf of the left foot of Andromeda, a greater one of mag. 6, no. 19 [Inter Scheat & eam quæ eſt inferior in ſura ſiniſtri pedis Andromedæ, 6 mag. maior. num. 19]	34° 22′ twice [bis]
Between Scheat and the one which is in the same calf of the left foot of Andromeda, no. 18, magnitude 5 [Inter Scheat & eam quæ eſt in eadem ſura ſiniſtri pedis Andromedæ num. 18, 5 magnit.]	33° 48⅓′
	33° 48′
Between Scheat and the one which is nearest to the eighteenth mentioned above, in, or rather around, the calf of the left foot of Andromeda, more to the north, a lesser one of magnitude 6 [Inter Scheat & eam quæ proxima eſt decimæ octauæ antedictæ, in vel potius circa ſuram ſiniſtri pedis Andr. borealior, 6 magnit. minor.]	34° 57′
	34° 57¾′

Diagram. A small figure set centred in the left column, below the line "6 magnit. minor. 34 57¾": five six-pointed star marks (asterisks) in a single oblique row, running from upper left down to lower right, the last two set almost one above the other. Three marks carry a printed label beside them, to their right; the second and third marks carry none.

- Topmost mark (upper left): "Situs" [the position], in smaller type
- Second mark: no label
- Third mark: no label
- Fourth mark: "18"
- Fifth mark (lowest, directly below the fourth): "19"

Between Scheat and the one which, next to the said calf, is still more to the north; it is a lesser one of magnitude 6 and fainter, at the same distance as that of the preceding one [Inter Scheat & illam quæ iuxta ſuram dictam adhuc borealior eſt, eſt 6 magnit. min. & obſcurior eadem diſtant. quæ præcedentis.]	34° 57′
Between Scheat and the highest of the three faint ones next to the calf, a lesser one of magnitude 6, whose position is marked here [Inter Scheat & ſupremam trium obſcurarum iuxta ſuram, 6 magnit. minor, cuius ſitus hic notatus eſt]	34° 59⅔′
	34° 58⅚′
Between Scheat and no. 22 at the calf of the right foot of Andromeda, a lesser one of magnitude 6 [Inter Scheat & 22 numero ad ſuram dextri pedis Andromedæ 6 magn. minor.]	33° 12½′
	33° 12⅔′
Between Scheat and 21 in the calf of the right foot of Andromeda, a faint one [Inter Scheat & 21 in ſura dext. ped. Androm., obſcuram]	32° 23′
	32° 23¼′
Between Scheat and no. 20; it is in the knee of the right foot of Andromeda [Inter Scheat & 20 numero, eſt in genu dextri pedis Androm.]	31° 3′
	once [ſemel]
Between Scheat and the one which is almost in a straight line with 22 and 17 [Inter Scheat & eam quæ eſt fere in recta linea cum 22 & 17]	34° 11′

in the right foot of Andromeda, a faint one [in pede dext. Andr., obſcura]	34° 9′

Diagram. A small figure set in the upper part of the right column, below the line "obſcura 34 9": four six-pointed star marks (asterisks) in a single oblique row, running from upper right down to lower left, and a fifth mark of a different form, a plain "×" without the vertical stroke of the asterisks, set below and to the right of the lowest asterisk. No mark carries a label.

- First mark (uppermost, at the right): asterisk, no label
- Second mark: asterisk, no label
- Third mark: asterisk, no label
- Fourth mark (lowest of the row, at the left): asterisk, no label
- Fifth mark (below and right of the fourth): "×", no label

Between Scheat and the last in the right foot of Andromeda, no. 16, a greater one of magnitude 5 [Inter Scheat & vltimam in pede dextro Andromedæ num. 16 5 magnit. maior.]	37° 35½′
	37° 35⅓′
Between Scheat and the one which is in a straight line with the upper one in the girdle of Andromeda and 21 of the small triangle in the right leg, magnitude 6 [Inter Scheat & illam quæ eſt in recta linea cum ſuperiore in cingulo Andr. & 21 parui trianguli in crure dextro, 6 magnit.]	29° 25′
	29° 25⅓′
Between the bright star of the left foot of Andromeda and the one which is in the ring of Andromeda [Inter lucidam pedis ſiniſtri Andromedæ & eam quæ eſt in annulo Andromedæ]	33° 12⅔′
	33° 13′

Declination of the small one in the head of Pegasus, no. 3 [Declinatio paruæ in capite Pegaſi num. 3]	3° 5′
	3° 5½′
Declination of the lower and following one in the mane of Pegasus, no. 4 [Declin. inferioris & ſequentis in iuba Pegaſi num. 4]	6° 38¼′
	6° 38⅔′
Declination of the preceding and upper one in the mane of Pegasus, no. 5 [Declin. præcedentis & ſuperioris in iuba Pegaſi num. 5]	7° 40′
	7° 39⅚′
Between that small one in the head of Pegasus, no. 3, a lesser one of magnitude 6, and the outermost of the wing of Pegasus [Inter paruam illam in capite Pegaſi num. 3, 6 magnit. minor. & extremam alæ Pegaſi]	32° 57′
	32° 56⅚′
Between the upper and preceding one in the mane of Pegasus, no. 5, a lesser one of magnitude 6, and the outermost of the wing of Pegasus [Inter ſuperiorem & præcedentem in iuba Pegaſi num. 5, 6 magnit. minor. & extremam alæ Pegaſi]	20° 28′ twice [bis]
Between the lower and following one in the mane of Pegasus, no. 4, magnitude 6, and the outermost of the wing of Pegasus [Inter inferiorem & ſequentem in iuba Pegaſi num. 4, 6 magnit., & extremam alæ Pegaſi]	20° 8′
	20° 8½′

18 September, in the evening [DIE 18 SEPTEMBRIS, VESPERI.]

Declination of the highest in the right hand of Andromeda [Decl. ſupremæ in dextra manu Andromedæ]	44° 16½′
The same declination repeated [Repetita eadem decl.]	44° 14⅓′
with one pinnule [vno pinn.]	44 15
Between the bright star of the Vulture and that small preceding one in the head of Pegasus, no. 3 [Inter lucidam Vulturis & paruam illam præcedentem in capite Pegaſi num. 3]	33° 43⅔′

19 September, in the evening [DIE 19 SEPTEMBRIS, VESPERI.]

Declination of the 8th in number in the upper hand of Andromeda [Declinatio 8^{ae} numero in ſuperiore manu Andromedæ]	42° 5′	
		with both [vtroque]
Declination of the 7th in the same hand of Andromeda [Declinatio 7^{ae} in eadem manu Andromedæ]	40° 0′	
	40° 0½′	

Declination of the ninth in the same upper hand of Andromeda; it is a faint one [Declin. nonæ in eadem manu ſuperiore Andromedæ, obſcura eſt]	44° 10′

	44° 9′
Between the Vulture and 5 in Pegasus [Inter Vulturem & 5 in Pegaſo]	44° 45′
	44° 46⅓′
Between the bright star of the Vulture and 4 in Pegasus [Inter lucidam Vulturis & 4 in Pegaſo]	45° 33½′
	45° 33⅔′
Between the Vulture and 15 in the upper part of the wing of Pegasus [Inter Vulturem & 15 in ſuperiore parte alæ Pegaſi]	52° 15′
	52° 16′
Between the Vulture and 16, the following one in the upper part of the wing of Pegasus [Inter Vulturem & 16 ſequentem in ſuperiore parte alæ Pegaſi]	53° 42′
Between the beak of the Swan and 14 below the right knee of Pegasus, towards the setting [Inter roſtrum Cygni & 14 infra genu dext. Peg. ad occ.]	41° 38½′
	41° 37⅓′
Between the beak of the Swan and 10 of Pegasus, which is in the right foot [Inter roſtrum Cygni & 10 Peg. quæ eſt in dextro pede]	34° 26′
	34° 27′

Vice versa [Viceverſa]

Between the ring of the chain of Andromeda and the tail of the Swan [Inter annulum catenæ Androm. & caudam Cygni]	25° 17¼′
	25° 18′

22 September, in the evening [DIE 22 SEPTEMBRIS, VESPERI.]

Vice versa, in Andromeda [Viceverſa in Andromeda]

Between the bright foot of Andromeda and 2, the lowest in the right[1] of Andromeda, magnitude 5 [Inter lucidum pedem Andromedæ & 2 infimam in dextra[1] Andromedæ 5 magnit.]	19° 10′
	19° 11′
Between the bright foot of Andromeda and 3, the lower in the left shoulder of Andromeda, magnitude 5 [Inter luc. ped. Andr. & 3 inferiorem in ſiniſtro humero Andromedæ 5 magnit.]	21° 30′
	21° 29′
Between the bright foot and no. 4 of Andromeda, a lesser one of magnitude 5 [Inter luc. ped. & num. 4 Androm. 5 magnit. min.]	20° 57′
	20° 57⅔′
Declination of 6 of Andromeda [Declinatio 6 Andromedæ]	35° 35⅓′ twice, with the worse pinnule [bis, peiori pinnacidio]
Between the bright foot and 5 of Andromeda [Inter lucidum pedem & 5 Andromedæ]	20° 27′
	20° 26⅔′
Between the bright foot and the sixth of Andromeda [Inter lucidum pedem & ſextam Andromedæ]	19° 59½′

	19° 59′
Between the bright foot and the seventh in the hand, a lesser one of magnitude 4 [Inter luc. ped. & ſeptimam in manu, magnit. 4 min.]	26° 36⅓′
	26° 36½′
Between the bright foot and 8 in her hand, a lesser one of magnitude 4 [Inter luc. ped. & 8 in manu eius, magnit. 4 minor.]	25° 58½′
	25° 58′
Between the bright foot and 9 in the hand, a lesser one of magnitude 6 [Inter luc. ped. & 9 in manu magnit. 6 minor.]	24° 49⅓′
	24° 48¾′
Between the bright foot and the upper one in the upper hand of Andromeda, which is no.[6], the lesser one, of magnitude 4² [Inter luc. ped. & ſuperiorem in ſuperiore manu Androm. quæ num. eſt 4 minor.²]	26° 12′
	26° 12⅓′
Between the bright foot and the highest in the girdle, no. 14, magnitude 5 [Inter luc. ped. & ſupremam in cingulo num.14, magnit. 5]	13° 50′
	13° 50½′
Between the bright foot and the middle one in the girdle, no. 13, magnitude 4 [Inter luc. ped. & mediam in cingulo num.13, magnit.4]	13° 21′
	13° 21⅙′

Between the bright star of ♈ and 10 in the left arm of Andromeda, a greater one of magnitude 5 [Inter lucidam ♈ & 10 in ſiniſtro brachio Andromedæ magnit. 5 maior.]	18° 13′
	18° 12′
Between the bright star of ♈ and the 11th in the left arm of Andromeda, a lesser one of magnitude 5 [Inter luc. ♈ & 11^{am} in ſiniſtro brachio Androm., magn. 5 min.]	15° 58½′
	15° 58⅔′

Vice versa, in the girdle of Andromeda. [Viceverſa in cingulo Andromedæ.]

Between the tail of the Swan and the highest in the girdle of Andromeda [Inter caudam Cygni & ſupremam in cingulo Androm.]	44° 18⅓′
	44° 18½′
Between the tail of the Swan and the middle one in the girdle of Andromeda [Inter caudam Cygni & mediam in cingulo Androm.]	46° 42½′
	46° 42⅔′
The one which is between the head of Andromeda and the bright star of her breast, a lesser one of magnitude 6, is distant from the bright star of ♈ [Quæ eſt inter caput Andromedæ & lucidam pectoris eiusdem magnit. 6 minor. diſtat a lucida ♈]	22° 31′
	22° 30⅔′

[6]no number is printed after "num. eſt"

23 September, in the evening [DIE 23 SEPTEMBRIS, VESPERI.]

Meridian altitude of the ring of the chain of Andromeda by the revolving quadrant [Altitudo annuli catenæ Andromedæ meridiana per Volub.]	74° 12⅔′
Between the head of Andromeda and 16, which is the outermost in the upper foot of Andromeda [Inter caput Androm. & 16 quæ eſt extrema in ſuperiore pede Andromedæ]	28° 2½′
	28° 2⅔′
Between the head of Andromeda and 18 in the calf of Andromeda [Inter caput Androm. & 18 in ſura Andromedæ]	21° 50′
	21° 49⅙′

Vice versa [Viceverſa]

Between the bright side of Perseus and 16 in the upper foot of Andromeda, a greater one of magnitude 5 [Inter lucidum latus Perſei & 16 in ſuperiore pede Andromedæ magn. 5 maior.]	15° 58′
	15° 58½′
Between 18 in the calf of Andromeda and the head of Medusa, a lesser one of magnitude 5 [Inter 18 in ſura Androm. & caput Meduſæ, magnit. 5 min.]	17° 5⅔′
	17° 5⅙′
Between 19 in the calf of Andromeda, magnitude 6, and the head of Medusa [Inter 19 in ſura Androm. magn.6 & caput Meduſæ]	16° 30′
	16° 30⅙′
Between the bright star in the right knee of Perseus, no. 23, and Andromeda +, unknown to Aratus, a greater one of magnitude 5 [Inter lucid. in dextro genu Perſei num. 23 & Androm. +, Arato ignotam, magn. 5 maior.]	28° 30½′
	28° 30⅔′

Diagram. A small figure set centred in the right column, below the line ”ignotam, magn. 5 maior. 28 30⅔”: five small open circles and one plain cross ”+”. The first two circles stand in an oblique row running down to the right, each with a number printed to its right; below them two circles are set one directly above the other; a fifth circle stands to the right of that pair, at about the height between them, with the cross immediately to its right. Only the first two circles carry a label.

- First circle (uppermost, at the left): ”16”
- Second circle (below and right of the first): ”17”
- Third circle (upper of the vertical pair): no label
- Fourth circle (lower of the vertical pair): no label
- Fifth circle (right of the pair): no label
- Cross ”+” (immediately right of the fifth circle): no label

Between the bright star in the right knee of Perseus and 20 of Andromeda, a greater one of magnitude 5 [Inter lucid. in dextro genu Perſei & 20 Androm. magn. 5 maior.]	30° 50⅙′

	30° 50½′

25 September, in the evening [DIE 25 SEPTEMBRIS, VESPERI.]

Between 21 of Andromeda, a lesser one of magnitude 6, and the bright star in the side of Perseus [Inter 21 Andromedæ 6 magnit. minor. & lucidam in latere Perſei]	24° 44′
	24° 44½′

[1] Thus in the codex. Perhaps »in the right shoulder-blade« (π). [Sic in codice. Fortaße »in ſcapula dextra« (π).] [2] Thus in codex D. [Sic in codice D.]

Between 22 of Andromeda, magnitude 6, and the bright side of Perseus [Inter 22 Androm. 6 magn. & luc. latus Perſei]	23° 48⅔′
	23° 49⅙′
Between the preceding one in the small triangle at the right foot of Andromeda, magnitude 6, and the bright side of Perseus [Inter præcedentem in paruo triangulo ad dext. ped. Androm. 6 magnit. & luc. latus Perſei]	20° 46′ twice [bis]
Between the middle and lower one in the same triangle, magnitude 6, and the bright side of Perseus [Inter mediam & inferiorem in eodem triangulo 6 magnit. & luc. latus Perſei]	19° 59⅙′
	19° 59′
Between the last at the apex of the same △ and the bright side of Perseus [Inter vltimam in cuſpide eiusdem △ & luc. latus Perſei]	19° 0′
	19° 1′
Between 15 in the wing of Pegasus and the first of the southern wing of the Swan [Inter 15 in ala Pegaſi & primam auſtralis alæ Cygni]	35° 2½′
	35° 2⅔′
Between the following one in the breast of Pegasus, no. 12, and the bright star of the southern wing of the Swan, magnitude 4 [Inter ſequentem in pectore Pegaſi num. 12 & lucidam auſtralis alæ Cygni, magnit. 4]	28° 27½′ twice [bis]
	28° 27⅔′

3 October, in the evening [DIE 3 OCTOBRIS, VESPERI.]

Declination of the bright star in the right shoulder of Hercules [Declinatio lucidæ in dextro humero Herculis]	22° 27½′
	22° 29′
Declination of the bright star in the left shoulder of Hercules [Declinatio lucidæ in ſiniſtro humero Herculis]	25° 23½′
	25° 24′

4 October, in the evening [DIE 4 OCTOBRIS, VESPERI.]

Declination of the lower of the two following ones in the □ of the Great Bear [Declin. inferioris ſequentium duarum in □ Vrſæ mai.]	56° 2′
	56° 0′
Declination of the preceding one in the spoils of Hercules, no. 7 [Declinatio præcedentis in exuuijs Herculis num. 7]	28° 4′
	28° 3′
Declination of the brighter of the two following ones in the spoils of Hercules, no. 10 [Declinatio lucidioris duarum ſequentium in exuuijs Herculis num. 10]	29° 20′
	29° 21′

Altitude of the pole star by the revolving quadrant [Altit. ſtellæ Polaris per Vol.]	Azimuth of the pole star from the north towards the rising [Azim. ſtellæ Polaris a ſept. ad ort.]	The bright star of the Vulture, west [Luc. Vultur. occ.]
56° 46½′	4° 45′	3 1
56° 53⅔′	4° 50′	5 21
56° 59′	4° 47′	7 7½

5 October, in the evening [DIE 5 OCTOBRIS, VESPERI.]

Altitude of the pole star [Alt. ſtellæ Polaris]: by the revolving quadrant [per Volub.]	Altitude of the pole star [Alt. ſtellæ Polaris]: by the steel instrument [per Chalyb.]	Its azimuth [Azimuth eius]	The bright star of the Vulture, east [Luc. Vult. orient.]
56° 26⅔′		5° 6′	4 19
56° 30½′	56° 30⅙′	5° 4½′	2 51
56° 36′	56° 37⅓′		0 30½

Declination of 20, the star at the knee of Andromeda [Declinatio 20 ſtellæ ad genu Andromedæ]	45° 3′
	45° 2⅔′
Between the right shoulder of Hercules and the bright star of the Vulture [Inter dext. hum. Herculis & lucid. Vulturis]	49° 42½′
	49° 43′
Between no. 3 in the right arm of Hercules and the bright star of the Vulture [Inter 3 num. in dext. brachio Herculis & luc. Vult.]	51° 25′
	51° 24⅓′
Between the preceding one in the spoils of Hercules, no. 7, and the bright star of the Vulture [Inter præced. in exuuijs Herculis num. 7 & luc. Vult.]	34° 49¾′
	34° 49½′

Declination of no. 6 in the spoils of Hercules, magnitude 5 [Declinatio num. 6 in Herculis exuuijs, magnit. 5]	29° 15¼′
Between no. 10 in the spoils and the bright star of the Vulture [Inter 10 num. in exuuijs & lucid. Vult.]	33° 23½′
	33° 23⅔′
Between no. 8 in the spoils of the lion and the bright star of the Vulture [Inter num. 8 in exuuijs leonis & luc. Vult.]	31° 20⅙′
	31° 19⅔′
Declination of the 6th in number in the left arm of Hercules [Declinatio 6^{ae} numero in brachio ſiniſtro Herculis]	26° 30⅓′
	26° 29′
Between no. 11 in the hip of Hercules and the bright star of the Vulture [Inter 11 num. in coxa Herculis & luc. Vult.]	49° 17⅓′
	49° 18′
Declination of no. 14 in the hip of Hercules [Decl.14 num. in coxa Herculis]	33° 36′
Between no. 14 in the hip of Hercules and the bright star of the Vulture [Inter 14 num. in coxa Herculis & lucid. Vulturis]	45° 18⅔′
	45° 19⅓′
Declination of 11 in the hip of Hercules, with both pinnules [Decl. 11 in coxa Herc., vtroq. pinn.]	31° 36′

6 October, in the evening [DIE 6 OCTOBRIS, VESPERI.]

The one in the left arm of Hercules is distant from the bright star of the Vulture; no. 6 [Quæ in ſiniſtro brachio Herculis a lucida Vulturis diſtat, num. 6]	37° 19¾′
	37° 20¼′
Between the ninth in number in the spoils of the lion and the bright star of the Vulture [Inter nonam num. in exuuijs leonis & lucid. Vult.]	32° 27′ twice [bis]
Declination of 16 at the extremity of the upper foot of Andromeda, with one and the same better pinnule [Declinatio 16 in extremitate ſuperioris pedis Androm., vno eodemque meliori pinnac.]	48° 36⅚′
	48° 37½′
Declination of 18 in the calf of the lower foot of Andromeda [Declinatio 18 in ſura inferioris pedis Andromedæ]	39° 21½′
Declination of 19 of Andromeda in the calf of the foot [Declinatio 19 Androm. in ſura pedis]	38° 29′
	38° 29⅚′
Between no. 4 in the right hand of Hercules and the bright star of the Vulture [Inter 4 num. in dextra manu Herculis & lucidam Vulturis]	54° 38′ twice [bis]
Between the head of Hercules and the fifth in the head of the Serpent [Inter caput Herculis & quintam in capite Serpentis]	20° 52¼′
	20° 53′
Declination of 4 in the right hand of Hercules [Declinatio 4 in dextra manu Herculis]	18° 16′
	18° 16⅔′
Between the head of Hercules and 2 in the tongue of the Serpent [Inter caput Herculis & 2 in lingua Serpentis]	22° 46½′
	22° 47′
Declination of no. 5 in the head of the Serpent [Declinatio 5 num. in capite Serpentis]	19° 30⅙′

	19° 30½′
Between the head of Hercules and the sixth in the nostrils of the Serpent [Inter caput Herculis & ſextam in naribus Serp.]	20° 59′
	21° 0′
Declination of the star no. 2 in the tongue of the Serpent [Declinatio ſtellæ num. 2 in lingua Serpentis]	21° 0′
	21° 0′ 30″

7 October, in the evening [DIE 7 OCTOBRIS, VESPERI.]

Between the star no. 25 in the right knee of Hercules and the head of Ophiuchus [Inter ſtellam num. 25 in genu dext. Herculis & caput Oph.]	37° 15′
	37° 15⅙′
Declination of the same 25 [Declinatio eiusdem 25]	47° 21¼′
	47° 20⅚′

Between no. 27 of Hercules and the tail of the Flying Vulture [Inter 27 num. Herculis & caudam Vulturis volantis]	49° 55½′
	49° 56′
Declination of 26 of Hercules, in the calf of the right leg [Declinatio 26 Herculis in ſura dextri cruris]	46° 4⅓′
	46° 4′
Declination of 27 of Hercules [Declinatio 27 Herculis]	47° 12½′
	47° 13½′
Between 26 in the calf of the right leg of Hercules and the tail of the Vulture [Inter 26 in ſura dextri cruris Herculis & caudam Vult.]	48° 30′
	48° 30⅔′
Declination of 24 in the right thigh of Hercules [Declinatio 24 in femore dextro Herculis]	43° 21′
	43° 19′
Between 28 of Hercules, in the right leg near the ankle, and the tail of the Vulture [Inter 28 Herculis in crure dextro circa talum & caudam Vult.]	50° 18′
	50° 18⅙′
Between 29 and the outermost in the sole of the right foot of Hercules and the tail of the Vulture [Inter 29 & extremam in planta pedis dextri Herculis & caudam Vulturis]	53° 31′
	53° 31¼′
Declination of 23 in the right thigh of Hercules [Declinatio 23 in femore Herculis dextro]	39° 45½′
	39° 46′
Between 24 in the right thigh of Hercules and the tail of the Vulture [Inter 24 in femore Herculis dextro & caudam Vult.]	43° 16½′
	43° 16′
Declination of 3 in the Gnosian Crown [Declinatio 3 in Corona Gnoſia]	32° 47′
	32° 47½′
Declination of 2 in the Gnosian Crown [Declinatio 2 in Corona Gnoſia]	30° 35′
	30° 34½′

Declination of the bright star of the Crown, no. 14 [Declinatio lucidæ Coronæ num. 14]	28° 9⅙′
	28° 9⅚′
Between the tail of the Vulture and 13 of Hercules [Inter caudam Vulturis & 13 Herculis]	43° 0′
	42° 59⅓′
Declination of 5 in the Gnosian Crown [Declinatio 5 in Corona Gnoſia]	27° 39′
	27° 39⅔′
Declination of the sixth in the Gnosian Crown [Declinatio ſextæ in Corona Gnoſia]	27° 24⅚′
	27° 24′
Declination of 7 in the Gnosian Crown [Declinatio 7 in Corona Gnoſia]	28° 7⅓′
	28° 8½′
Between 3 of the Gnosian Crown and the head of Hercules [Inter 3 Coronæ Gnoſiæ & caput Herculis]	28° 57′
	28° 57⅓′
Between the second of the Gnosian Crown and the head of Hercules [Inter ſecundam Coronæ Gnoſiæ & caput Herculis]	28° 45′
	28° 44¾′
Between the fifth of the Gnosian Crown and the head of Hercules [Inter quintam Coronæ Gnoſiæ & caput Herculis]	24° 34¾′ twice [bis]
Between 6 of the Crown and the head of Hercules [Inter 6 Coronæ & caput Herculis]	23° 4′
	23° 5′
Between the seventh of the Crown and the head of Hercules [Inter ſeptimam Coronæ & caput Herculis]	21° 51½′
	21° 51⅔′

8 October [DIE 8 OCTOBRIS.]

Declination of 8 in the Northern Crown [Declinatio 8 in Corona Boreali]	28° 6⅚′
	28° 7⅙′

9 October [DIE 9 OCTOBRIS.]

Between the head of Ophiuchus and... [Inter caput Ophiuchi &...]	27° 37′
	27° 36½′

10 October, in the morning [DIE 10 OCTOBRIS, MANE.]

The pole star was observed at its greatest digression from the pole towards the setting: azimuth 5° 12½′. [Obſeruata eſt ſtella polaris in maxima digreßione a polo verſus occaſum 5 12½ Azimut.]

10 October, in the evening [DIE 10 OCTOBRIS, VESPERI.]

Between the tail of the Eagle and 7 of its unformed ones [Inter caudam Aquilæ & 7 informium eiusdem]	6° 12½′
	6° 12¾′
Between the following one in the left hand of Ophiuchus and the bright star of the Gnosian Crown [Inter ſequentem in ſin. manu Ophiuchi & lucid. Coronæ Gnoſiæ]	33° 5′
	33° 5¼′
Declination of the same, in the hand [Declinatio eiusdem in manu]	4° 26½′
The altitude was 8° 40′ [Altitudo erat 8 40]	4° 27′

Vice versa [Viceverſa]

Between the same following one in the hand of Ophiuchus and the bright star of the Vulture [Inter eandem ſequentem in manu Ophiuchi & luc. Vulturis]	54° 32′
	54° 32½′
Between 5 of the unformed ones of Ophiuchus and the bright star of the Vulture [Inter 5 informium Ophiuchi & lucidam Vulturis]	25° 27½′
	25° 27⅔′

Vice versa [Viceverſa]

Between the same 5th unformed one of Ophiuchus and the head of Hercules [Inter eandem 5^{tam} informem Ophiuchi & caput Herculis]	13° 47¾′
	13° 48¼′
Declination of the same 5 [Declinatio eiusdem 5]	9° 35′
	9° 35½′
Between 6 in the left elbow of Ophiuchus and the bright star of the Crown [Inter 6 in ſiniſtro cubito Ophiuchi & lucidam Coronæ]	28° 11′
	28° 11⅙′

Vice versa [Viceverſa]

Between the same 6 in the left elbow of Ophiuchus and the bright star of the Vulture [Inter eandem 6 in ſiniſtro cubito Ophiuchi & lucidam Vulturis]	50° 2′ twice [bis]
Between 7 of the unformed ones of the Vulture and the bright star of the Vulture [Inter 7 informium Vulturis & lucidam Vulturis]	18° 2′
	18° 2½′
Declination of the same 7 [Declinatio eiusdem 7]	17° 48′
	17° 47½′

Vice versa [Viceverſa]

Between the same 7 of the unformed ones of the Vulture and the head of Ophiuchus [Inter eandem 7 informium Vulturis & caput Ophiuchi]	18° 14½′ twice [bis]
Between the middle one in the neck of the Swan, no. 3, and the bright star of Lyra [Inter mediam in collo Cygni num. 3 & lucidam Lyræ]	16° 20′

Vice versa [Viceverſa]

Between the same middle one in the neck of the Swan and Scheat of Pegasus [Inter eandem mediam in collo Cygni & Scheat Pegaſi]	40° 7′
	40° 7½′
The left arm of Hercules from the Crown [Siniſtrum brachium Herculis a Corona]	29° 13′
	29° 13¼′

Between the more northern one in the right foot of the Swan and Scheat of Pegasus [Inter borealiorem in dextro pede Cygni & Scheat Pegaſi]	24° 39½′
	24° 40½′

This one seems to be unformed. [Hæc videtur informis eße.]

Between the more southern one in the right foot of the Swan and Scheat of Pegasus [Inter auſtraliorem in dextro pede Cygni & Scheat Peg.]	24° 47′
	24° 47½′

and this one too seems to be unformed. [et hæc videtur informis eße.]

Declination of the left arm of Hercules [Declinatio ſiniſtri brachij Herculis]	28° 2½′
	28° 3′
Between the more northern one in the northern foot of the Swan and Scheat [Inter borealiorem in Boreo pede Cygni & Scheat]	37° 53′
	37° 54′
Between the more southern one in the upper foot of the Swan and Scheat [Inter auſtraliorem in ſuperiore pede Cygni & Scheat]	37° 59½′ twice [bis]

Vice versa [Viceverſa]

Between the said more northern one in the foot of the Swan and Lyra [Inter dictam borealiorem in pede Cygni & Lyram]	30° 54½′ twice [bis]

Between the more southern one in the right foot of the Swan and Lyra [Inter auſtraliorem in dextro pede Cygni & Lyram]	30° 40½′ twice [bis]

Thursday 15 October, in the evening [DIE IOUIS 15 OCTOBRIS, VESPERI.]

Between 6 in the left elbow of Ophiuchus and 3 in the head of the Serpent [Inter 6 in ſiniſtro cubito Ophiuchi & 3 in capite Serpentis]	16° 15′ twice [bis]
Between 7 of the unformed ones of the Vulture and the tail of the Vulture [Inter 7 informium Vulturis & caudam Vulturis]	6° 12′
Declination of 6 in the left elbow of Ophiuchus [Decl. 6 in ſin. cubito Ophiuchi]	3° 1′
Its altitude was then about [Erat tunc Altit. eius quaſi]	10° 0′
The unformed one making a right angle with the tail of the Vulture and the beak of the Swan is distant from the mouth of Pegasus [Informis conficiens angulum rectum cum cauda Vult. & roſtro Cygni ab ore Pegaſi diſtat]	44° 13′
	44° 12′
Declination of the one which makes a right angle with the mouth of the Swan and the tail of the Vulture; it is an unformed one in the Vulture [Declinatio eius quæ conficit angulum rectum cum ore Cygni & cauda Vulturis, eſt informis in Vulture]	20° 14¼′
with the better pinnule [meliori pinnacidio]	20° 13½′
Between the left shoulder of Hercules and the left arm of the same [Inter ſiniſtrum hum. Herculis & ſiniſtrum brachium eiusdem]	7° 34′
	7° 34⅔′

Vice versa [Viceverſa]

Between the one which makes a [right] angle with the tail of the Vulture and the beak of the Swan and the head of Ophiuchus [Inter eam quæ conficit angulum [rectum] cum cauda Vulturis & roſtro Cygni & caput Ophiuchi]	18° 41′
	18° 41½′
Declination of the left arm of Hercules [Declinatio ſiniſtri brachij Herculis]	28° 2′
	28° 2½′
Between the preceding one in the right foot of the Swan and the bright star of Lyra [Inter præcedentem in dextro pede Cygni & lucidam Lyræ]	26° 47′
	26° 46¾′
Between the bright star of Lyra and the one which is at the right knee of the Swan [Inter lucidam Lyræ & eam quæ ad genu dextrum eſt Cygni]	28° 1′
	28° 0⅓′

Vice versa [Viceverſa]

Between Scheat of Pegasus and the preceding one in the right foot of the Swan [Inter Scheat Pegaſi & præcedentem in dextro pede Cygni]	28° 50′
	28° 52½′
Between the one which is at the knee of the right foot of the Swan and Scheat [Inter eam quæ ad genu eſt dextri pedis Cygni & Scheat]	28° 30½′
	28° 31′

Sunday 18 October, in the evening [DIE SOLIS 18 OCTOBRIS, VESPERI.]

Declination of the star which makes a right angle with the beak of the Swan and the tail of the Vulture [Declinatio ſtellæ quæ facit angulum rectum cum roſtro Cygni & cauda Vulturis]	20° 13⅚′
	20° 13⅔′
Between the head of Ophiuchus and the one which makes a [right] angle with the tail of the Vulture and the beak of the Swan [Inter caput Ophiuchi & eam quæ facit angulum [rectum] cum cauda Vulturis & roſtro Cygni]	18° 41½′
Between the same and the head of Hercules [Inter eandem & caput Herculis]	22° 32′ twice [bis]
The unformed one making a right angle with the tail of the Vulture and the beak of the Swan is distant from the mouth of Pegasus [Informis conficiens angulum rectum cum cauda Vulturis & roſtro Cygni, ab ore Pegaſi diſtat]	44° 12½′
	44° 13⅔′
Between the bright star of Lyra and the preceding one in the right foot of the Swan [Inter lucidam Lyræ & præced. in dextro pede Cygni]	26° 49½′
	26° 50′
Between the bright star of Lyra and the one which is at the right knee of the Swan [Inter luc. Lyræ & eam quæ eſt ad dextrum genu Cygni]	27° 58′
	27° 57⅓′

Vice versa [Viceverſa]

Between the preceding one in the right foot and Scheat of Pegasus [Inter præcedentem in dextro pede & Scheat Pegaſi]	28° 54½′
	28° 54⅚′
Between the one which is in the right knee of the Swan and Scheat of Pegasus [Inter eam quæ eſt in genu dextro Cygni & Scheat Pegaſi]	28° 25½′
	28° 26′

28 October [DIE 28 OCTOBRIS.]

Declination of the bright star of Lyra, west [Declin. lucidæ Lyræ, occid.]	38° 28′ twice [bis]

Distance between 10 of the Swan, the middle one in the lower wing, and the bright star of Lyra [Diſtantia inter 10 Cygni in ala inferiori mediam & lucidam Lyræ]	26° 18′
	26° 19′
Declination of the bright side of Perseus, west [Declin. lucidi lateris Perſei, occid.]	48° 20′
	48° 20½′
The middle one of the right wing of the Swan and Scheat are distant [Media dextræ alæ Cygni & Scheat diſtant]	29° 54½′
	29° 55½′

Thursday 29 October, in the evening [DIE IOUIS 29 OCTOBRIS, VESPERI.]

Between the Eagle and its tail [Inter Aquilam & eiusdem caudam]	12° 5⅓′
	12° 5½′

Tuesday 10 November, in the evening [DIE MARTIS 10 NOUEMBRIS, VESPERI.]

Between the following one of the two lower ones in the body of Lyra and Scheat [Inter ſequentem duarum inferiorum in corpore Lyræ & Scheat]	52° 16′
The same distance repeated [Eadem diſt. repetita]	52° 17′

Between the other of the same two lower ones in the body of Lyra, the western one, and Scheat [Inter alteram earundem duarum inferiorum in corpore Lyræ occid. & Scheat]	53° 56′ twice [bis]
Its declination, with the better pinnule [Declin. eius meliori pinn.]	32° 58′
Between the tail of the Vulture and the mouth of Pegasus [Inter caudam Vulturis & os Pegaſi]	39° 0′
Repeated [Repetita]	38° 59⅔′
Between the tail of the Eagle and the bright star of the Eagle itself [Inter caudam Aquilæ & ipſam lucidam Aquilæ]	12° 9′
	12° 10′
Between the left arm of Hercules and the bright star of the Crown [Inter ſiniſtrum brachium Herculis & luc. Coronæ]	26° 1⅓′
	26° 1¼′
Between the head of the Dragon and the outermost of the left wing of the Swan [Inter caput Draconis & extremam ſiniſtræ alæ Cygni]	12° 22′
	12° 22¾′

13 November, in the evening [DIE 13 NOUEMBRIS, VESPERI.]

Between the bright star of the hand of Antinous and the left shoulder of ♒ [Inter luc. manus Antinoi & ſiniſtrum humerum ♒]	12° 35⅓′ twice [bis]
Between the head of Hercules and the tail of the Dolphin [Inter caput Herculis & caudam Delphini]	48° 29⅓′
	48° 28′
The unformed one making is distant from the mouth of Pegasus[1] [Informis conficiens ab ore Pegaſi diſtat]	40° 25′
	40° 25⅔′
Between the preceding and upper one in the square of the Great Bear and Capella [Inter præcedentem & ſuperiorem in □ Vrſæ mai. & Capellam]	49° 16⅔′
	49° 16¼′
Put [Pone]	49° 16′
Between Scheat of Pegasus and 2 of Lyra, magnitude 5 [Inter Scheat Pegaſi & 2 Lyræ magnit. 5]	53° 52⅔′
	53° 53′
Between Scheat of Pegasus and 3 of Lyra, magnitude 5 [Inter Scheat Pegaſi & 3 Lyræ magnit. 5]	54° 10⅙′
	54° 11′
Between Scheat of Pegasus and 4 of Lyra, magnitude 6 [Inter Scheat Pegaſi & 4 Lyræ magnit. 6]	52° 25′
	52° 24′
Between Scheat of Pegasus and 6 of Lyra, magnitude 6 [Inter Scheat Pegaſi & 6 Lyræ magnit. 6]	47° 55⅔′
	47° 55⅚′
Between Scheat of Pegasus and 5 of Lyra [Inter Scheat Pegaſi & 5 Lyræ]	48° 21½′
	48° 22′
Between Scheat of Pegasus and the little star which is in a straight line with 5 of Lyra and the following one of the two lower ones of the same [Inter Scheat Pegaſi & ſtellulam quæ eſt in linea recta cum 5 Lyræ & ſequente duarum inferiorum eiusdem]	49° 58′
	49° 57′

Magnitude 6, lesser; likewise in a straight line with the 3rd and 4th of the same Lyra. [Magnit. 6 minor., item in linea recta cum 3^{tia} & 4ta eiusdem Lyræ.]

Declinations of the stars of Lyra: [Declinationes ſtellarum Lyræ:]

The 2nd of Lyra [2dæ Lyræ]	39° 16¾′	39° 16½′
The 3rd of Lyra [3tiæ Lyræ]	37° 14¾′	37° 14⅔′
The 4th of Lyra [4tæ Lyræ]	36° 28′	36° 28¼′
The 6th of Lyra [6tæ Lyræ]	37° 29⅓′	37° 29¾′
The 5th of Lyra [5tæ Lyræ]	38° 29⅔′	38° 30½′

Declination of the left foot of Erichthonius [Decl. ſiniſtri pedis Erichtonij]	32° 24′

Between the bright foot of Andromeda and the bright star in the right arm of Erichthonius, magnitude 2 [Inter lucidum pedem Andromedæ & lucid. in dextro brachio Erichtonij, magnit. 2]	41° 49′
	41° 48½′
Between the bright foot of Andromeda and the fifth of Erichthonius in the right arm [Inter luc. ped. Androm. & quintam Ericht. in dext. brachio]	44° 40′
	44° 41′
Between the bright star of the girdle of Andromeda and the seventh of Erichthonius in the left elbow [Inter luc. cinguli Androm. & ſeptimam Erichtonij in ſiniſtro cubito]	44° 30′
	44° 30⅔′
Between the bright star of the girdle of Andromeda and 9 of Erichthonius, the preceding one in the left arm [Inter luc. cing. Andr. & 9 Ericht. in ſiniſtro brachio præcedentem]	45° 8½′ twice [bis]
Between the bright star of the girdle of Andromeda and 8 of Erichthonius, the following one in the left arm [Inter luc. cing. Androm. & 8 Ericht. in ſiniſtro brachio ſequentem]	45° 49½′
	45° 50′

This one and the preceding one are called the Kids. [Hæc & præcedens hædi appellantur.]

Declination of the bright star in the right shoulder of Erichthonius, with both pinnules [Declinatio lucidæ in dextro humero Erichtonij, vtroque pinn.]	44° 50′
Declination of the one in the right arm of Erichthonius, no. 5 [Declinatio eius quæ in dextro brachio Erichtonij num. 5]	37° 6′
more difficult because of an obstructing beam. [difficilior propter obſtantem trabem.]	37° 7½′ better [melior]

14 November, in the morning [DIE 14 NOUEMBRIS, MANE.]

Declination of 7 in Erichthonius, in the right elbow [Declinatio 7 in Erichtonio in dextro cubito]	43° 5½′
	43° 6½′
Declination of the following Kid of Erichthonius [Declin. ſequentis Hædi Erichtonij]	40° 32½′
	40° 34′
Between the upper head of ♊ and the bright star in the right shoulder of Erichthonius [Inter ſuper. caput ♊ & lucidam in dextro humero Erichtonij]	22° 39′ twice [bis]
Between the upper head of ♊ and the one in the right arm of Erichthonius [Inter ſup. caput ♊ & eam quæ in dextro brachio Ericht.]	20° 12⅙′
	20° 12⅔′
Between the lower head of ♊ and the following Kid of Erichthonius [Inter infer. caput ♊ & ſequentem Hædum Ericht.]	30° 57⅙′
	30° 57¾′
Between the upper head of ♊ and the preceding Kid of Erichthonius [Inter ſuperius caput ♊ & præcedent. Hædum Ericht.]	31° 38′

	31° 39′
Between the upper head of Ⅱ and the 7th in the left elbow of Erichthonius [Inter ſuper. caput Ⅱ & 7^{mam} in ſiniſtro cubito Ericht.]	32° 5′
	32° 4⅔′
Declination of the preceding Kid of Erichthonius [Declinatio præcedentis Hædi Erichtonij]	40° 24′
	40° 23½′

14 November, in the evening [DIE 14 NOUEMBRIS, VESPERI.]

The second of Lyra, vice versa, from 11 of Hercules, which is in the left hip [Secunda Lyræ viceverſa ab 11 Herculis quæ eſt in coxa ſiniſtra]	26° 3½′
	26° 4′

[1] So in the codex. Which star this is, I do not know; it was observed after the northern star in the tail of the Whale (ι [Greek: iota]). [Sic in codice. Quæ ſit hæc ſtella, neſcio; obſervata eſt poſt ſtellam borealem in cauda Ceti (ι).]

The third of Lyra from the same 11 in the left hip of Hercules [Tertia Lyræ ab eadem 11 in ſiniſtra coxa Herculis]	25° 53½′
	25° 54½′
The fourth of Lyra is distant from the same in the hip of Hercules [Quarta Lyræ ab eadem in coxa Herculis diſtat]	27° 46⅓′
	27° 46½′
The fifth of Lyra from the left hip of Hercules [Quinta Lyræ a ſiniſtra coxa Herculis]	31° 39⅓′
	31° 39⅔′
That very one in the left hip of Hercules is distant from the bright Lyra [Ipſa illa in ſiniſtra coxa Herculis a luc. lyra diſtat]	24° 29′
	24° 28⅔′
The sixth of Lyra is distant from the left hip of Hercules [Sexta Lyræ a ſiniſtra coxa Herculis diſtat]	32° 8½′
	32° 8′

15 November, in the morning [DIE 15 NOUEMBRIS, MANE.]

At 3^{h} 56^{m} cor ♌ was passing through the meridian. [Hora 3 M. 56 pertranſibat cor ♌ meridianum.]

22 November, in the evening [DIE 22 NOUEMBRIS, VESPERI.]

Declination of 12 in the rump of Hercules [Declin. 12 in culo Herculis]	32° 28½′
Its altitude 9° 5′. [Altit. eiusdem 9 5.]	32° 28′

23 November, in the evening [DIE 23 NOUEMBRIS, VESPERI.]

Greatest altitude of the pole star, by the revolving quadrant [Altitudo maxima ſtellæ polaris per Volub.]	58° 49⅚′ doubtful [dubia]
Greatest meridian altitude of the preceding one of the head of Medusa [Altit. merid. maxima præcedentis capitis Meduſæ]	70° 38′
Altitude of 14 in the head of Medusa [Altit. 14 in capite Meduſæ]	71° 17′
Meridian altitude of 13 of the head of Medusa [Alt. mer. 13 capitis Meduſæ]	72° 5′
Meridian altitude of 8 in the side of Perseus, magnitude 5 [Alt. merid. 8 in latere Perſei magnit. 5]	80° 36¾′
Meridian altitude of 9 in the same side [Alt. mer. 9 in eodem latere]	80° 51⅚′
Meridian altitude of 10 in the side of Perseus [Alt. mer. 10 in latere Perſei]	80° 30′
Meridian altitude of 25 in the left heel of Perseus [Alt. mer. 25 in calcaneo Perſei ſiniſtro]	65° 1½′
Meridian altitude of 22 at the buttocks, of the 4th magnitude [Alt. mer. 22 ad nates, 4tæ mag.]	75° 16′
Meridian altitude of 26 in the left foot [Alt. mer. 26 in ſin. pede]	64° 41⅓′
Meridian altitude of 24 in the shin [Alt. mer. 24 in tibia]	68° 38′
Meridian altitude of 19 of Perseus [Alt. mer. 19 Perſei]	81° 23′
Meridian altitude of 20 in the knee of Perseus [Alt. mer. 20 in genu Perſei]	79° 32½′
Altitude of 17 above the knee of Perseus [Altit. 17 ſupra genu Perſei]	83° 39′
Meridian altitude of 21 in the right foot, magnitude 4 [Altit. merid. 21 in dextro pede, magnit. 4]	74° 24½′

26 November, in the evening [DIE 26 NOUEMBRIS, VESPERI.]

Between the second of Perseus and the bright star of the girdle of Andromeda [Inter ſecundam Perſei & lucidam cinguli Andromedæ]	26° 34⅓′ twice [bis]
Between 5 of Perseus and the bright star of the girdle of Andromeda [Inter 5 Perſei & lucidam cinguli Andromedæ]	25° 10′
	25° 9¾′
Between 4 of Perseus and the bright star of the girdle of Andromeda [Inter 4 Perſei & lucidam cinguli Andromedæ]	21° 55⅙′
	21° 54⅓′
Between 6 of Perseus and the bright star of the girdle of Andromeda [Inter 6 Perſei & luc. cing. Andr.]	25° 40′ good [bona]

Between 11 in the left elbow of Perseus and the bright star of the girdle of Andromeda [Inter 11 in ſin. cubito Perſei & luc. cing. Androm.]	24° 26′
	24° 27′
Between 8 of Perseus and the bright star of the girdle of Andromeda [Inter 8 Perſei & luc. cing. Androm.]	28° 43′
	28° 44′

Between 9 in the side of Perseus and the bright star of the girdle of Andromeda [Inter 9 in latere Perſei & luc. cing. Androm.]	29° 43½′
	29° 42⅔′
Between 17 in the knee of Perseus and the bright star of the girdle of Andromeda [Inter 17 in genu Perſei & luc. cing. Androm.]	34° 54′ twice [bis]
Between 16 in the hollow of the knee of Perseus and the bright star of the girdle of Andromeda [Inter 16 in poplite genu Perſei & luc. cing. Androm.]	36° 43′
	36° 42⅔′
Between 18 in the knee of Perseus and the bright star of the girdle of Andromeda [Inter 18 in genu Perſei & luc. cinguli Androm.]	34° 57′ twice [bis]
Between 19 in Perseus and the bright star of the girdle of Andromeda [Inter 19 in Perſeo & luc. cing. Androm.]	36° 3⅓′
	36° 3⅔′
Between 20 in Perseus and the bright star of the girdle of Andromeda [Inter 20 in Perſeo & luc. cing. Androm.]	37° 4⅔′
	37° 5⅓′
At 7^h $0\frac{1}{6}^m$ the outermost one of the wing of Pegasus was passing through the meridian, having an altitude, by the revolving quadrant, of [H. 7 M. 0⅙ Tranſibat extrema alæ Pegaſi per Meridianum, habens Alt. per Volub.]	47° 1⅓′
Its declination then was, by the largest armillae [Declinatio eius tunc erat per Armillas maximas]	12° 54⅚′
	12° 54⅓′

Meridian altitudes [Altitudines Meridianæ]

4 in the left shoulder of Perseus, by the steel instrument [4 in ſin. hum. Perſei per Chal.]	81° 31′
2 in the right elbow of Perseus, by the revolving quadrant [2 in dextro cubito Perſei per Vol.]	88° 16½′
The preceding one in the head of Medusa, by the steel instrument [Præced. in cap. Meduſæ per Chal.]	70° 38¼′
5 of Perseus, by the revolving quadrant [5 Perſei per Quadr. Volub.]	85° 12⅔′
15 in the head of Medusa [15 in capite Meduſæ]	71° 57⅔′
14 in the head of Medusa, by the revolving quadrant [14 in cap. Meduſæ per Volub.]	71° 19′
by the steel instrument [per Chalyb.]	71° 16′
The bright star of the side of Perseus, by the steel instrument [Luc. lateris Perſei per Chalyb.]	82° 24⅙′
by the revolving quadrant [per Volub.]	82° 25¼′
The revolving quadrant must be corrected. [Quadrans Volubilis corrigendus eſt.]	
22 of Perseus, by the steel instrument [22 Perſei per Chalyb.]	75° 17⅓′
by the revolving quadrant [per Volub.]	75° 17⅔′
Of the following one in the left foot [Sequentis in pede ſiniſtro]	64° 40½′
	64° 41¾′
Declination of the same by the armillae, with both pinnules [Declinatio eiusdem per Armillas vtroque pinnacidio]	30° 36′
Declination of 25 of Perseus on the armillae [Decl. 25 Perſei in Armill.]	30° 56′ good [bona]
Meridian altitude of 17 in the right knee, by the steel instrument [Alt. merid. 17 in dextro genu per Chalyb.]	83° 17′

16 in the right knee, by the steel instrument [16 in dextro genu per Chalyb.]	83° 15⅔′

27 November, in the evening [DIE 27 NOUEMBRIS VESPERI.]

For rectifying the instruments. [Pro rectificandis inſtrumentis.]

Meridian altitude of the head of Andromeda [Altit. merid. capitis Andromedæ]	
by the steel instrument [per Chalyb.]	60° 55½′
by the revolving quadrant [per Volub.]	60° 55⅓′
Its declination by the armillae [Eius declinatio per Armillas]	with one [vno] 26° 50′ with the other [alt.] 26° 50½′
Meridian altitude of the outermost one of the wing of Pegasus [Alt. mer. extremæ alæ Pegaſi]	
by the steel instrument [per Chalyb.]	47° 0⅙′
by the revolving quadrant [per Volub.]	47° 0′
Its declination by the armillae [Eiusdem declinatio per Armillas]	12° 54½′ 12° 54′

4 December [DIE 4 DECEMBRIS.]

For examining the new sextant, entirely covered with brass. [Pro examinando nouo Sextante orichalco totaliter obducto.]

Meridian altitude of the first of the wing of Pegasus [Alt. merid. 1 alæ Pegaſi]	
by the revolving quadrant [per Quadr. Volub.]	47° 5⅔′
by the new sextant[1] [per Sext. nouum[1]]	47° 6½′

5 December [DIE 5 DECEMBRIS.]

Declination of the unformed one in the middle of the body of Lyra [Declin. informis in medio corpore Lyræ]	37° 47′ 37° 46⅔′

6 December, in the evening [DIE 6 DECEMBRIS, VESPERI.]

For examining the new brass sextant. [Pro examinando nouo Sextante orichalcico.]

Meridian altitude of the outermost one of the wing of Pegasus [Altit. meridiana extremæ alæ Pegaſi]	
by the new sextant [per nou. Sext.]	47° 0$^{1}/_{12}$′
by the steel instrument [per Chalyb.]	47° 0⅙′
by the revolving quadrant [per Volub.]	47° 0½′
Meridian altitude of the more southern bright star in the tail of the Whale, by the new brass sextant [Meridiana altit. lucidæ auſtralioris in cauda Ceti per nouum orich. Sext.]	13° 53⅔′
Meridian altitude of 4 in the intersection of ♉ [Alt. merid. 4 in interſectione ♉]	
by the new sextant [per nouum Sext.]	41° 38⅙′
by the steel instrument [per Chalyb.]	41° 37⅚′
by the revolving quadrant [per Volub.]	41° 37⅚′
Meridian altitude of 3 in the intersection of ♉ [Alt. merid. 3 in interſectione ♉]	
by the new sextant [per nouum Sext.]	42° 20$^{11}/_{12}$′
by the steel instrument [per Chalyb.]	42° 20⅚′
by the revolving quadrant [per Volub.]	42° 20⅔′
Between the bright star of ♈ and Aldebaran [Inter lucidam ♈ & Aldeboram]	
by the new sextant [per nouum Sext.]	35° 32′
Repeated [Repetita]	35° 32′ 25″

17 December, in the evening [DIE 17 DECEMBRIS, VESPERI.]

Between the following and upper one in the square of the Lesser Bear and the tail of the Swan [Inter ſequentem & ſuperiorem in □ Vrſæ minoris & caudam Cygni]	42° 46½′
	42° 45′

This evening Aldebaran was passing through the meridian at 9^{h} 48^{m} 40^{s}. The clock is to be corrected to this time. [Aldeboram hoc veſpere tranſibat per meridianum H. 9 M. 48 40″. Ad hoc tempus corrigendum eſt horologium.]

Greatest altitude of the pole star [Altit. max. ſtellæ Polaris]	
by the steel instrument [per Chalyb.]	58° 48¼′
by the revolving quadrant [per Volub.]	58° 48⅚′
with the clock showing 6^{h} $6½^{m}$, Aldebaran, east, 57 41 [horologio indicante H. 6 M. 6½, Aldeb. orient. 57 41]	
At 6^{h} $14⅚^{m}$, the clock having been corrected, the least meridian altitude of the 1st in the tail of the Great Bear [H. 6 14⅚′ correcto horologio, altitudo minima meridiana 1^{ae} in cauda Vrſæ maioris]	
by the steel instrument [per Chalyb.]	24° 7½′
by the revolving quadrant [per Volub.]	24° 6⅚′
Least meridian altitude of the outermost one in the tail of the Great Bear [Altitudo merid. min. extremæ in cauda Vrſæ maioris]	
by the steel instrument [per Chalyb.]	17° 19⅔′
by the revolving quadrant [per Volub.]	17° 19′

18 December, in the morning [DIE 18 DECEMBRIS, MANE.]

Between Arcturus and 3 n. of the Gnosian Crown [Inter Arcturum & 3 n. Coronæ Gnoſiæ]	21° 0⅔′
	21° 0⅚′
Between Arcturus and 2 of the Crown [Inter Arcturum & 2 Coronæ]	18° 59′
Between Arcturus and 5 of the Crown [Inter Arcturum & 5 Coronæ]	21° 4′
Between Arcturus and 6 of the Crown [Inter Arcturum & 6 Coronæ]	32° 31¼′
	32° 31⅔′
Between Arcturus and 7 of the Crown [Inter Arcturum & 7 Coronæ]	24° 26′
Between Arcturus and 8 of the Crown, uncertain because of the dawn [Inter Arcturum & 8 Coronæ, incerta propter auroram]	26° 11′
At 5^h 54^m, least altitude of the pole star [5^H 54′ Altitudo ſtellæ polaris minima]	
by the revolving quadrant [per Q. Volub.]	53° 0½′
by the steel quadrant [per Q. Chalyb.]	53° 0′

The clock was running 10^m slower. [Horologium 10 M. tardius ciebatur.]

The same day, the 18th, in the evening [Eodem die 18, veſperi.]

Between the one which is in the left shoulder of Perseus, no. 4, and Capella [Inter eam quæ eſt in ſiniſtro humero Perſei num. 4 & Capellam]	25° 38′
	25° 38¼′
Distance between 22 of Perseus, magnitude 5, greater, and Capella [Diſt. inter 22 Perſei magnit. 5 maior. & Capellam]	16° 39′
	16° 39⅓′
Between 23 of Perseus, magnitude 3, lesser, and Capella [Inter 23 Perſei magnit. 3 minor. & Capellam]	15° 30¾′
Between 25 of Perseus, magnitude 4, and Capella [Inter 25 Perſei 4 magnit. & Capellam]	22° 26½′
Between the preceding and unformed one in the head of Medusa and Capella [Inter præcedentem & informem in capite Meduſæ & Capellam]	twice [bis] 27° 52⅓′
Between 13 below the bright star in the head of Medusa and Capella [Inter 13 infra lucidam in capite Meduſæ & Capellam]	23° 39⅓′

[1] Afterwards there was written in addition »while setting the sextant into the meridian«. [Poſtea adſcriptum eſt »inter diſponendum Sextantem in meridiem«.]

Between 11 in the left elbow of Perseus and Capella [Inter 11 in cubito ſiniſtro Perſei & Capellam]	22° 9½′
Between 6 of Perseus in the back and Capella [Inter 6 Perſei in dorſo & Capellam]	21° 37½′
	21° 38′
Between 15 in the head of Medusa and the girdle of Andromeda [Inter 15 in capite Meduſæ & cingulum Andromedæ]	21° 56′
	21° 55½′

Between 8 in the side of Perseus and Capella [Inter 8 in latere Perſei & Capellam]	18° 3½′
Between 9 in the side and Capella [Inter 9 in latere & Capellam]	17° 6′

Meridian altitudes: [Altitudines Meridianæ:]

Of the lower one in the Great Bear [Inferioris in Vrſæ maiore]	
by the steel instrument [per Chal.]	21° 54′
by the revolving quadrant [per Vol.]	21° 54$\frac{1}{12}$′
Greatest, of the pole star [Stellæ polaris maxima]	
by the revolving quadrant [per Vol.]	58° 48¼′
by the steel instrument [per Chal.]	58° 48⅓′ or [vel] 48 17
Least, of the 1st in the tail of the Great Bear, the one nearest the square [Minima 1^{ae} in cauda Vrſæ maioris proximæ quadrato]	
by the revolving quadrant [per Vol.]	24° 7⅙′
by the steel instrument [per Chal.]	24° 8⅓′
Least, of the middle one in the tail of the Great Bear [Minima mediæ in cauda Vrſæ maioris]	
by the revolving quadrant [per Vol.]	23° 1⅙′
by the steel instrument [per Chal.]	23° 1⅙′
Least, of the outermost one in the tail of the Great Bear [Minima extremæ in cauda Vrſæ mai.]	
by the steel instrument [per Chal.]	17° 19⅚′
by the revolving quadrant [per Vol.]	17° 19′

19 December, in the morning [DIE 19 DECEMBRIS, MANE.]

Least meridian altitude of the preceding one in the Chair of Cassiopeia [Altitudo minima meridiana præcedentis in cathedra Caßiopeæ]	
by the steel instrument [per Chalyb.]	22° 50′
by the revolving quadrant [per Volub.]	22° 49¾′
Least meridian altitude of the pole star [Alt. ſtellæ Polaris merid. min.]	
by the steel instrument [per Chalyb.]	53° 0′
by the new sextant [per Sext. nou.]	53° 0¾′
by the revolving quadrant [per Volub.]	53° 0½′
Spica was then in the east, when the pole star was being observed [Tunc erat Spica orientalis cum obſeruabatur ſtella polaris.]	10 56
Least meridian altitude of the Bend of Cassiopeia [Altit. meridiana minima Flexuræ Caßiopeæ]	
by the steel instrument [per Chalyb.]	24° 25′
by the revolving quadrant [per Volub.]	24° 25′
by the new brass quadrant [per nouum orich. Quadr.]	24° 24⅚′
Altitude of the head Algol below the pole [Altit. capitis Algol infra Polum]	
by the revolving quadrant [per Volub.]	6° 21⅓′

20 December, in the morning [DIE 20 DECEMBRIS, MANE.]

Least altitude of the pole star [Alt. Stellæ Polaris min.]	
by the steel instrument [per Chalyb.]	53° 0′
by the revolving quadrant [per Volub.]	53° 0⅓′

Least meridian altitude of the one which is in the knee of Cassiopeia [Altitudo meridiana minima eius quæ eſt in genu Caßiop.]	
by the steel instrument [per Chalyb.]	24° 1¼′
by the revolving quadrant [per Volub.]	24° 1′

The same day, in the evening [Eodem die Veſperi.]

The clock was corrected at noon. [Horologium in meridie corrigebatur.]

Least altitude of the upper of the two following ones in the square of the Great Bear [Altitudo minima ſuperioris duarum ſequentium in □ Vrſæ mai.]	
by the steel instrument [per Chal.]	25° 14½′
by the revolving quadrant [per Vol.]	25° 14′
Between the bright star of the girdle of Andromeda and the third in the right shoulder of Perseus [Inter lucidam cinguli Andromedæ & tertiam in dextro humero Perſei]	26° 52′
	26° 52⅔′
Between Capella and 24 in the left shin of Perseus [Inter Capellam & 24 in tibia ſiniſtra Perſei]	17° 48½′
	17° 48⅔′
At 5^h 36⅔^m, greatest meridian altitude of the pole star [H. 5 36⅔′ Altitudo meridiana maxima ſtellæ Polaris]	
by the steel instrument [per Chalyb.]	58° 48′ 15″
by the revolving quadrant [per Volub.]	58° 48′ 0″
Between 26 in the left foot of Perseus and Capella [Inter 26 in pede ſiniſtro Perſei & Capellam]	21° 16⅓′
	21° 16½′
Meridian altitude of the preceding one of the three in the tail of the Great Bear [Altitudo meridiana præcedentis trium in cauda Vrſæ mai.]	
by the revolving quadrant [per Volub.]	24° 7′
by the steel instrument, [per Chalyb.,]	better [melior]
	24° 8′
Meridian altitude of the bright star of the girdle of Andromeda [Alt. mer. luc. cinguli Androm.]	67° 29⅚′
Meridian altitude of the middle one in the tail of the Great Bear [Alt. mer. mediæ in cauda Vrſæ mai.]	
by the revolving quadrant and the steel instrument [per Volub. & Chalyb.]	23° 1′
Meridian altitude of the head of Medusa [Alt. merid. capitis Meduſæ]	
by the revolving quadrant [per Volub.]	73° 23′

by the steel instrument [per Chalyb.]	73° 24′
Least meridian altitude of the brighter one in the square of the Lesser Bear [Alt. merid. minima lucidioris in □ Vrſæ minoris]	
by the revolving quadrant [per Volub.]	41° 43 1/12′
by the steel instrument [per Chalyb.]	41° 44′
Meridian altitude of the bright star of Perseus, by the revolving quadrant [Alt. mer. luc. Perſei per Vol.]	82° 19′

This meridian altitude ought to be greater, as you will find in many places elsewhere. It had almost passed beyond the cylinder of the instrument. [Hæc altitudo meridiana debet eße maior, prout alibi paßim invenies. Erat fere prætergreßa cylindrum inſtrumenti.]

Meridian altitude of the lower of the two preceding ones in the square of the Lesser Bear [Alt. merid. inferioris præcedentium duarum in □ Vrſæ min.]	39° 11½′

21 December, in the evening [DIE 21 DECEMBRIS, VESPERI.]

Greatest altitude of the pole star [Alt. max. ſtellæ Polaris]	
by the steel instrument [per Chalyb.]	58° 48 1/3′
by the revolving quadrant [per Volub.]	58° 48′

Least altitude of the 1st in the tail of the Great Bear [Altit. minima 1ae in cauda Vrſæ mai.]	
by the steel instrument [per Chalyb.]	24° 7¾′
by the revolving quadrant [per Volub.]	24° 7 2/3′
Least meridian altitude of the middle one in the tail of the Great Bear [Altit. merid. minima mediæ in cauda Vrſæ maioris]	
by the steel instrument [per Chalyb.]	23° 1′ 25″
by the revolving quadrant [per Volub.]	23° 1′

22 December, in the morning [DIE 22 DECEMBRIS, MANE.]

Least altitude of the pole star [Alt. min. ſtellæ Polaris]	
by the steel instrument [per Chalyb.]	53° 0¼′
by the revolving quadrant [per Volub.]	53° 0 1/6′

The same day, 22 December, in the evening [Eodem die 22 Dec. Veſperi.]

Meridian altitude of the lower of the two following ones in the square of the Great Bear, below the pole, by the steel instrument [Alt. merid. inferioris duarum ſequentium in □ Vrſæ maioris infra polum per Chalyb.]	21° 53¾′
Greatest meridian altitude of the pole star [Alt. maxima meridiana ſtellæ Polaris]	
by the steel instrument [per Chalyb.]	58° 48′ 35″
by the revolving quadrant [per Volub.]	58° 48′ 25″

It was not very clear. [Non erat bene ſerenum.]

For correcting the clock: with the clock showing 6^h $24\frac{1}{3}^m$, the right shoulder of Orion was east [Pro horol. corrigendo, Horologio indicante horam 6 M. 24⅓, erat dexter humerus Orionis orient.]	66 58

The time of the transit of the same right shoulder of Orion through the meridian was 10^h $44\frac{2}{3}^m$. From this the clock was corrected. [Tempus tranſitus eiusdem dextri humeri Orionis per meridianum hora 10 M. 44⅔. Hinc corrigebatur horologium.]

Least meridian altitude of the last one in the tail of the Great Bear [Altit. meridiana minima vltimæ in cauda Vrſæ maioris]	
by the brass sextant [per Sext. orich.]	17° 20⅙′
by the revolving quadrant [per Volub.]	17° $20\frac{1}{12}$′
by the steel instrument [per Chalyb.]	17° 19′ 35″
Least meridian altitude of the upper of the two bright ones in the square of the Lesser Bear [Altit. merid. ſuperioris duarum lucidarum in □ Vrſæ minoris minima]	
by the new brass sextant [per Sext. nou. orich.]	41° 44′
by the steel instrument [per Chalyb.]	41° $43\frac{11}{12}$′
by the revolving quadrant [per Volub.]	41° 43⅚′
Least altitude of the penultimate one in the knot of the Dragon, no. 27 [Altit. min. penultimæ in nodo Draconis num. 27]	
by the new brass sextant [per Sext. nou. orich.]	26° 21⅙′
by the revolving quadrant [per Volub.]	26° 21¼′
by the steel instrument [per Chalyb.]	26° 21′ 0″
Least meridian altitude of the lower of the two preceding bright ones in the square of the Lesser Bear [Altit. merid. inferioris duarum præcedentium lucidarum in □ Vrſæ minoris minima]	
by the new brass sextant [per nou. Sext. orich.]	39° 12½′
by the revolving quadrant [per Volub.]	39° 11⅔′
by the steel instrument [per Chalyb.]	39° 12⅓′
Least meridian altitude of 26 in the Dragon [Alt. mer. min. 26 in Dracone]	
by the steel instrument [per Chalyb.]	25° 37′
by the new sextant [per Sext. nou.]	25° 36½′

23 December [DIE 23 DECEMBRIS.]

Greatest altitude of the pole star [Altit. max. ſtellæ polaris] by the revolving quadrant [per Volub.]	58° 48¼′

28 December, in the morning [DIE 28 DECEMBRIS, MANE.]

The declination of the Vulture was observed by the armillae [Obſeruabatur declin. Vulturis per Armillas]	7° 52′
	7° 53⅚′
Its altitude was then, by the revolving quadrant [Tunc erat eius alt. per Volub.]	15° 10′
Its declination, repeated [Declin. eiusdem repetita]	7° 52½′
	7° 53′

The same 28 December, in the evening [Eodem 28 Decemb., Veſperi.]

Greatest altitude of the pole star [Alt. ſtellæ Polaris max.]	
by the revolving quadrant [per Volub.]	58° 48⅔′
by the steel instrument [per Chalyb.]	58° 48⅚′
Least meridian altitude of the 1st in the tail of the Lesser Bear [Altit. meridiana minima 1ae in cauda Vrſæ minoris]	
by the revolving quadrant [per Volub.]	24° 7⅔′
by the steel instrument [per Chalyb.]	24° 7′ 47″
Least altitude of the middle one in the tail of the Great Bear [Altit. minima mediæ in cauda Vrſæ maioris]	
by the revolving quadrant [per Volub.]	23° 0⅚′
by the steel instrument [per Chalyb.]	23° 1′
	a little less [paulo minus]
Declination of the Vulture [Declinatio Vulturis]	7° 53′
	7° 53⅓′
Its altitude was then 14¼° [Altit. eius tunc erat 14¼ g.]	
Declination of the Vulture, repeated [Declinatio Vulturis repetita]	7° 55¼′
	7° 55⅔′
Its altitude was 9⅙° [Altitudo eius erat 9⅙.]	

With the clock showing $5^h\ 46^m$, the bright star of the jaw of the Whale was east, 20° 47′; this bright star was due to pass through the meridian at $7^h\ 27^m$. The clock was therefore running $17^m\ 52^s$ slower than it should, an error that had accrued to it since noon of this day, 28 December. It was therefore corrected. [Horologio indicante horam 5 M. 46, erat lucida mandibula Ceti orient. 20° 47′, quæ lucida erat tranſitura per meridianum hora 7 M. 27. Mouebatur igitur

horologium iuſto tardius 17′ 52″, qui error illi acceßerat a meridie huius diej 28 Decembris. Corrigebatur igitur.]

Declination of the Vulture [Declinatio Vulturis]	7° 56½′ 7° 56′
Altitude 6° 35′ [Altitudo 6° 35′.]	
Least meridian altitude of the last one in the tail of the Great Bear [Altitudo minima meridiana vltimæ in cauda Vrſæ mai.]	
by the revolving quadrant [per Volub.]	17° 19′ 35″
by the steel instrument [per Chalyb.]	17° 19′ 40″

Declination of the Vulture [Declinatio Vulturis]	7° 57′ 7° 57½′
Altitude 5° 0′ [Altitudo 5° 0′]	
Meridian altitude of the right shoulder of Perseus, by the revolving quadrant [Altitudo meridiana dextri humeri Perſei per Volub.]	85° 53⅓′
Meridian altitude of the head of Medusa [Alt. mer. capitis Meduſæ]	
by the steel instrument [per Chalyb.]	73° 19⅓′
by the revolving quadrant [per Volub.]	73° 20½′
Least meridian altitude of the brighter one in the square of the Lesser Bear [Altit. merid. lucidioris in □ Vrſæ minoris minima]	
by the steel instrument [per Chalyb.]	41° 43⅔′
by the revolving quadrant [per Volub.]	41° 43⅙′
Meridian altitude of the bright star of the side of Perseus [Altit. merid. lucidæ lateris Perſei]	
by the revolving quadrant [per Volub.]	82° 23⅓′ good [bona]
Meridian altitude of 10 at the bend of the right side of Perseus, by the revolving quadrant [Altit. meridiana 10 ad flexuram dextri lateris Perſei per Volub.]	80° 28¾′
Meridian altitude of the other bright one in the square of the Lesser Bear, by the steel instrument and the revolving quadrant [Altit. merid. alterius lucidæ in □ Vrſæ minoris per Chal. & Vol.]	37° 12′
Between Aldebaran and the bright star of the girdle of Andromeda [Inter Aldeboram & lucidam cinguli Andromedæ]	
by the new brass sextant [per nou. Sext. orich.]	49° 24½′
Least meridian altitude of 25[1] [Alt. mer. 25 minima[1]]	
by the steel instrument [per Chalyb.]	28° 23′
by the revolving quadrant [per Volub.]	28° 24′
Least meridian altitude of 24 in the Dragon, in the middle of the body [Altitudo meridiana minima 24 in Dracone in medio corpore]	
by the revolving quadrant [per Volub.]	32° 8⅔′
by the steel instrument [per Chalyb.]	32° 8⅔′ less 5″ [minus 5″.]

At the beginning of the year 90 [Anno 90 ad initium.]

		Meridian altitude [Alt. merid.]	
	Declination of the bright star of the square of the Lesser Bear [Declinatio lucidæ □ Vrſæ minoris]	75° 49⅚′	
the year 89 [A° 89]	of the less bright one in the square of the same [Minus lucidæ in □ eiusdem]	73° 17⅚′	
ending [labente]	of Aldebaran [Aldeboræ]	15° 37′ 49° 42¼′	
	of Arcturus [Arcturi]	21° 22′ 55° 27½′	only once [Semel tantum]
	of Capella [Capellæ]	45° 29½79° 34¾′	by the revolving quadrant [per Volub.]
the year 90 [A° 90]	of the bright star of Perseus [Lucidæ Perſei]	48° 19½84° 24′ 45″	
at the beginning [ad initium]	of the head of Medusa [Capitis Meduſæ]	39° 18½73° 23′ 45″	

Meridian altitudes of circumpolar stars above and below the pole, for finding the elevation of the pole. [Stellarum circumpolarium altitudines meridianæ ſupra & infra Polum pro Poli eleuatione indaganda.]

	By the steel instrument [Per Chalybeum]	By the revolving quadrant [Per Volubilem]	
Of the pole star [Stellæ Polaris]	58° 48′ 55″	58° 49′ 0″	
Above the pole [Supra Polum]	58° 49′ 10″	58° 49′ 0″	
	58° 49′ 6″	58° 49′ 10″	
	58° 49′ 0″	58° 48′ 50″	58 49 0[2]
Below the pole [Infra Polum]	53° 0′ 6″ good [bona]	53° 0′ 0″	53 0 5
	53° 0′ 0″	53° 0′ 10″	55 54 33
Of the bright star of the square of the Lesser Bear [Lucidæ □ Vrſæ minoris]	70° 4′ 40″	70° 4′ 40″	
Above the pole [Supra Polum]	70° 5′ 10″	70° 4′ 45″	
	70° 5′ 20″	70° 5′ 0″	
	70° 5′ 15″	70° 3′ 50″	41 44 22
Below the pole [Infra Polum]	41° 44′ 20″	41° 43′ 45″	70 4 25
	41° 44′ 20″	41° 44′ 30″	55 54 23
	41° 44′ 20″	41° 44′ 0″	
	41° 44′ 15″	41° 44′ 30″	
	41° 44′ 30″	41° 44′ 20″	
Of the less bright one of the square of the Lesser Bear [Minus lucidæ □ Vrſæ minoris]	72° 36′ 50″	72° 36′ 40″	

	By the steel instrument [Per Chalybeum]	By the revolving quadrant [Per Volubilem]
	72° 36′ 30″	72° 36′ 50″

[1] In the Dragon. It is star 14, η [Greek: η (ēta)] of the Dragon. [In Dracone. Eſt ſtella 14 η Draconis.] [2] These are found only in codices V and K. [Hæc in ſolis codd. V. et K. reperiuntur.]

Above the pole [Supra Polum]	72° 37′ 0″	72° 36′ 50″	
	72° 36′ 50″	72° 36′ 30″	
	72° 36′ 50″	72° 36′ 50″	
	72° 37′ 0″	72° 36′ 40″	
	…	72° 36′ 45″	72 36 40
Below the pole [Infra Polum]	39° 12′ 20″	39° 12′ 30″	39 12 10
	39° 12′ 15″	39° 12′ 30″	55 54 25
	39° 12′ 0″	39° 11′ 50″	
	39° 12′ 20″	39° 12′ 0″	

Observations of stars in the southern constellations outside the zodiac [OBSERUATIONES STELLARUM IN ASTERISMIS AUSTRALIBUS EXTRA ZODIACUM.]

18 February, in the evening [DIE 18 FEBRUARIJ, VESPERI.]

Between the Greater Dog and its preceding foot [Inter Canem maiorem & pedem eius præcedentem]	5° 34⅙′
	5° 34¼′

9 October [DIE 9 OCTOBRIS.]

Meridian altitude of Fomalhaut [Altit. meridiana Phomahant]	2° 30′
Declination of Fomalhaut [Declinatio Phomahant]	31° 29′
	31° 28⅚′
Distance between Fomalhaut and the lower horn of ♍ [Diſt. inter Phomahant & inferius cornu ♍]	38° 51′
	38° 52′
Between the bright star of the tail of the Whale and Fomalhaut [Inter lucidam caudæ Ceti & Phomahant]	26° 42′
	26° 42¾′

13 November [DIE 13 NOUEMBRIS.]

Between 21 of the Whale, the northern one in the tail, and the left shoulder of ♒ [Inter 21 Ceti borealem in cauda & ſiniſtrum humerum ♒]	41° 45′

21 November, in the morning [DIE 21 NOUEMBRIS, MANE.]

Declination of 17 of Hydra, magnitude 4 [Declinatio 17 Hydræ magnit. 4]	20° 19′
	20° 18½′
Declination of the following one, 8 of Hydra, magnitude 5, smaller [Declinatio ſequentis 8 Hydræ magnit. 5 minor.]	19° 53⅔′

22 November, in the evening [DIE 22 NOUEMBRIS, VESPERI.]

The bright one in the belly of the Whale, magnitude 4, no. 14, is distant from the northern one in the tail of the same [Lucida quæ in ventre Ceti magnit. 4 num. 14 a borea in cauda eiusdem diſtat]	22° 45′
	22° 44½′
The one below this, towards the west, magnitude 5 [Quæ infra hanc ad occaſum, 5 magnit.]	22° 18½′
	22° 19½′
No. 12, also in the belly of the Whale, magnitude 4, is distant from the same one in the tail of the same [Quæ num. 12 etiam in ventre Ceti magnit. 4 ab eadem in cauda eiusdem diſtat]	22° 2′
	22° 1¾′
No. 13, at the bottom of the belly of the Whale, magnitude 5, is distant from the northern one in the tail of the same [Quæ num. 13 in imo ventris Ceti magnit. 5 a borea in cauda eiusdem diſtat]	27° 7½′
	27° 8½′
Declination of 14 of the Whale [Declinatio 14 Ceti]	12° 20′
	12° 19¾′

Its altitude was then about 20°. [Erat tunc Altit. 20° circiter.]

23 November, in the evening [DIE 23 NOUEMBRIS, VESPERI.]

Meridional declination of 12 of the Whale [Declinatio Meridiana 12 Ceti]	18° 7′
	18° 6½′
Declination of 13 at the bottom of the belly of the Whale [Decl. 13 in imo ventris Ceti]	23° 4′
Altitude about 9° [Altit. 9° circiter]	23° 2½′
Declination of the one that is no. 4 in the head of the Whale [Declin. eius quæ num. 4 in capite Ceti]	1° 30′
	south [M.]
	1° 29⅓′

Declination of the bright star of the jaw of the Whale B. [Decl. luc. mandibulæ Ceti B.]	2° 26¼′
Declination of 3 in the head of the Whale, north [Decl. 3 in capite Ceti Bor.]	1° 27′ twice [bis]

24 November, in the morning [DIE 24 NOUEMBRIS, MANE.]

Between the Lesser Dog and the first in the head of Hydra, magnitude 5 [Inter Canem min. & primam in capite Hydræ magnit.5]	14° 54′
	14° 53¼′
Between the Lesser Dog and 2 in the head of Hydra, magnitude 5 [Inter Canem min. & 2 in capite Hydræ magnit. 5]	15° 59½′
	15° 59⅔′
Between the Lesser Dog and the unformed star that precedes [Inter Canem min. & informem quæ præcedit]	14° 26′
	14° 25⅔′
Between the Lesser Dog and 3 in the head of Hydra [Inter Canem minorem & 3 in capite Hydræ]	16° 46′
	16° 45⅓′
Between the Lesser Dog and the 4th [Inter Canem minorem & 4^{tam}]	17° 9½′
	17° 9′
Between the bright star of the feet of ♊ and 5 in the head of Hydra [Inter lucidam pedum ♊ & 5 in capite Hydræ]	35° 17⅓′ twice [bis]

The same, vice versa [Eædem Viceverſa]

Between cor ♌ and that first one in the head of Hydra [Inter cor ♌ & primam illam in capite Hydræ]	23° 51′
	23° 50⅓′
Between cor ♌ and 2 and the following one in the head [Inter cor ♌ & 2 & ſequentem in capite]	22° 48⅙′
	22° 47⅔′
Between cor ♌ and the unformed star that precedes them in the head of Hydra [Inter cor ♌ & informem quæ præcedit eas in capite Hydræ]	23° 17½′

Between cor ♌ and 3 in the head of Hydra [Inter cor ♌ & 3 in cap. Hydræ]	20° 54′
Between cor ♌ and 4 in the head of Hydra [Inter cor ♌ & 4 in cap. Hydræ]	20° 42′
Between cor ♌ and 5 in the head of Hydra [Inter cor ♌ & 5 in cap. Hydræ]	19° 1′
Declination of 1 and the preceding one in the head of Hydra [Declinatio 1 & præcedentis in capite Hydræ]	4° 45′
	4° 45⅔′
Declination of 2 in the head of Hydra, north [Decl. 2 in capite Hydræ Bor.]	4° 50′
Declination of 3 in the head of Hydra [Decl. 3 in capite Hydræ]	7° 52¼′
Declination of 4 in the head of Hydra [Decl. 4 in capite Hydræ]	7° 16½′

Declination of 5 and the following one in the head of Hydra [Decl. 5 & ſequentis in capite Hydræ]	7° 27′
	7° 27⅙′
Declination of that unformed star which precedes them in the head of Hydra [Declinatio informis illius quæ præcedit illos in capite Hydræ]	7° 4′

25 November, in the morning [DIE 25 NOUEMBRIS, MANE.]

Between the Lesser Dog and 7 of Hydra, in the neck [Inter Canem minorem & 7 Hydræ in collo]	23° 48¼′
	23° 47¾′
Between the Lesser Dog and 9 of Hydra, in the first coil [Inter Canem min. & 9 Hydræ in primo volumine]	30° 42′

For rectifying the armillae: [Pro rectificandis Armillis:]

Meridian altitude of 18 of Hydra, by the revolving quadrant [Alt. merid. 18 Hydræ per Vol.]	20° 4′
Its declination in the armillae [Declinatio eiusdem in Armillas]	14° 3¼′
	14° 3½′
Between the Lesser Dog and 8 of Hydra [Inter Canem min. & 8 Hydræ]	28° 49′
	28° 48′
Meridian altitude of the one immediately preceding the Crater of Hydra [Altit. merid. proxime præcedentis Cratera Hydræ]	18° 1⅔′
Between the Lesser Dog and 10 of Hydra [Inter Canem minorem & 10 Hydræ]	28° 23¼′
	28° 22¼′
Declination of the one immediately preceding the Crater of Hydra [Declin. proxime præcedentis Cratera Hydræ]	16° 7′
	16° 7½′
Northern declination of 7 of Hydra [Declin. borealis 7 Hydræ]	3° 58′
	3° 58⅔′

Vice versa [Viceverſa]

Between 7 in the wing and 7 of Hydra [Inter 7 in ala & 7 Hydræ]	52° 4⅙′ twice [bis]
Between 7 of ♍ and the ninth of Hydra [Inter 7 ♍ & nonam Hydræ]	45° 31⅓′
	45° 32′
Between 7 of ♍ and 8 of Hydra [Inter 7 ♍ & 8 Hydræ]	47° 28¼′
	47° 28′
Southern declination of 10 of Hydra [Declinatio auſtrina 10 Hydræ]	1° 1½′
	1° 2′
Between 7 of ♍ and 10 of Hydra [Inter 7 ♍ & 10 Hydræ]	48° 18′
Northern declination of 9 of Hydra [Declinatio borea 9 Hydræ]	0° 42⅓′

	0° 41′

27 November, in the morning [DIE 27 NOUEMBRIS, MANE.]

Declination of 8 of Hydra, northern [Declinatio 8 Hydræ borea]	0° 35½′
	0° 34¼′
Between the sixth in Hydra and the Lesser Dog [Inter ſextam in Hydra & Canem minorem]	21° 31¼′
	21° 32¼′

Vice versa [Viceverſa]

Between the same 6 in Hydra, magnitude 6, and cor ♌ [Inter eandem 6 in Hydra 6 magnit. & cor ♌]	16° 57′ twice [bis]
Between the eleventh of Hydra, below the bright star towards the west, and the Lesser Dog (almost obscure) [Inter vndecimam Hydræ infra lucidam ad occaſum & Canem minor. (fere obſcura)]	29° 12½′

The same day, in the evening [Eodem die Veſperi]

Meridian altitude of the bright star of the tail of the Whale [Alt. merid. luc. caudæ Ceti]	
by the steel instrument [per Chalyb.]	13° 54⅔′
by the revolving quadrant [per Volub.]	13° 54′
Its declination by the armillae [Eiusdem Declin. per Armillas]	20° 14′
	20° 13½′

6 December, in the evening [DIE 6 DECEMBRIS, VESPERI.]

Meridian altitude of the more southern bright star in the tail of the Whale, by the new brass sextant [Meridiana altit. lucidæ auſtralioris in cauda Ceti per nouum orich. Sextantem]	13° 53⅔′

17 December, in the evening [DIE 17 DECEMBRIS, VESPERI.]

Between the bright star of the jaw of the Whale and the uppermost of the three above the head of Orion, no. 1, an unformed star [Inter lucidam mandibulæ Ceti & ſupremam trium ſupra Caput Orionis num. 1 informem]	38° 20′

	38° 21′
Declination of the same, in Orion B. [Declinatio eiusdem in Orione B.]	9° 35⅔′
	9° 35⅓′
Between the lowest of the same three above the head of Orion and the bright star of the jaw of the Whale [Inter infimam earundem trium ſupra caput Orionis & lucidam mandibulæ Ceti]	38° 43¼′
	38° 43′
Declination of the same lowest one [Declinatio eiusdem infimæ]	8° 59⅓′
	9° 0′

18 December, in the evening [DIE 18 DECEMBRIS, VESPERI.]

Declination of the bright star of the tail of the Whale, with both pinnules [Declinatio lucidæ caudæ Ceti vtroque pinnac.]	20° 12½′

19 December, in the morning [DIE 19 DECEMBRIS, MANE.]

Meridian altitude of 2 in the head of the Crow [Alt. mer. 2 in capite Corui]	13° 49′
Meridian altitude of 4 in the Crow [Alt. mer. 4 in Coruo]	18° 53½′
Its declination by the armillae [Declinatio eius per Armillas]	15° 15′
	15° 14⅙′
Meridian altitude of 1 in the beak of the Crow [Alt. mer. 1 in roſtro Corui]	11° 43⅔′
Meridian altitude of 5 in the Crow [Alt. mer. 5 in Coruo]	19° 54¼′
Declination by the armillae of 7 in the Crow; it is in the foot [Declinatio per Armillas 7 in Coruo, eſt in pede]	21° 4½′
	21° 5⅔′

The same day, the 19th, in the evening [Eodem die 19 Veſperi.]

Between 25 in the cloth of Orion and the Lesser Dog [Inter 25 in linteo Orionis & Canem min.]	40° 20′
	40° 19′
Between 32 of Orion and the Lesser Dog [Inter 32 Orion. & Can. min.]	32° 29⅔′
Between 31 in the sword of Orion and the Lesser Dog [Inter 31 in enſe Orionis & Canem minorem]	32° 53′
	32° 53⅔′
Meridian altitude of the right shoulder of Orion [Alt.merid.dextri hum. Orion.]	41° 20⅙′
Meridian altitude of 38 in the right knee of Orion [Alt. merid. 38 in genu dextro Orionis]	24° 14¼′

20 December, in the evening [DIE 20 DECEMBRIS, VESPERI.]

Between Aldebaran and the unformed star immediately following the head of the Whale, magnitude 5, smaller [Inter Aldeboram & informem, caput Ceti proxime ſequentem, magnit. 5 minor.]	22° 58′
Between Aldebaran and 1 of the Whale, in the snout, magnitude 5, larger [Inter Aldeb. & 1 Ceti in roſtro magnit. 5 maior.]	24° 38′
Between 6 in the head of the Whale above the eye, magnitude 4, and Aldebaran [Inter 6 in capite Ceti ſupra oculum 4 magnit. & Aldeb.]	27° 45½′ twice [bis]
Declination of the 1st in the head of the Whale [Declinatio 1ae in capite Ceti]	7° 13⅔′
	7° 14½′
Between the middle one between 5 and 3 in the head of the Whale, magnitude 5, a little larger, unknown to Aratus, and Aldebaran [Inter mediam inter 5 & 3 in capite Ceti 5 magnit. paulo maior., Arato ignotam, & Aldeboram]	31° 21′ twice [bis]
Between 5 in the back of the head of the Whale and Aldebaran. Magnitude 4, smaller. [Inter 5 in occipite Ceti & Aldeboram. 4 magnit. minor.]	32° 11′
Declination of 6 of the Whale [Declinatio 6 Ceti]	8° 20′
	8° 20⅔′
Between 7 of the Whale and Aldebaran [Inter 7 Ceti & Aldeboram]	35° 37⅓′
Declination of 5 of the Whale [Declinatio 5 Ceti]	6° 35⅓′
	6° 36′

Vice versa [Viceverſa]

Between the outermost one of the wing of Pegasus and the unformed star immediately following the head of the Whale [Inter extremam alæ Pegaſi & informem caput Ceti proxime ſequentem]	47° 16¼′
Declination of 7 of the Whale [Declinatio 7 Ceti]	8° 25′
	8° 24½′
Between the outermost one of the wing of Pegasus and 1 of the Whale [Inter extremam alæ Peg. & 1 Ceti]	41° 8′
Between 6 of the Whale and the outermost one of the wing of Pegasus [Inter 6 Ceti & extr. alæ Peg.]	37° 16¼′
Between the middle one, which is on a straight line between 3 and 5 of the Whale in the head, and the outermost one of the wing of Pegasus [Inter mediam quæ eſt in recta linea inter 3 & 5 Ceti in capite & extrem. alæ Pegaſi]	36° 18½′
	36° 18¾′
Between 5 of the Whale and the outermost one of the wing of Pegasus [Inter 5 Ceti & extr. alæ Peg.]	33° 38⅚′
Between 7 of the Whale and the outermost one of the wing of Pegasus [Inter 7 Ceti & extr. alæ Peg.]	29° 58⅙′
Declination of the middle one between 3 and 5 in the Whale, with one pinnule [Declinatio mediæ inter 3 & 5 in Ceto, vno pinnac.]	3° 46⅔′
Declination of the one immediately following the head of the Whale, with both pinnules [Decl. ſequentis caput Ceti proxime vtroque pinnac.]	1° 49½′
Declination of the middle one in the belt of Orion [Decl. mediæ in baltheo Orion.]	1° 31′

Diameters of the stars[1] [DIAMETRI STELLARUM[1].]

19 January [DIE 19 JANUARIJ.]

In the evening the diameters of the stars were observed by Aurifaber. [Veſperi obſeruabantur diametri ſtellarum per Aurifabrum]

Observation of the right shoulder of Orion [Obſeruatio humeri dextri Orionis]	2′ 0″
	1 15
Diameter of the Greater Dog [Canis maioris diameter]	4 0
	3 30
Repeated again, the Greater Dog [Denuo repetita Canis maior]	3½
	3⅔
Diameter of the Lesser Dog [Canis minoris diameter]	2 0 }
with both pinnules [vtroque pin.]	}
Repeated [Repetita]	2 0
	2 20
Diameter of the heart of ♌ [Cordis ♌ diameter]	2 0
	2 15
Repeated [Repetita]	2 0
	2 20
Diameter of the eye of ♉, with both [Diameter oculi ♉ vtroq.]	2 0
Diameter of Lyra [Diameter Lyræ]	1¾
	1½

20 January [DIE 20 JANUARIJ.]

Diameter of Capella [Diameter Capellæ]	2¾′,	2½′
Repeated with both [Repetita vtroque]	2½	
Diameter of Spica [Diameter Spicæ]	1½,	2 0
Repeated [Repetita]	2 0,	1 50

23 January, in the evening [DIE 23 JANUARIJ, VESPERI.]

Diameter of the Greater Dog, by the armillae [Diam. Canis mai. per Armill.]	3′ [3 Min.]
Repeated [Repetita]	2⅚
The bright foot of Orion, diameter [Lucidus pes Orionis, diam.]	1¾
Repeated [Repetita]	1¾
Aldebaran, diameter [Aldeboram diam.]	1¼
Repeated [Repetita]	1¼
The lower head of ♊, diameter [Inferius caput ♊, diam.]	1½
Repeated [Repetita]	1¼
Cor ♌, diameter [Cor ♌, diam.]	1½

Repeated [Repetita]	1¼
The right and following shoulder [Dexter & ſequens humerus]	1 twice [bis]

26 January [DIE 26 JANUARIJ.]

Observation of the diameter of the eye of ♉, made by Aurifaber. By the steel instrument 1⅔ [Obſeruatio diametri oculi ♉ per Aurifab. facta. Per Chalybeum 1⅔]

[1] Compare above, among the observations of the planets, pp. 30, 39, 44, 46, 47. [Cf. ſupra inter obſervationes planetarum pp. 30, 39, 44, 46, 47.]

Observations of the year 1591 [OBSERUATIONES ANNI 1591.]

Observations of the Sun [OBSERUATIONES SOLIS.]

5 January [DIE 5 JANUARIJ.]

The meridian altitude of the Sun was [Erat Altitudo ☉ meridiana]	
by the steel instrument [per Chalyb.]	12° 57¾′
by the revolving quadrant [per Volub.]	12° 58⅚′
by the mural quadrant, with the old pinnule [per Mural., veteri pinnacid.]	12° 56¾′
Declination of the Sun [Declin. ☉]	21° 8¼′
by the largest armillae [per Armill. maxim.]	21° 8⅔′

The clock was rectified. It was clear enough. [Horolog. rectificabatur. Erat ſatis ſerenum.]

7 January [DIE 7 JANUARIJ.]

Meridian altitude of the Sun [Altit. ☉ merid.]	
by the steel instrument [per Chalyb.]	13° 20⅔′
by the revolving quadrant [per Volub.]	13° 20⅓′
Declination of the Sun [Declin. ☉]	20° 45½′
by the largest armillae [per Armill. max.]	20° 45¾′

The clock was rectified. [Horologium rectificabatur.]

13 January [DIE 13 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the revolving quadrant [per Volub.]	14° 39⅙′
by the steel instrument [per Chalyb.]	14° 38⅝′
Declination of the Sun [Declin. ⊙]	19° 29⅓′
by the armillae [per Armill.]	19° 29⅙′

The clock was corrected. It was clear enough. [Horologium corrigebatur. Erat ſatis ſerenum.]

21 January [DIE 21 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	16° 40⅓′
by the revolving quadrant [per Volub.]	16° 41⅓′
Declination of the Sun [Declin. ⊙]	17° 26⅔′
by the largest armillae [per Armill. max.]	17° 26¼′

The clock was corrected. It was clear enough. [Horol. corrigebatur. Erat ſatis ſerenum.]

22 January [DIE 22 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	16° 58¼′
by the revolving quadrant [per Volub.]	16° 58⅝′
Declination of the Sun [Declin. ⊙]	17° 8½′
by the equatorial armillae [per Armill. æquat.]	17° 8⅙′

The clock was corrected. It was clear enough. [Horologium corrigebatur. Erat ſatis ſerenum.]

In the evening [Veſperi.]

6^h $11⅓^m$ [H. 6 11⅓′]: A trace of twilight still appeared. The following shoulder of Orion, east, 34 54. [Apparebat adhuc veſtigium crepuſculi. Sequens humerus Orionis orient. 34 54.]

6^h $13⅙^m$ [6 13⅙]: Nothing more of the twilight was seen, as far as it was possible to make out through the brightness of the Moon. The following shoulder of Orion, 34 28. [Nihil crepuſculi amplius videbatur quantum per ☾ ſplendorem diſcernere licuit. Seq. hum. Or. 34 28.]

23 January (?)[1] [DIE 23 JANUARIJ [?][1].]

6^h 0^m [H.6 0′]: The twilight was no longer seen. The left shoulder of Orion, east, 45 4. [Crepuſculum non amplius videbatur. Sin. hum. Or. orient. 45 4.]

6^h 5^m [6 5]: No trace remained. The left shoulder of Orion, east, 44 6. [Nihil reſtabat veſtigij. Sin. hum Or. orient. 44 6.]

6^h 7^m [6 7]: Nothing more at all. The left shoulder, 43 31½. [Prorſus nihil amplius. Sin. hum. 43 31½.]

24 January [DIE 24 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	17° 32⅔′
by the revolving quadrant [per Volub.]	17° 33′
Declination by the armillae [Declin. per Armill.]	16° 35½′
subterranean [ſubterraneas]	16° 35′

It was moderately clear. The clock was corrected. [Erat mediocriter ſerenum. Horologium corrigebatur.]

31 January [DIE 31 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	19° 42⅓′
by the revolving quadrant [per Volub.]	19° 42⅔′
Declination of the Sun [Declin. ⊙]	14° 24¾′
by the armillae [per Armill.]	14° 24⅔′

It was not clear enough. The clock was corrected. [Non erat ſatis ſerenum. Horolog. corrigebatur.]

1 February [DIE 1 FEBRUARIJ.]

The clock was corrected at noon. [Horol. in meridie corrigebatur.]

It was not clear enough. [Non erat ſatis ſerenum.]

7 February [DIE 7 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	22° 3½′
by the revolving quadrant [per Volub.]	22° 3′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	12° 2′

the largest subterranean [ſubterraneas maxim.]	12° 2½′

It was moderately clear. [Erat mediocriter ſerenum.]

[1] The day is missing. The observation is written in codex D after the observations of the fixed stars of 23 January. [Dies deeſt. Conſcripta eſt obſervatio in codice D poſt obſervationes ſtellarum fixarum diei 23 Januarii.]

9 February [DIE 9 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	22° 45½′
by the revolving quadrant [per Volub.]	22° 45⅔′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	11° 22½′
	11° 22⅙′

It was clear enough. [Erat ſatis ſerenum.]

17 February [DIE 17 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	25° 41′ 10″
by the revolving quadrant [per Volub.]	25° 41′ 20″
Declination of the Sun [Declin. ⊙]	8° 25⅓′
by the largest armillae [per Arm. max.]	8° 26⅙′

It was clear enough. The clock was corrected. [Erat ſatis ſerenum. Horol. corrigebatur.]

On the same day, 17 February, at 5^{h} 15^{m} [H.5 M.15], the Sun set. The time of the clock, as noted, was corrected from the equator to the Sun. [Eodem die 17 Februarij H.5 M.15 occidebat ⊙. Tempus horologij annotatum ex æquatore ad ⊙ corrigebatur.]

18 February [DIE 18 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	26° 3⅙′
by the revolving quadrant [per Volub.]	26° 3⅚′
Declination of the Sun [Declin. ⊙]	8° 3′
by the armillae [per Armillas]	8° 3⅚′

The clock was corrected, because it was running 13^m [13′] slower than it should; it had acquired this error since 5^h 39^m [hora 5 Min. 39] yesterday evening. See the observations of Mercury. It was clear enough. [Horologium corrigebatur, quod iuſto tardius mouebatur 13′ qui error illi acceßit ab hora 5 Min. 39 heſterna veſpertina. Vide apud obſeruationes ☿. Erat ſatis ſerenum.]

19 February [DIE 19 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the revolving quadrant [per Volub.]	26° 26½′
by the steel instrument [per Chalyb.]	26° 26′
Declination of the Sun [Declin. ⊙]	7° 40′
by the armillae [per Armill.]	7° 39½′

It was clear enough. [Erat ſatis ſerenum.]

The clock was running 33^m [33′] slower than it should; it had acquired this error since 5^h $45½^m$ [hora 5 M. 45½] yesterday evening. [Horologium mouebatur iuſto tardius 33′, qui error acceßit illi ab hora 5 M. 45½ heſterni veſperis.]

20 February [DIE 20 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	26° 48⅓′
by the revolving quadrant [per Volub.]	26° 49′
Declination of the Sun [Declin. ⊙]	7° 17½′
by the armillae [per Armill.]	7° 17⅓′

The clock was running 21^m 40^s [21′ 40″] slower than it should, and this error was corrected. It was clear enough. [Horologium mouebatur iuſto tardius 21′ 40″, qui error corrigebatur. Erat ſatis ſerenum.]

22 February [DIE 22 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the revolving quadrant [per Volub.]	27° 34′
by the steel instrument [per Chalyb.]	27° 34⅔′
Declination of the Sun [Declin. ⊙]	6° 30⅚′
by the armillae [per Armillas]	6° 31′

The clock was corrected. It was not clear enough. [Horol. corrigebatur. Non erat ſatis ſerenum.]

26 February [DIE 26 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	29° 6⅚′
by the revolving quadrant [per Volub.]	29° 6⅔′
Declination of the Sun [Declin. ⊙]	4° 59′
by the armillae [per Armillas]	4° 59⅓′

The clock was corrected. It was clear enough. On the same day, in the evening, at about 6^h [circa horam 6], the clock was corrected, because since noon it had been running 1 minute slower. [Horol. corrigebatur. Erat ſatis ſerenum. Eodem die Veſperi circa horam 6 corrigebatur horologium, quod a meridie 1 Minuto tardius mouebatur.]

17 March [DIE 17 MARTIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	36° 34½′
by the revolving quadrant [per Volub.]	36° 34⅓′
by the mural quadrant, old [per Muralem vet.]	36° 34⅚′
new [nov.]	36° 35′
Declination of the Sun [Declin. ⊙]	2° 28′
by the subterranean armillae [per Arm. ſubt.]	2° 27⅚′

It was clear enough. The clock was corrected. [Erat ſatis ſerenum. Horologium corrigebatur.]

Observed altitude of the Sun [Altit. ⊙ obſeruata]	
by the steel instrument [per Chalyb.]	36° 34′ 30″
Parallax, to be added [Parallaxis add.]	2 24
Refraction, to be subtracted [Refractio ſubtrahenda]	0 27
	36 36 27
Elevation of the equator [Eleuatio Æquatoris]	34° 5′ 30″
True declination of the Sun [Vera declinatio ⊙]	2° 30′ 57″
Resp. longitude of the Sun [Reſp. Longitudo ⊙]	6° 18′ 55″ ♈

Place of the Sun from the meridian altitude (taking account of the parallax and the refraction) [Locus ⊙ ex altitudine meridiana (habita ratione parallaxeos & refractionis)]

by the mural quadrant [per Quadrantem Mural.]	6° 20′ 15″ ♈
by the steel instrument [per Chalyb.]	6° 18′ 55″ ♈
by the revolving quadrant [per Volub.]	6° 19′ 0″ ♈
From our ephemeris [Ex Ephemeride noſtra]	6° 19′ 50″ ♈
Cyprian [Cypriani]	6° 33′ 54″ ♈
Scala [Scalæ]	5° 48′ 30″ ♈

The 17th, in the evening [Die 17, Veſperi.]

		the bright shoulder of Orion, east [Luc. hum. Or. orient.]
$7^h\ 41^m$ [H. 7 41′]	The twilight was still seen [Videbatur adhuc crepuſculum]	7 35
$7^h\ 44^m$ [7 44]	Something of the twilight was seen to remain [Videbatur aliquid crepuſculi ſupereße]	7 0
$7^h\ 46^m$ [7 46]	No trace of the twilight remained [Nullum crepuſculi veſtigium ſupererat]	6 27

21 March [DIE 21 MARTIJ.]

At noon the clock was corrected to the Sun. It was not clear enough for observing the altitude and declination of the Sun. [In meridie corrigebatur horologium ad Solem. Non erat ſatis ſerenum pro obſeruanda altitudine & dclinatione ☉.]

Easter Day, 4 April [DIE PASCHATIS 4 APRILIS.]

Meridian altitude of the Sun [Altit. ☉ merid.]	
by the steel instrument [per Chalyb.]	43° 22⅝′
by the revolving quadrant [per Volub.]	43° 22⅛′
Declination of the Sun [Declin. ☉]	9° 17′
by the armillae [per Armillas]	9° 17¼′

It was clear enough. The clock was corrected. [Erat ſatis ſerenum. Horologium corrigebatur.]

In the evening [Veſperi.]

$8^h\ 54^m$ [H. 8 54′]: No trace of the twilight appeared. The bright star of Hydra, west, 25 15. [Nullum apparebat veſtigium crepuſculi. Luc. Hydræ occid. 25 15]

5 April [DIE 5 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the revolving quadrant [per Volub.]	43° 43¾′
by the steel instrument [per Chalyb.]	43° 43½′
Declination of the Sun [Declin. ⊙]	9° 39′
by the armillae [per Armillas]	9° 38⅓′

The clock was set at noon. [Horologium in meridie poſitum.]
It was not very clear. [Non admodum ſerenum erat.]

10 April [DIE 10 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
(by the revolving quadrant)[1] [[per Volub.][1]]	45° 28⅚′
(by the steel instrument)[1] [[per Chalyb.][1]]	45° 28⅔′
Declination of the Sun [Declin. ⊙]	11° 24′ 30″
by the armillae [per Armillas]	11° 24′ 30″

It was moderately clear. [Erat mediocriter ſerenum.]

12 April [DIE 12 APRILIS.]

Altitude of the Sun at noon [Altit. ⊙ in meridie]	
by the steel instrument [per Chal.]	46° 10⅙′
by the revolving quadrant [per Volub.]	46° 10′
Declination of the Sun [Declin. ⊙]	12° 5′
by the armillae [per Armillas]	12° 4⅔′

At the same noon we measured the shadow of the Sun as follows. [In eodem Meridie demetiebamur vmbram ⊙$^{\text{l}}_{\text{i}}{}^{\text{s}}$ vt ſequitur.]

I. Through the new square wooden channel, divided into 1000 equal parts, the shadow was observed as 18½ such parts; it was let in through a square hole, which was 10 symmetrical parts wide. [Per nouum quadratum ligneum canalem in 1000 æquales partes diuiſum, obſeruabatur vmbra 18½ talium partium, intromiſſa per quadratum foramen, quod amplum erat 10 part. ſymmetrarum.]

II. The smaller old square channel was set on the new one already mentioned, and the side then came to 1660 parts, of the parts of which the new one had been before. The hole through which the shadow was let in here was also of 10 parts, of the parts of which the side was 1660. The shadow was observed as 24⅔ symmetrical parts. [Imponebatur minor vetus canalis quadratus prætacto nouo, et tunc fiebat latus 1660 partium, qualium nouus prius erat. Foramen,

per quod hic vmbra intromittebatur, erat etiam 10 partium, qualium latus 1660. Vmbra obſeruabatur 24⅔ ſymmetrarum partium.]

III. In the said small channel, which was divided into 1000 parts (but smaller than in the new one), the shadow was observed as 18⅓ parts. The hole through which the shadow entered was square and of 10 parts of the 1000 parts of this smaller channel. [In paruo dicto canali, qui in 1000 partes (ſed minores quam in nouo) diuiſus, obſeruabatur vmbra 18⅓ partium. Foramen, per quod vmbra ingrediebatur, erat quadratum & 10 partium de 1000 partibus iſtius minoris canalis.]

IV. With a hole 5 parts wide placed in the small channel, the shadow was observed as 14⅙ parts. [Poſito foramine in paruo canali 5 partibus amplo, obſeruabatur vmbra 14⅙ partium.]

It was clear enough. [Erat ſatis ſerenum.]

The same day, in the evening [Eodem die, Veſperi.]

9^h $9⅓^m$ [H. 9 9⅓′]: The twilight was still seen. Spica, east, 21 23. [Videbatur adhuc crepuſculum. Spica orient. 21 23.]

9^h $13½^m$ [9 13½]: The twilight still appeared. Spica, east, 20 15. At about this time the altitude of Aldebaran was about 1¼° [1¼ g.]. [Apparebat adhuc crepuſculum. Spica orient. 20 15. Circa hoc tempus erat altit. Aldeb. circiter 1¼ g.]

Here it was moderately well clear. [Hic erat mediocriter bene ſerenum.]

9^h $21⅙^m$ [9 21⅙]: A trace of the twilight still remained, but it was beginning to become doubtful. Spica, east, 18 16. Then the altitude of the head of Medusa was 9° 40′. [Supererat adhuc veſtigium crepuſculi, ſed incipiebat dubium fieri. Spica or. 18 16. Tunc erat altit. capitis Meduſæ 9 40.]

9^h 36^m [9 36]: At about this time no notable trace of the twilight remained. More could not be observed, because it was not clear enough [Circa hoc tempus nullum notabile crepuſculi veſtigium ſupererat. Plures non poterant obſeruari quia non ſatis ſerenum erat]

[1] From codex V. [E codice V.]

13 April [DIE 13 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	46° 30′
by the revolving quadrant [per Volub.]	46° 30′
Declination of the Sun [Declin. ⊙]	12° 25⅔′
by the largest armillae [per Armillas maximas]	12° 25′

It was moderately clear. [Erat mediocriter ſerenum.]

We observed the shadow of the Sun. [Obſeruabamus ⊙ vmbram.]

At about 1^{h} [horam 1] after noon we observed the Sun and took its shadow. [Circiter horam 1 poſt Meridiem obſeruabamus ⊙ & accipiebamus eius vmbram.]

I. Through the larger wooden channel, 18⅗. [Per canalem maiorem ligneum 18⅗]

II. With the smaller channel placed (as yesterday) on the larger one mentioned before, the shadow came together at 24½ parts. [Impoſito (vt heri) minore canali maiori antedicto, aggregabatur vmbra 24½ partium.]

III. Through the smaller channel the shadow came out at 18½. It was exceptionally clear. [Per minorem canalem prodibat vmbra 18½. Erat apprime ſerenum.]

23 April [DIE 23 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	49° 39⅓′
by the revolving quadrant [per Volub.]	49° 38⅔′
Declination [Declin.]	15° 35⅔′
by the armillae [per Armill.]	15° 35⅓′

It was moderately clear, but the air was unsteady. [Erat mediocriter ſerenum, ſed intranquillus aër.]

24 April [DIE 24 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	49° 57⅓′
by the revolving quadrant [per Volub.]	49° 56⅓′
Declination [Declin.]	15° 51⅔′
by the armillae [per Armill.]	15° 51½′

It was moderately clear. [Erat mediocriter ſerenum.]

25 April [DIE 25 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	50° 14⅔′
by the revolving quadrant [per Volub.]	50° 14′
by the mural quadrant [per Muralem]	50° 15⅔′
	50° 15¾′
Declination [Declin.]	16° 9½′

by the armillae [per Armill.]	16° 8¾′

It was not clear enough. [Non erat ſatis ſerenum.]

26 April [DIE 26 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	50° 31⅔′
by the revolving quadrant [per Volub.]	50° 31′
Declination [Declin.]	16° 27′
by the largest armillae [per Armillas maximas]	16° 27¾′

It was clear enough. [Erat ſatis ſerenum.]

On the same 26 April, around noon itself, soon after observing the meridian altitude of the Sun, we observed the shadow of the Sun. [Eodem 26 Aprilis circa ipſum meridiem, mox poſt obſeruatam ⊙ meridianam altitudinem obſeruabamus ⊙ vmbram.]

I. In the new wooden channel we took 18⅔ parts. [In canali nouo ligneo accipiebamus 18⅔ partes]

II. In both channels together, the new and the old, 24⅔. [In vtroque, nouo & veteri canali ſimul 24⅔]

III. In the old channel alone, 18 35. [In veteri canali ſolo 18 35]

It was clear enough. [Erat ſatis ſerenum.]

27 April [DIE 27 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	50° 48⅓′
by the revolving quadrant [per Volub.]	50° 47⅚′
Declination of the Sun [Declin. ⊙]	16° 44⅓′
by the armillae [per Armillas]	16° 44′

It was clear enough. [Erat ſatis ſerenum.]

29 April [DIE 29 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	51° 20⅔′
by the revolving quadrant [per Volub.]	51° 20′

by the mural quadrant [per Mural.]	51° 22⅔′
	51° 22⅚′
Declination of the Sun [Declin. ⊙]	17° 18′
	17° 17½′

It was clear enough. [Erat ſatis ſerenum.]

30 April [DIE 30 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	51° 37⅓′
by the revolving quadrant [per Volub.]	51° 37′
by the mural quadrant [per Mural.]	51° 38⅙′
	51° 38¼′
Declination of the Sun [Declin. ⊙]	17° 32⅙′
by the armillae [per Armill.]	17° 32½′

The clock was running 27⅓^{m} [27⅓ M.] slower than it should. It was set right. [Horol. mouebatur 27⅓ M. iuſto tardius. Rectificabatur.]

It was moderately clear. [Erat mediocriter ſerenum.]

2 May [DIE 2 MAIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	52° 9¼′
by the revolving quadrant [per Volub.]	52° 7⅔′
Declination of the Sun [Declin. ⊙]	18° 4′
by the armillae [per Armill.]	18° 3½′

It was not clear enough. [Non erat ſatis ſerenum.]

12 May [DIE 12 MAIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	54° 24¾′
by the revolving quadrant [per Volub.]	54° 25⅙′
Declination of the Sun [Declin. ⊙]	20° 20⅓′
by the armillae [per Armill.]	20° 20′

It was fairly well clear. [Erat ſatis bene ſerenum.]

13 May [DIE 13 MAIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	54° 36¾′
by the revolving quadrant [per Volub.]	54° 36⅚′
Declination [Declin.]	20° 31⅓′
by the armillae [per Armillas]	20° 31⅔′

It was clear enough. [Erat ſatis ſerenum.]

On the same day, at about 2^h in the afternoon [hora circiter 2 P. M.], the size of the Sun was observed. [Eodem die hora circiter 2 P. M. obſeruabatur Quantitas $\odot^{is}$.]

I. Through the larger channel the shadow came out at 18¾. [Per maiorem canalem prodibat vmbra 18¾]

II. Through the smaller old channel, 18½. [Per minorem veterem Canalem 18½]

III. Through both channels combined, 24⅔. [Per vtrumque aggregatum canalem 24⅔]

It was not exceptionally clear, but still moderately so. [Non erat apprime ſerenum, ſed tamen mediocriter.]

17 May [DIE 17 MAIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	55° 21′
by the revolving quadrant [per Volub.]	55° 21¼′
Declination [Declin.]	21° 15½′
by the subterranean armillae [per Armill. ſubterr.]	21° 16′

It was moderately clear. [Erat mediocriter ſerenum.]

21 May [DIE 21 MAIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	56° 0′
by the revolving quadrant [per Volub.]	55° 59⅓′
Declination [Declin.]	21° 53⅙′
by the armillae [per Armill.]	21° 53′

It was not very clear. [Non erat bene ſerenum.]

28 MAY [DIE 28 MAIJ.]

Altitude of the Sun at noon by the steel instrument, uncertain because of clouds [Altit. ⊙ in meridie per Chalyb., incerta propter nubes,]	56° 55′
Declination of the Sun by the subterranean armillae, equally uncertain [Declin. ⊙ per Armillas ſubterraneas, æque incerta,]	22° 49′

The clock was corrected. It was not entirely clear. [Corrigebatur horologium. Non erat plane ſerenum.]

12 JUNE [DIE 12 JUNIJ.]

In the morning we observed the declination of the Sun near the Tropic of ♋, and that at the altitudes that follow. [Obſeruabamus mane ⊙ Declinationem Tropico ♋ vicini, idque in altitudinibus quæ ſequuntur.]

The clock was corrected to Mars on the preceding evening. [Horologium præcedente veſp. ad ♂ corrigebatur.]

$4^h\ 58^m$ [4ᴴ 58ᴹ]	Declination of the Sun [Declin. ⊙]	23° 35′
	by the larger subterranean armillae [per Arm. mai. ſubterr.]	23° 35⅙′
	Declination by the lesser new armillae [Declin. per min. Armill. nouas]	23° 37′
	Altitude of the Sun by the revolving quadrant [Altit. ⊙ per Volub.]	9° 43′
	Declination by the larger armillae, with one pinnule [Declin. per maiores Armill. vno pin.]	23° 33¼′
	Altitude by the revolving quadrant [Altit. per Volub.]	11° 16′
	Declination by the larger armillae, with one pinnule [Decl. per Arm. mai. vno pin.]	23° 32′
	Declination by the new lesser armillae [Decl. per nouas minores Arm.]	23° 35′

These two observations are uncertain because of the obstruction of the beams. [Hæ duæ obſeruationes ſunt incertæ propter impedimenta tignorum.]

$5^h\ 39½^m$ [5 39½]	Declination [Declin.]	23° 33½′
	by the larger armillae [per maiores Armill.]	23° 33′
	Declination by the lesser armillae [Decl. per minores Arm.]	23° 34′ nearly [fere]
	Altitude by the revolving quadrant [Altit. per Volub.]	14° 56′
$5^h\ 49^m$ [5 49]	Declination by the armillae [Declin. per Armill.]	23° 31¾′
	larger [maiores]	23° 32⅙′
	Altitude of the Sun by the revolving quadrant [Altit. ⊙ per Volub.]	16° 8′

N.B. The Sun could not be observed any further because of clouds; nor was it clear enough while the observations above were being made; and the

lesser armillae had not yet been finished with a proper correction, although on the preceding night they were tested against some fixed stars and performed moderately well. [N.B. Amplius obſeruari non poterat ⊙ propter nubes, neque inter obſeruandum ſuperiora ſatis ſerenum fuit, & Armillæ minores iuſta correctione nondum erant abſolutæ, licet præcedente nocte ad ſtellas quaſdam fixas examinatæ ſunt ſeque mediocriter habuerunt.]

Afterwards, when it was becoming clear again, the following were observed. [Poſtea, cum iterum fiebat ſerenum, obſeruabantur ſequentia.]

7^h $1\frac{5}{6}^m$ [H. 7 1⅚]	Declination of the Sun [Declin. ⊙]	23° 31⅔′
		23° 31½′
	Altitude of the Sun [Altitudo ⊙]	26° 0⅔′
	Azimuth from the meridian towards the east [Azim. a merid. ad ort.]	96° 0′
	Declination by the new armillae [Decl. per nouas Arm.]	23° 30½′
7^h $11\frac{1}{2}^m$ [H. 7 11½]	Altitude of the Sun [Altitudo ⊙]	27° 21⅔′
	Azimuth	92° 0′
	Declination of the Sun by the largest armillae, with both pinnules [Declin. ⊙ per max. Armillas, vtroque pinnac.]	23° 31½′

7^h $21\frac{1}{2}^m$ [7 21½]	Altitude of the Sun [Altit. ⊙]	
	by the steel instrument [per Chalyb.]	28° 42⅚′
	by the revolving quadrant [per Volub.]	28° 43½′

At that time the Sun was at the 90th degree from the meridian towards the east. [Tunc erat ⊙ in 90 gradu a meridie verſus ortum.]

	Declination [Declin.]	23° 31½′
	by the largest armillae [per max. Armill.]	23° 32⅙′
	by the new [per nouas]	23° 30′
		23° 33′
7^h 36^m [7 36]	Altitude of the Sun [Altitudo ⊙]	30° 46′
	Azimuth of the Sun [Azimuth ⊙]	87° 0′
	Declination of the Sun [Declin. ⊙]	23° 32′
	by the largest armillae [per max. Armill.]	23° 31⅙′
7^h $45\frac{1}{2}^m$ [7 45½]	Altitude of the Sun [Altit. ⊙]	32° 2⅔′
	Azimuth of the Sun [Azimuth ⊙]	85° 0′
	Declination of the Sun [Declin. ⊙]	23° 30¾′
	by the largest armillae [per max. Armill.]	23° 31⅙′
	Declination of the Sun [Declin. ⊙]	23° 30¼′
	by the lesser new armillae [per min. nouas Armill.]	23° 32′

7^h $54\frac{2}{3}^m$ [7 $54\frac{2}{3}$]	Altitude of the Sun [Altit. ⊙]	33° 20′
	Azimuth of the Sun [Azimuth ⊙]	83° 0′
	Declination of the Sun [Declin. ⊙]	23° 31¼′
	by the largest armillae [per max. Armill.]	23° 31′
8^h $3\frac{5}{6}^m$ [8 $3\frac{5}{6}$]	Altitude of the Sun [Altit. ⊙]	34° 35½′
	Declination by the largest armillae [Declin. per Arm. max.]	23° 31⅙′
8^h $6\frac{1}{6}^m$ [8 $6\frac{1}{6}$]	At that time the Sun was east [Tunc erat ⊙ orientalis]	61 55 0
8^h 10^m [8 10]	The Sun was east [Erat ⊙ orient.]	61 0
8^h $12\frac{5}{6}^m$ [8 $12\frac{5}{6}$]	Declination of the Sun [Declin. ⊙]	23° 31¼′
	Altitude of the Sun [Altit. ⊙]	35° 49½′
	Azimuth of the Sun [Azimuth ⊙]	79° 0′
	the Sun, east [⊙ orientalis]	60 20

With the clock corrected. [Correcto horologio.]

8^h 4^m 40^s [H. 8 4′ 40″]	Declination [Decl.]	23° 30′
	by the lesser armillae [per min. Arm.]	23° 31½′
	the Sun, east [⊙ orient.]	59 9
8^h 36^m [8 36]	Altitude of the Sun [Altit. ⊙]	40° 56′
	Declination by the largest armillae [Decl. per max. Armill.]	23° 30¾′
	by the lesser armillae [per minores Arm.]	23° 32′
		23° 29′
	Time on the equator [Tempus in æquatore]	50 48
8^h $55\frac{3}{4}^m$ [8 $55\frac{3}{4}$]	Altitude of the Sun [Altit. ⊙]	43° 29⅔′
	Azimuth	65° 0′
	Declination by the largest, with one pinnule [Decl. per Max., vno pin.]	23° 31⅓′
	by the lesser [per minores]	23° 31′
	armillae [Armillas]	23° 30′
	the Sun, east [⊙ orient.]	45 55
9^h $14\frac{1}{6}^m$ [9 $14\frac{1}{6}$]	Altitude [Altitudo]	45° 46¾′
	Azimuth	60° 0′
	Declination [Declin.]	23° 30⅔′
	by the largest armillae [per Armill. maximas]	23° 31⅙′
	the Sun, east [⊙ orient.]	41 17½
9^h $35\frac{5}{8}^m$ [9 $35\frac{5}{8}$]	Altitude of the Sun [Altit. ⊙]	48° 14′
	Azimuth of the Sun [Azimuth ⊙]	54° 0′
	Declination by the largest armillae [Declin. per Armill. max.]	23° 30′
		23° 30⅔′
	the Sun, east [⊙ orient.]	36 5
9^h 56^m [9 56]	Altitude of the Sun [Altit. ⊙]	50° 21⅓′
	Azimuth	48° 0′
	Declination of the Sun [Declin. ⊙]	23° 30½′
	by the largest armillae [per max. Armillas]	23° 31′
10^h $48\frac{1}{3}^m$ [10 $48\frac{1}{3}$]	Altitude of the Sun [Altit. ⊙]	55° 5¾′
	Azimuth of the Sun [Azim. ⊙]	29° 0′

Declination [Declin.]	23° 31′
	23° 31⅙′

On the same day, 12 June [Eodem die 12 Iunij]

the meridian altitude of the Sun was [erat altit. ⊙ merid.]	
by the revolving quadrant [per Volub.]	57° 35⅔[numeral: ?]′
by the steel instrument [per Chalyb.]	57° 36′
by the mural quadrant [per Muralem]	57° 36′
	57° 35½′
Declination [Declin.]	23° 31⅙′
by the larger armillae [per Armillas maiores]	23° 31′
Declination of the Sun [Declin. ⊙]	23° 30′
by the lesser armillae [per minores Armillas]	23° 31′

The clock was running three minutes slow, which was corrected. [Horologium tribus ibat Minutis tardius, quod corrigebatur.]

The instruments had been carefully corrected beforehand, to a nicety. [Inſtrumenta antea diligenter ad amußim corrigebantur.]

At the same noon, immediately after observing the meridian altitude of the Sun, we observed the shadow of the Sun. [Eodem meridie ſtatim poſt obſeruatam ⊙ meridianam altitudinem obſeruabamus vmbram ⊙.]

I. 18⅓ parts through the new square wooden channel alone, of the parts of which this channel is 1000. [18⅓ partium per ſolum nouum ligneum quadrangularem Canalem, qualium iſte Canalis eſt 1000.]

II. With the smaller old channel placed on the new one mentioned before, the side came out at 1660 parts, of the parts of which the new one was before, and the shadow was observed at about 24½ equal parts. [Impoſito minore veteri Canali prædicto nouo, euadebat latus 1660 partium, qualium nouus antea erat, & obſeruabatur vmbra 24½ partium æqualium fere.]

III. The shadow of the Sun was observed through the smaller channel mentioned before, on its own, at 18⅓ parts, of the parts of which the smaller channel itself is 1000. [Obſeruabatur vmbra ⊙ per prædictum minorem Canalem ſeorſim 18⅓ partium, qualium ipſe minor Canalis exiſtit 1000.]

It was clear enough. [Erat ſatis ſerenum.]

In the afternoon the Sun was observed in the same way as before. [Poſt meridiem ſimili modo vt antea obſeruabatur ⊙.]

Time on the clock [Tempus Horol.]	Declination of the Sun by the lesser new armillae [Declin. ⊙ per min. nouas Arm.]	Declination of the Sun by the larger subterranean armillae [Decl. ⊙ per Arm. mai. subterr.]	Altitude of the Sun [Altitudo ⊙]	Azimuth of the Sun from the meridian towards the west [Azim. ⊙ a mer. vers. occ.]	Time on the equator, the Sun west [Tempus in æquat., ⊙ occid.]
1h 51⅙m [1 51⅙]	23° 30′	23° 29′ a little more [paulo plus]	23° 30′ 31° 29′	44° 30′	
2h 44½m [2 44½]	23° 29′	23° 29′ a little more [paulo plus]	23° 30½′ 25° 25′	61° 0′	
3h 7m [3 7]		23° 30½′	23° 30′ 42° 34′	67° 0′	
3h 18⅓m [3 18⅓]	23° 29′	23° 29½′	23° 30′ 41° 2′	70° 0′	50 30
3h 45⅙m [3 45⅙]		23° 30⅓′	38° 12⅙′	75° 0′	56 19
4h 6¾m [4 6¾], corrected 4½ [corr. 4½]	23° 30′	23° 30½′	23° 29½′ 35° 19¼′	80° 0′	61 7
4h 12⅓m [4 12⅓]	23° 29′	23° 29⅚′	32° 38¼′	84° 0′	65 40
4h 49⅓m [4 49⅓]		23° 30¾′	23° 29½′ 28° 51′ by the revolving quadrant [per Vol.], 28° 50′ by the steel instrument [per Chal.]	90° 0′	73 11
5h 19m [5 19]		23° 31¼′	23° 30′ 25° 0′		79 41
5h 33¾m [5 33¾]	23° 29½′	23° 30′	23° 30⅔′ 23° 0′		
5h 47⅚m [5 47⅚]	23° 30′	23° 30′	23° 30⅓′ 21° 0′		
6h 9⅚m [6 9⅚]	23° 29½′	23° 30′	23° 30⅙′ 18° 0′		
6h 24½m [6 24½]	23° 30′ twice [bis]	23° 30′	23° 30½′ 16° 0′		
6h 32m [6 32]	23° 30′ twice [bis]	23° 30⅙′	23° 30¾′ 15° 0′		

Time on the clock [Tempus Horol.]	Declination of the Sun by the lesser new armillae [Declin. ⊙ per min. nouas Arm.]	Declination of the Sun by the larger subterranean armillae [Decl. ⊙ per Arm. mai. ſubterr.]	Altitude of the Sun [Altitudo ⊙]	Azimuth of the Sun from the meridian towards the west [Azim. ⊙ a mer. verſ. occ.]	Time on the equator, the Sun west [Tempus in æquat., ⊙ occid.]
6^h 47½^m [6 47½]		23° 31¼′	23° 31½	13° 0′	
6^h 55⅓^m [6 55⅓]	23° 32′	23° 32¼′	23° 32⅙′	12° 0′	
7^h 3⅙^m [7 3⅙]	23° 32′	23° 32¼′	23° 32⅔′	11° 0′	116° 8′
7^h 11⅙^m [7 11⅙]	23° 33′	23° 33½′	23° 32½′	10° 0′	117° 40′
7^h 19⅛^m [7 19⅛]	23° 32′	23° 34′	23° 32⅚′	9° 0′	119° 19′
7^h 27⅓^m [7 27⅓]	23° 34′	23° 34½′	23° 33′	8° 0′	120° 55′
7^h 36^m [7 36]	23° 34½′	23° 34⅔′	23° 34′	7° 0′	122° 35′
7^h 44⅔^m [7 44⅔]	23° 35½′ twice [bis]	23° 34⅓′	23° 34⅔′	6° 0′	124° 20′
7^h 53½^m [7 53½]	23° 36′	23° 35½′	23° 36′	5° 0′	126° 15′
8^h 2½^m [8 2½]	23° 38½′	23° 39′	23° 38′	4° 0′	128° 0′
8^h 11⅔^m [8 11⅔]	23° 43′ twice [bis]			3° 0′	129° 53′

The observations are here fitted to whole degrees of altitude, the azimuths being left out, so that the solar refractions can be obtained the better by this means and adapted thereafter to whole degrees. [Obſeruationes hic ad integros gradus altitudinum applicantur omißis azimuthis, vt refractiones ſolares eo melius haberi & integris deinceps gradibus adaptari poßint.]

13 JUNE [DIE 13 JUNIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 35⅙′
by the revolving quadrant [per Volub.]	57° 35½′
by the mural quadrant [per Mural.]	57° 36′
	57° 36′
Declination [Declin.]	23° 31′
by the larger armillae [per maiores Armillas]	23° 30¾′
Declination [Declin.]	23° 30′
by the lesser armillae [per min. Armill.]	23° 30½′

It was not clear enough. [Non fuit ſatis ſerenum.]

14 June [DIE 14 JUNIJ.]

The clock was set right. [Horologium rectificabatur.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 35′
by the revolving quadrant [per Volub.]	57° 34⅛′
by the mural quadrant [per Muralem]	57° 35′
	57° 35′
Declination of the Sun by the equatorial armillae, with both pinnules [Declin. ⊙ per Æquatorias Armillas, vtroque pinn.]	23° 30′
Declination of the Sun [Declin. ⊙]	23° 29¾′
by the lesser armillae [per min. Armill.]	23° 29½′

The shadow of the Sun was observed at this noon. [Vmbra ⊙ obſeruabatur hoc meridie.]

I. Through the new larger wooden channel, 18⅜ parts. [Per nouum maiorem ligneum Canalem 18⅜ partium.]

II. Through the said smaller wooden one, with the smaller inserted, the shadow was observed at $24\frac{5}{12}$ parts. [Per minorem dictum ligneum inſerto minori obſeruabatur vmbra $24\frac{5}{12}$ partium.]

III. Through the smaller channel, however, the shadow was taken at 18⅖ parts. [Per minorem autem Canalem accipiebatur vmbra 18⅖ partium.]

It was clear enough. [Erat ſatis ſerenum.]

15 June [DIE 15 JUNIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 33⅓′
by the revolving quadrant [per Volub.]	57° 33⅓′
by the mural quadrant [per Mural.]	57° 33⅙′
	57° 33¼′
Declination of the Sun [Decl. ⊙]	23° 28⅙′
by the largest armillae [per max. Armill.]	23° 28⅙′
Declination by the new armillae [Declin. per nouas Armill.]	23° 28′
	a little more [paulo plus]
	23° 28′

It was moderately clear. [Erat mediocriter ſerenum.]

17 June [DIE 17 JUNIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 30⅓′
by the revolving quadrant [per Volub.]	57° 30¼′
by the mural quadrant [per Mural.]	57° 30½′
	57° 31′
Declination [Declin.]	23° 26′
by the larger armillae [per Armillas maiores]	23° 25½′

It was not clear enough. [Non erat ſatis ſerenum.]

19 June [DIE 19 JUNIJ.]

Shortly before M. Declination of the Sun [Paulo ante M. Declin. ⊙]	23° 21′
by the larger armillae [per Armillas maiores]	23° 21¼′

by the new armillae [per Armillas nouas]	23° 21′
	23° 21½′

The altitude of the Sun could not be observed by the quadrants at noon, because the air was misty and less purified. [Altitudo ⊙ per Quadrantes obſeruari non poterat in meridie, quia aër nebuloſus & minus defecatus extitit.]

21 June [DIE 21 JUNIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 18½′
by the revolving quadrant [per Volub.]	57° 19′
Declination of the Sun [Declin. ⊙]	23° 13½′
by the larger armillae [per Armill. maiores]	23° 13½′
by the lesser armillae [per minor. Armill.]	23° 13′
	23° 13′

It was moderately clear. [Erat mediocriter ſerenum.]

26 June [DIE 26 JUNIJ.]

The Sun was observed at noon. [Obſeruabatur ⊙ in meridie.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	56° 54⅙′
by the revolving quadrant [per Volub.]	56° 53⅔′
Declination [Declin.]	22° 49⅙′
by the larger armillae [per maior. Armill.]	22° 49⅔′
By the lesser armillae, with both pinnules [Per min. Arm., vtroque pinn.]	22° 48½′

It was clear enough, but the air was unsteady. [Erat ſatis ſerenum, ſed aër intranquillus.]

28 JUNE [DIE 28 JUNIJ.]

The Sun was observed at noon. [Obſeruabatur ⊙ in meridie.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	56° 42′
by the revolving quadrant [per Volub.]	56° 41¾′
Declination of the Sun [Declin. ⊙]	22° 37½′
by the larger armillae [per maior. Armill.]	22° 38′

The clock was corrected. [Horologium corrigebatur.]
It was moderately clear. [Erat mediocriter ſerenum.]

10 JULY [DIE 10 JULIJ.]

In the afternoon an eclipse of the Sun was observed, as follows. [Poſt meridiem obſeruabatur ⊙ Eclipſis vt ſequitur.]

Shortly before the eclipse the clock was corrected to the observation of the Sun through the pinnules on the equator, because the shadow was not sufficiently in view, since the Sun's rays were shining through passing small clouds. [Horologium paulo ante Eclipſin corrigebatur ad ⊙ obſeruationem per pinnacidia in Æquatore, quia non erat vmbra ſatis in conſpectu, propterea quod radij solares per intercurrentes nubeculas transparebant.]

N.B. The Sun had entered the shadow, or the eclipse, about two minutes of time on the clock before (as it seemed to some) it was observed with the instruments. [N. B. Sol erat vmbram ſiue Eclipſin ingreßus ante duo fere minuta temporis in horologio (vt quibusdam videbatur) antequam obſeruaretur inſtrumentis.]

	Time on the clock [Tempus in horologio]		
I.	2^h $53\frac{5}{6}^m$ [H. 2 53⅚′]	The Sun was west [Erat ⊙ occid.]	43 25

	Time on the clock [Tempus in horologio]		
	2^h 52⅔^m [2 52⅔]	corrected [corr.] Altitude of the upper limb of the Sun by the revolving quadrant [Altit. ſup. limbi ⊙ per Volub.]	42° 37′
		by the steel instrument [per Chalyb.]	42° 36′
II.	3^h 4⅚^m [3 4⅚]	The Sun was west on the equator [Erat ⊙ in æquatore occid.]	46 0
		Altitude of the upper limb of the Sun by the revolving quadrant [Altit. ⊙ ſup. limbi per Volub.]	41° 2′
		by the steel instrument [per Chalyb.]	41° 16′
III.	3^h 15½^m [3 15½]	the Sun, west [⊙ occid.]	48 34
		Altitude of the lower limb of the Sun by the revolving quadrant [Alt. inf. limbi ⊙ per Volub.]	39° 37′
		by the steel instrument [per Chalyb.]	39° 37′
		Eclipsed a little beyond the sixth part of the diameter. [Eclipſatus paulo vltra ſextam partem diametri.]	
IIII.	3^h 27⅔^m [3 27⅔]	the Sun, west [⊙ occid.]	51 22
		Altitude of the lower limb of the Sun by the steel instrument [Altit. infer. limbi ⊙ per Chalyb.]	38° 19′
		by the revolving quadrant [per Volub.]	38° 18′
		About a fifth part obscured.[1] [Quinta quaſi pars obſcurata[1].]	
V.	3^h 39^m [3 39]	The Sun was west [Erat ⊙ occid.]	54 5
		Altitude of the lower limb by the revolving quadrant [Alt. infer. limbi per Volub.]	36° 45′
		by the steel instrument [per Chalyb.]	36° 44⅓′
		Here the Sun seemed to be struggling out of the eclipse, and almost a sixth part to remain in the shadow. [Hic videbatur ⊙ ex eclipſi eluctari & ſexta ferme pars in vmbra ſupereße.]	
VI.	3^h 51⅙^m [3 51⅙]	the Sun, west [⊙ occid.]	57 0½
		Altitude of the lower limb of the Sun by the revolving quadrant [Altit. infer. limbi ⊙ per Vol.]	35° 10′
		by the steel instrument [per Chalyb.]	35° 10½′
		Azimuth of the eastern limb [Orientalis limbi Azimuth]	73° 53′
		About an eighth part still obscured, and the horns appeared balanced in the vertical circle. [Octaua quaſi pars adhuc obſcurata, & cornua videbantur in circulo verticali æquilibria.]	

Diagram. A small circle in outline, the Sun's disc, set at the left of group I, with a small dark notch at the upper right of the rim marking the eclipsed part.

• Below the circle: I.

Diagram. The same circle at the left of group II, with a small hatched lens-shaped segment cut off at the upper right of the rim; a small dot stands inside the circle near its centre.

• Below the circle: II.

Diagram. The same circle at the left of group III, with a larger hatched segment cut off at the upper right of the rim.

• Below the circle: III.

Diagram. The same circle at the left of group IIII, with a larger hatched segment running from the top of the rim round to the right; a small dot stands inside the circle near its centre.

• Below the circle: IIII.

Diagram. The same circle at the left of group V, with a hatched segment across the top of the rim, a little to the right of the vertical.

• Below the circle: V.

Diagram. The same circle at the left of group VI, with a thin hatched segment at the top of the rim.

• Below the circle: VI.

[1] Codex V. adds in another hand: »or rather a sixth part, which I myself remember. D. T. was in Copenhagen«. [Codex V. addit alia manu: »vel potius ſexta pars quod ipſe memini. D. T. fuit Hafniæ«.]

VII.	4^h $2\frac{1}{4}^m$ [the Sun, west [⊙ occid.] $2\frac{1}{4}$]	59 40
	Altitude of the lower limb of the Sun by the revolving quadrant [Altit. inf. limbi ⊙ per Volub.]	33° 48′
	by the steel instrument [per Chalyb.]	33° 47′
	A tenth part in the shadow, and the western horn appeared to be a little higher with respect to the vertical circle. [Decima pars in vmbra & cornu occidentale apparebat paulo eleuatius eße reſpectu circuli verticalis.]	
VIII.	4^h $10\frac{2}{3}^m$ [the Sun, west [⊙ occid.] $10\frac{2}{3}$]	61 40
	Altitude of the lower limb of the Sun by the revolving quadrant [Altit. infer. limbi ⊙ per Volub.]	32° 40′
	An eleventh part, a little more, was still labouring in the shadow. [Vndecima pars paulo plus laborabat adhuc in vmbra.]	
IX.	4^h $15\frac{5}{6}^m$ [the Sun, west [⊙ occid.] $15\frac{5}{6}$]	63 10
	Altitude of the lower limb by the revolving quadrant [Altit. infer. limbi per Volub.]	31° 52′
	4^h $23\frac{1}{2}^m$ [the Sun, west [⊙ occid.] $23\frac{1}{2}$]	64 42
	Altitude of the lower limb by the revolving quadrant [Altit. infer. limbi per Volub.]	30° 58½′
	by the steel instrument [per Chalyb.]	30° 58½′
	Here no more of the shadow was seen, but the Sun was seen wholly round again, and that with the careful attention of everyone. [Hic nihil vmbræ amplius videbatur, ſed ⊙ iterum integre rotundus viſus eſt, idque diligenti omnium animaduerſione.]	

Diagram. A small circle in outline, the Sun's disc, set at the right of group VII, with a dark hatched segment cut off at the top of the rim, lying a little to the left of the vertical.

• Below the circle: VII.

Diagram. The same circle at the right of group VIII, with a thinner dark segment at the upper left of the rim; a small dot stands inside the circle near the top, right of the vertical.

• Below the circle: VIII.

Diagram. The same circle at the right of group IX, with a thin dark sliver at the top of the rim, a little to the left of the vertical.

• Below the circle: IX.

At 4^h 31^m [H. 4 31′] the Sun was west on the equator 66 18 by the shadow, for correcting the clock. Therefore the clock was running faster than right by $5¾^m$. [H. 4 31′ erat ⊙ in æquatore occid. 66 18 per vmbram, pro corrigendo horologio. Ergo horologium mouebatur celerius iuſto 5¾′.]

The size of the solar eclipse described above was made out through paper slits and sometimes, when the glare did not trouble the eyes much, separately by direct sight of the eye, without the reed. For the shadow was not sufficient. Therefore almost all the observations had to be made through the slits of the pinnules on the instruments: for the Sun was wrapped in rather sparse small clouds during the whole time of its duration, so that it was not sufficiently open to observations by the shadow. Otherwise, however, the increase and decrease of the eclipse from the beginning right up to the end (as long as we observed with the instruments) could be made out and observed quite well, and the care that ought to be applied was neglected at no point. [Quantitas Deliquij Solaris ſupraſcripti per chartaceas rimulas, & interdum, quando irradiatio non multum oculos offendebat, ſeorſim oculari intuitu discernebatur, absque arundine. Nam vmbra non erat ſufficiens. Idcirco omnes ferme obſeruationes per pinnacidiorum in inſtrumentis rimulas fieri oportebat: Ita enim ⊙ rariuſculis nubeculis toto durationis tempore inuoluebatur, vt obſeruationibus per vmbram non ſatis pateret. Alias autem Eclipſeos incrementum &decrementum ab initio vsque ad finem (quamdiu inſtrumentis obſeruauimus) ſatis bene diſcerni & obſeruari potuit, nec diligentia, quæ adhiberi debebat, vllo in loco neglecta eſt.]

Examination of the eclipse of the Sun against our restoration of the Moon made in the year 97¹. [Examinatio eclipſis ⊙ ad reſtitutionem noſtram ☾ factam A° 97¹.]

The middle of this eclipse occurred at [Medium huius deliquij contigit]	3^h 35^m [H. 3 M. 35]
Corresponding place of the Sun [Locus ⊙ conueniens]	27° 1⅙′ ♋
True longitude of the Moon [Longitudo ☾ vera]	27° 19′ ♋
True latitude [Latitudo vera]	1° 2½′ north [B.]
Altitude about [Altitudo quaſi]	37°
Equated anomaly of the Moon [Anomalia ☾ coæquata]	265⅚°
Resp. parallax of altitude of the Moon from the Sun [Reſp. Parallaxis alt. ☾ a ⊙]	46⅙′
Resp. parallax of longitude [Reſp. Parall. longit.]	17
of latitude [latit.]	42
Semidiameter of the Sun [Semid. ⊙]	15′
Semidiameter of the Moon [Semid. ☾]	13′

Sum of the semidiameters [Agg. ſemid.]	28′

[1] From codex V. [E codice V.]

12 JULY [DIE 12 JULIJ.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	54° 32¼′
by the revolving quadrant [per Volub.]	54° 32⅙′
Declination by the larger armillae [Declin. per Armill. maiores]	20° 27½′
	20° 27′

It was very clear. [Erat bene ſerenum.]

17 JULY [DIE 17 JULIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	54° 20½′
by the revolving quadrant [per Volub.]	54° 21⅓′
Declination of the Sun [Declin. ⊙]	20° 15¾′
by the larger armillae [per maiores Armillas]	20° 16′

It was moderately clear. [Erat mediocriter ſerenum.]

1 AUGUST [DIE 1 AUGUSTI.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	49° 34⅓′
by the steel instrument [per Chalyb.]	49° 34¾′
Declination of the Sun [Declin. ⊙]	15° 29⅔′
by the equatorial armillae [per Armillas æquatorias]	15° 29¾′

It was clear enough. [Erat ſatis ſerenum.]

4 AUGUST [DIE 4 AUGUSTI.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the revolving quadrant [per Volub.]	48° 40⅚′

or rather [vel potius]	11/12
by the steel instrument [per Chalyb.]	48° 40′
Declination of the Sun [Declin. ⊙]	14° 34¾′
	14° 34⅚′

The clock was corrected. [Horol. corrigebatur.]
It was clear enough. [Erat ſatis ſerenum.]

7 August [DIE 7 AUGUSTI.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	47° 44′
by the revolving quadrant [per Volub.]	47° 44 1/12′
Declination of the Sun [Declin. ⊙]	13° 39¼′
by the armillae [per Armill.]	13° 39⅓′

It was clear enough. [Erat ſatis ſerenum.]

26 August [DIE 26 AUGUSTI.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the revolving quadrant [per Volub.]	41° 6½′
by the steel instrument [per Chalyb.]	41° 7¼′
Declination [Declin.]	7° 3′
by the largest armillae [per maximas Armillas]	7° 4′

It was very clear. [Erat bene ſerenum.]

29 August [DIE 29 AUGUSTI.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	40° 0′
by the revolving quadrant [per Volub.]	40° 0′
by the mural quadrant [per Mural.]	40° 0′
with the other pinnule [alt. pin.]	40° 0½′
Declination of the Sun [Declin. ⊙]	5° 54⅓′
by the equatorial armillae [per Armill. æquat.]	5° 54¼′

The clock was corrected. [Horologium corrigebatur.]
It was moderately clear. [Erat mediocriter ſerenum.]

7 September [DIE 7 SEPTEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	36° 33¼′
by the revolving quadrant [per Volub.]	36° 33′ 25″
by the mural quadrant [per Mural.]	36° 33¼′
	36° 33½′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	2° 27⅙′
largest [maximas]	2° 27⅔′

The clock was corrected. [Horol. corrigebatur.]

It was clear enough. [Erat ſatis ſerenum.]

For the place of the Sun at noon, from the observations. [Pro ⊙lis loco in meridie ex obſeruationibus.]

Apparent altitude [Altitudo viſa]	36° 33′ 20″
Refraction corresponding to the altitude [Refract. congruens alt.]	27
Parallax [Greek: Παραλλαξις (parallaxis, "parallax")] of the Sun [⊙lis]	2 24
True altitude of the Sun [Vera alt. ⊙lis]	36° 35′ 17″
Altitude of the equator [Alt. æquatoris]	34° 5′ 30″
True declination of the Sun [Vera ⊙lis Decl.]	2° 29′ 47″ north [B.]
Resp. longitude [Reſp. longitudo]	23° 44′ 5″ ♍
Comparison of the place of the Sun found with the tables. [Collatio inuenti ⊙lis loci cum tabulis.]	
Ours [Noſtris]	23 45 56
Copernicus's [Copernici]	23 40 0
The Alphonsine [Alphonſinis]	23 27 30

8 September [DIE 8 SEPTEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	36° 9½′
by the revolving quadrant [per Volub.]	36° 9½′
by the mural quadrant [per Mural.]	36° 9½′
	36° 10′
Declination of the Sun [Declin. ⊙]	2° 4′ north [B.]
by the larger armillae [per Armill. maior.]	2° 4⅓′

The sky was quite clear. [Erat ſatis bene ſerenum.]

21 September [DIE 21 SEPTEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	31° 4¾′
by the revolving quadrant [per Volub.]	31° 5⅙′

Declination [Declin.]	3° 1′
by the largest armillae [per Armill. max.]	3° 0⅝′

The clock was corrected. [Horologium corrigebatur.]
It was moderately clear. [Erat mediocriter ſerenum.]

26 September [DIE 26 SEPTEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the revolving quadrant [per Volub.]	29° 8′
by the steel instrument [per Chalyb.]	29° 7¾′
Declination of the Sun [Declin. ⊙]	4° 58′
by the armillae [per Armillas]	4° 57⅓′

It was very clear. [Erat bene ſerenum.]

27 September [DIE 27 SEPTEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the revolving quadrant [per Volub.]	28° 45⅝′
by the steel instrument [per Chalyb.]	28° 44⅝′
Declination of the Sun [Declin. ⊙]	5° 20′
by the largest armillae [per Armillas maximas]	5° 20⅙′

2 October [DIE 2 OCTOBRIS.]

Meridian altitude [Altit. merid.]	
by the revolving quadrant [per Volub.]	26° 51⅔′
Declination [Declin.]	7° 14½′ } *
by the larger armillae [per Armill. maiores]	7° 14¾′ } *

*The Sun had gone a little past the meridian. [*Erat ⊙ paululum meridianum prætergreßus.] It was very clear. [Erat bene ſerenum.]

9 October [DIE 9 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	24° 14⅔′
by the revolving quadrant [per Volub.]	24° 15′
Declination of the Sun [Declin. ⊙]	9° 50½′
by the larger armillae [per Armillas maiores]	9° 50¾′

It was very clear. [Erat bene ſerenum.]

12 October [DIE 12 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	23° 9⅚′
by the revolving quadrant [per Volub.]	23° 11½′
Declination [Declin.]	10° 56½′
by the armillae [per Armill.]	10° 56⅓′
by the lesser armillae [per minores Armillas] with one pinnule [vno pinnacidio]	10° 57′

It was clear enough. [Erat ſatis ſerenum.]
The clock was corrected. [Horol. corrigebatur.]

22 October [DIE 22 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	19° 46′
by the revolving quadrant [per Volub.]	19° 45¾′
Declination of the Sun [Declin. ⊙]	14° 20′
by the largest armillae [per Armillas maximas]	14° 20⅙′

It was not clear enough. [Non erat ſatis ſerenum.]

4 November [DIE 4 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	15° 56½′
by the revolving quadrant [per Volub.]	15° 56⅚′
Declination of the Sun [Declin. ⊙]	18° 9′
by the largest armillae [per Armillas maximas]	18° 9½′

The sky was quite clear. [Erat ſatis bene ſerenum.]

11 November [DIE 11 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	14° 14½′
by the revolving quadrant [per Volub.]	14° 15′
Declination of the Sun [Declin. ⊙]	19° 52′
by the armillae [per Armillas]	19° 51⅔′

The air was not clear enough. [Non erat aër ſatis defecatus.]

12 November [DIE 12 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	14° 1½′
by the revolving quadrant [per Volub.]	14° 3′
Declination [Declin.]	20° 4⅚′
by the armillae [per Armillas]	20° 5′

A little later the shadow of the Sun was observed by the larger quadrangular wooden channel[1]: 19 0, barely perceptibly more. [Paulo poſt obſeruabatur vmbra ⊙ per Canalem quadrangularem ligneum maiorem[1] 19 0 vix perceptibiliter plus.]

By the lesser channel [Per Canalem minorem]	18⅔
By the sum of both channels [Per aggregatum vtriusque Canalis]	25$\frac{1}{12}$

And here it was not clear enough. [Atque hic non erat ſatis ſerenum.]

27 November [DIE 27 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	11° 31⅓′
Declination by the larger armillae [Declin. per Armillas maiores]	22° 34′
	22° 34½′

It was not very clear. [Non fuit bene ſerenum.]

[1] It is written in the margin: "For the proportions of the channels, see above." [Adſcriptum eſt in margine: »Proportiones canalium vide ſuperius«.]

Immediately afterwards we observed the shadow of the Sun. [Statim poſt obſeruabamus ⊙ vmbram.]

I. By the large new channel divided into 1000 equal parts, 19⅕. [Per magnum nouum Canalem diuiſum in 1000 æquales partes 19⅕.] By the old and lesser channel, 18 52, good. [Per veterem ac minorem Canalem 18 52 bonæ]

II. By the same new one, with the old wooden channel inserted, which together made up 1660 parts, 24¾. [Per eundem nouum inſerto veteri ligneo Canali, qui ſimul conſtituebant 1660 partes 24¾]

It is not reliable, because small clouds were passing across here. [Non eſt tuta quia hic nubeculæ intercurrebant.]

5 December [DIE 5 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	10° 52′ about [fere]
by the revolving quadrant [per Volub.]	10° 52⅓′
Declination [Declin.]	23° 14⅔′
by the larger armillae [per maiores Armill.]	23° 14¾′

It was very clear. [Erat bene ſerenum.]

A little later the diameter of the Sun was observed by means of the shadow. [Obſeruabatur paulo poſt diameter ⊙ ratione vmbræ.]

I. By the larger new channel; and the shadow came out at about 19 parts, twice. [Per maiorem Canalem nouum, & prodibat vmbra part. 19 fere, bis.]

II. By the sum of both channels, in the usual way, the shadow came out 25 0; 25⅙ repeated. [Per vtriusque Canalis aggregatum more conſueto proueniebat vmbra 25 0 / 25⅙ rep.]

Here too it was clear enough and calm. [Etiam hic ſatis fuit ſerenum & tranquillum.]

6 December [DIE 6 DECEMBRIS.]

At noon the clock was corrected. The altitude and declination of the Sun were not observed, because it was not clear enough. [In meridie corrigebatur horologium. Altitudo & declinatio ⊙ non obſeruabantur, quia non ſatis erat ſerenum.]

7 December [DIE 7 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	10° 46¾′
by the revolving quadrant [per Volub.]	10° 47⅓′
Declination [Declin.]	23° 19½′
by the larger armillae [per maiores armillas]	23° 20′

It was not clear enough, and the air was turbulent. [Non fuit ſatis ſerenum & aër turbulentus.]

9 December [DIE 9 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	10° 43¼′
by the revolving quadrant [per Volub.]	10° 44′
Declination of the Sun [Declin. ⊙]	23° 24′
by the larger armillae [per Armillas maiores]	23° 23⅔′

The shadow was barely seen. [Vmbra parum conſpiciebatur.]
It was not clear enough. [Non erat ſatis ſerenum.]

16 December [DIE 16 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	10° 44′
by the revolving quadrant [per Volub.]	10° 44⅙′
Declination [Decl.]	23° 21⅙′
by the armillae [per Armillas]	23° 22′

The air was not clear enough. The size of the shadow by the larger wooden channel, $19\frac{1}{12}$. [Non erat aër ſatis defecatus. Magnitudo vmbræ per maiorem canalem ligneum $19\frac{1}{12}$.]

26 December [DIE 26 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	11° 27½′
by the revolving quadrant [per Volub.]	11° 28′
Declination [Declin.]	22° 37½′
by the armillae [per Armillas]	22° 38′

It was moderately well clear. [Erat mediocriter bene ſerenum.]

Afterwards, at 2^h after noon [hora 2 p. m.], the shadow of the Sun was observed by the larger wooden one, 19⅙, twice. But it was not to be trusted enough. [Poſtea hora 2 p. m. obſeruabatur vmbra ☉lis per maiorem ligneum 19⅙ bis. Sed non erat ſatis fidendum.]

Observations of the Moon [OBSERUATIONES LUNÆ.]

1 January [DIE 1 JANUARIJ.]

The clock was corrected this evening at 7^h 37^m [hora 7 Minuto 37]; at that time it was running slower than correct by 1^h $51⅔^m$ [1 hor. M. 51⅔], an error it had gathered since noon of the 30th day of the past month of December. [Horologium hoc veſpere corrigebatur hora 7 Minuto 37, quo tempore ibat iuſto tardius 1 hor. M. 51⅔, qui error illi acceßerat a meridie 30^{mi} diej præterlapſi menſis Decembris.]

1^h 36^m [H. 1 36′]	Altitude of the upper limb of the Moon at the meridian [Altit. ſuper. limbi ☾ in meridie]	
	by the steel instrument [per Chalyb.]	51° 13¾′
	by the revolving quadrant [per Volub.]	51° 10⅝′
1^h 43^m 25^s [1 43′ 25″]	Declination of the lower horn of the Moon [Decl. inf. cornu ☾]	16° 35′
	of the upper [ſuperioris]	17° 4½′

5 January, morning [DIE 5 JANUARIJ, MANE.]

On this day Spica ♍ crossed the meridian at 5^h 17^m 32^s [H. 5 M. 17 S. 32]. [Spica ♍ hoc die tranſibat meridianum H. 5 M. 17 S. 32.]

At 6^h 13^m [H. 6 M. 13] the Moon stood at about 90°. [H. 6 M. 13 verſabatur ☾ circa 90 g.]

The Moon was observed near the nonagesimal, as follows. [Obſeruabatur ☾ circa nonageſimum vt ſequitur.]

Time by the clock [Tempus horol.]	Distance between the eastern limb of the Moon and the northern scale-pan of ♎ [Diſt. inter or. limb. ☾ & lancem Bor. ♎]	Declination of the upper and lower horn [Declin. ſup. inf. cornu]	Altitude of the lower horn [Altit. infer. cornu]	For correcting the clock: Spica, west [Pro cor. horol. Spica occ.]
6^h 10^m [6 10] }	} 46° 35⅙′	5° 4′	29° 48′	21 31
corrected [cor.]	}	4° 37½′		
6^h $43⅔^m$ [6 43⅔] }				
6^h $15⅔^m$ [6 15⅔]		5° 1½′	29° 22′	22 56
		4° 38⅔′		

Time by the clock [Tempus horol.]	Distance between the eastern limb of the Moon and the northern scale-pan of ♎ [Diſt. inter or. limb. ☾ & lancem Bor. ♎]	Declination of the upper and lower horn [Declin. ſup. inf. cornu]	Altitude of the lower horn [Altit. infer. cornu]	For correcting the clock: Spica, west [Pro cor. horol. Spica occ.]
6^h $19\frac{5}{6}^m$ [6 19⅚]	46° 32¾′		28° 51′	24 4
6^h $22\frac{2}{3}^m$ [6 22⅔]	46° 32′	5° 1½′	28° 39′	24 40
		4° 37⅓′ Vice versa [Viceverſa]		
	Between the eastern limb of the Moon and cor ♌ [Inter or. limb. ☾ & cor ♌]			
6^h $28\frac{1}{3}^m$ [6 28⅓] }	} 33° 9⅔′		28° 1′	26 13
corrected [cor.]	}			
7^h $2\frac{1}{3}^m$ [7 2⅓] }				
6^h $34\frac{1}{6}^m$ [6 34⅙]		5° 0′	27° 23′	27 32
		4° 35′		
6^h 37^m [6 37]	33° 14⅙′		27° 3′	28 15
6^h $39\frac{2}{3}^m$ [6 39⅔]	33° 15⅙′	4° 57⅔′	26° 45′	28 58
		4° 30⅔′		
6^h $42\frac{2}{3}^m$ [6 42⅔]	33° 16½′		26° 25′	29 41

For examining the eclipse of the Moon that took place at the end of the previous year: a working for the same day, 5 January, and the hour 6^h 44^m [horam 6 M. 44]. [Pro examinanda Eclipſi ☾ in fine anni ſuperioris facta, Operatio ad eundem diem 5 Januarij & horam 6 M. 44.]

For the longitude and latitude of the Moon's centre. [Pro longitudine & latit. ☾ centri.]

The distance of the Moon's centre from the northern scale-pan of ♎ was then [Diſt. centri ☾ tunc erat a Boreali lance ♎]	46° 49′	
Declination of the Moon's centre, north [Declinatio centri ☾ Bor.]	4° 51′	
Hence the right ascension of the Moon's centre [Hinc Aſcenſio R. centri ☾]	178° 36⅔′	
Resp. longitude [Reſp. Long.]	26° 48⅙′ ♍ }	From our observations. [Ex noſtris obſeruationibus.]
latitude [Latit.]	3° 53′ 35″ north [B.] }	

Vice versa [Viceverſa]
On the same day, 5 January. [Eodem die 5 Januarij.]

At 7^h $2⅓^m$ [H. 7 M. 2⅓] the Moon's centre was distant from cor ♌ [diſtabat centrum ☾ a corde ♌]	32° 56′
Declination of the Moon's centre [Declinatio centri ☾]	4° 47′
Hence the right ascension of the Moon's centre [Hinc Aſc. R. centri ☾]	178° 44′
Resp. longitude [Reſp. Longitudo]	26° 56′ 27″ ♍
latitude [Latitudo]	3° 52′ 50″ north [B.]
From the Prutenic Tables { longitude [Ex Tabulis Prutenicis Long.]	25° 59′ 48″
{ latitude [Lat.]	4° 22′ 35″

From Cyprian, longitude [Ex Cypriano Long.]	25° 40′ 50″
latitude [Lat.]	4° 21′ 0″

For the place of the Moon on 5 January[1]. [Pro loco ☾ ad diem 5 Januarij[1].]

6^h 41^m [H. 6 M. 41]	Distance of the Moon's centre from the northern scale-pan of ♎ [Diſtantia centri ☾ a bor. lance ♎]	46° 49′
	Declination of the Moon's centre [Declin. centri ☾]	4° 50′ north [B.]
	Declination of the northern scale-pan of ♎ [Declin. bor. lanc. ♎]	7° 47′ south [M.]
	Angular difference of ascension [Ang. diff. aſcenſ.]	45° 11′ 35″
	Right ascension of the northern scale-pan [Aſc. R. bor. lanc.]	223° 47′ 10″
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	178° 35′ 35″
7^h 0^m [H. 7 M. 0]	Distance of the Moon from cor ♌ [Diſt. ☾ a corde ♌]	32° 56′
	Declination of the Moon's centre [Declin. centri ☾]	4° 47′ north [B.]
	Declination of cor ♌ [Declin. cordis ♌]	13° 56′
	Angular difference of ascension [Ang. diff. aſcenſ.]	32° 6¾′
	Right ascension of cor ♌ [Aſc. R. cordis ♌]	146° 36′ 5″
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	178° 42¾′
Set 6^h 40^m [Pone H. 6 M. 40]	Right ascension of the Moon [Aſc. R. ☾]	178° 35′
	Declination [Declin.]	4° 50′ north [B.]
	Resp. longitude [Reſp. Longitudo]	26° 46⅙′ ♍
	latitude [Latitudo]	3° 52′ north [B.]

9 February [DIE 9 FEBRUARIJ.]

Observation of the Moon near the beginnings of ♍. [*Obſeruatio* ☾ *iuxta initia* ♍.]

When the Moon was near the beginning of ♍, having passed the meridian by about two degrees, it was observed thus. [Cum ☾ circa initium ♍ eßet, duos circiter gradus meridianum prætergreßa, ita obſeruata eſt.]

The Sun, east [☉ orient.]	Declination, south [Declin. M.]: upper horn [ſuper. cornu]	of the lower [inferioris]
56 32	22° 13′	22° 30′ *doubtful* [*dubia*]
55 8	22° 10′	22° 35′
54 0	22° 10′	22° 34′

At these observations the altitude of the Moon was about 12° [quaſi 12 grad.]. [Erat ad has obſeruationes altitudo ☾ quaſi 12 grad.]

Examination of the preceding observation of the Moon, when it was near the Tropic of ♍, close to the meridian. [*Examinatio præcedentis obſeruationis in ☾ cum eßet iuxta Tropicum ♍ prope meridianum.*]

The time at which the last two observations were completed was very nearly 8^h 22^m after midnight [H. 8 M. 22 proxime P.M.N.]. [*Tempus erat quo vltimæ obſeruationes duæ perficiebantur H. 8 M. 22 proxime P.M.N.*]

According to the ephemerides of Cyprian (for no great precision is required here) the place of the Moon was then in 2⅓° ♍, and its latitude was 1° 45′ S. [p. 1 45′ S.] [*Locus ☾ tunc erat iuxta Ephemerides Cypriani (neque enim hic magna requiritur præciſio) in 2⅓ ♍, Latit. erat p. 1 45′ S.*][7]

Therefore the true declination [*Ergo Declinatio vera*]	*21° 45′*
The observed declination [*Obſeruata declinatio*]	*22° 22′*
Difference of the two [*Differentia vtriusque*]	*0 37*
Refraction at an altitude of 12° [*Refractio in altit. p. 12*]	*0 10*
True parallax of the Moon's centre [*Vera Parallaxis centri ☾*]	*0 47*

[1] From codex V. [E codice V.]

But you can repeat these very things, using a truer and more corrected place of the Moon from the following observation, or from both ephemerides, and with its latitude also corrected according to our restitution. [*Sed potes hæc ipſa repetere, adhibito veriore & emendatiore loco lunæ ex obſeruatione ſequenti, vel vtriſque Ephemeridibus, & correcta etiam latitudine eius iuxta noſtram reſtitutionem.*]

19 February [*DIE 19 FEBRUARIJ.*]

N.B. In the evening, after Mercury, which we had been observing before, had already set, the Moon seemed to be approaching the star Aldebaran. We therefore watched carefully for its visible conjunction with this star; the Moon, however, was not yet exactly half illuminated. The observations made were of this kind. [*N.B. Veſperi*

[7] S. = Septentrionalis (north) in Tycho's usage elsewhere in these logs; not verified against the position here

poſtquam ☿ iam occidißet, quem antea obſeruabamus, videbatur ☾ appropinquare ſtellæ Aldeboram. Ideoque coniunctioni eius viſibili cum hac diligenter attendebamus, erat autem ☾ nondum dimidia illuminata exacte. Quæ autem obſeruabantur, fuerunt eiuſcemodi.]

With the clock corrected by the stars and verified a little before, the Moon seemed to point directly at the star Aldebaran with both horns at 10^h 1½^m [H. 10 M. 1½]. The Lesser Dog was then 23⅓° [p. 23⅓] west, by degrees of the equator; the declination of the lower horn of the Moon was 16° 6⅔′ [p. 16 M. 6⅔], that of the upper 16° 42′ [p. 16 M. 42]; and the altitude of the lower limb of the Moon, the one nearest the horizon, was 24° 39′ [p. 24 M. 39]. [*Horologio per ſtellas correcto & paulo ante verificato, videbatur ☾ vtroque cornu directe ſignare ſtellam Aldeboram H. 10 M. 1½, fuitque tunc Canis minor occid. p. 23⅓ per Æquatoris gradus, eratque Declin. inferior. cornu ☾ p. 16 M. 6⅔, ſuperioris p. 16 M. 42 & Altitudo infer. limbi ☾ Horizonti proximi p. 24 M. 39.*]

The distance of the Moon, as to the horn nearest Aldebaran, was then observed as 0° 34′ [p. 0 M. 34], and this by the Radius; and as far as sight goes the Moon seemed, by its lower horn, to stand off from the said star by about the visible diameter of its own body. Therefore the star was more southerly than the Moon by even something beyond that, though not perceptibly more. [*Diſtantia autem ☾ quoad cornu Aldeboræ proximum tunc obſeruabatur p. 0 M. 34, idque per Radium, videbaturque quoad viſum ☾ per cornu inferius diſtare a dicta ſtella, quaſi ad diametrum viſibilem ſui corporis. Igitur etiam aliquid vltra, non tamen ſenſibiliter plus, ſtella erat luna meridionalior.*]

From this you will be able to examine both parallaxes of the Moon, and to compare its apparent place with the true one. [*Hinc poteris examinare parallaxes ☾ vtraſque, & locum eius viſum conferre cum vero.*]

For verifying the clock time further, this can be done from the observation made a little before, when at 9^h 43⅓^m [H. 9 M. 43⅓] the Lesser Dog was 31° 11′ [p. 31 M. 11] from the meridian towards the west. [*Pro Horologio tempore vlterius verificando poteſt id fieri ex obſeruatione paulo ante facta, quando H. 9 M. 43⅓ Canis minor abfuit a meridiano verſus occaſum p. 31 M. 11.*]

Aldebaran this year ♊ 4° 4½′ [♊ 4 4½′], latitude 5° 31′ south [5 31 M.]; therefore the Moon's longitude 4° 5′ ♊ [4 5 ♊], latitude 4° 40′ south [4 40 M.], at 10^h 1½^m [H. 10 1½]. [*Aldebora hoc anno ♊ 4 4½′, Lat. 5 31 M., ergo ☾ long. 4 5 ♊, lat. 4 40 M., H. 10 1½.*]

22 February [DIE 22 FEBRUARIJ.]

In the evening the Moon was observed near 90. It was a little past the first quadrature [□$^{tu^ram}$ primam], not far from the greatest digression of both epicycles. [Veſperi obſeruabatur ☾ circa 90. Eratque paulo poſt □$^{tu^ram}$ primam non longe a digreßione vtriuſque epicycli maxima.]

N. B. This observation was near the Tropic of ♋ and close to the node, at the least latitude; therefore its parallax is best derived from it, since the latitude raises no doubt. [N. B. Hæc obſeruatio erat circa Tropicum ♋ & prope nodum apud

minimam latitudinem, ideoque eius parallaxis hinc optime eruitur, latitudine nihil ſuggerente dubij.]

Time by the clock [Tempus horol.]	Distance of the western limb of the Moon from Aldebaran [Diſt. occid. limbi ☾ ab Aldeb.]	Northern declination of the upper and lower horn [Decl. Bor. ſuper. infer. cornu]	Altitude of the lower horn [Altit. infer. cornu]	For correcting the clock: the bright foot of Orion, east [Pro corr. horol. Luc. pes Or. orient.]
7^h $28\frac{5}{6}^m$ [7 $28\frac{5}{6}$]	38° 37′	21° $39\frac{2}{3}$′		22 47
		21° $6\frac{3}{4}$′		
7^h $33\frac{1}{3}^m$ [7 $33\frac{1}{3}$]	38° $37\frac{3}{4}$′	21° $39\frac{1}{2}$′	54° 55′	23 53
		21° $6\frac{1}{2}$′		
7^h $36\frac{5}{6}^m$ [7 $36\frac{5}{6}$]	38° $38\frac{1}{2}$′	21° $39\frac{5}{6}$′	54° 59′	24 44
	From cor ♌ [A corde ♌]	21° 7′	55° 31′ }	
7^h $41\frac{1}{2}^m$ [7 $41\frac{1}{2}$]	41° $33\frac{1}{4}$′	21° $39\frac{1}{2}$′	upper [ſuper.] }	25 47
		21° $7\frac{1}{6}$′		
7^h $46\frac{2}{3}^m$ [7 $46\frac{2}{3}$]	41° 34′	21° 38′		26 58
		21° 5′		
7^h 54^m [7 54]	41° 32′	21° 39′		The Lesser Dog, east [Can. min. or.]
		21° 7′		7 1
7^h $57\frac{5}{6}^m$ [7 $57\frac{5}{6}$]	41° 30′			
7^h $59\frac{1}{6}^m$ [7 $59\frac{1}{6}$]	The western limb of the Moon was on the meridian [Erat occid. limb. ☾ in mer.]			5 46½

The Moon crossed the meridian with an altitude [☾ *per merid. tranſibat habens altitudinem*]

by the steel instrument, of the upper limb [*per Chalyb. ſup. limbi*]	*55° 44⅚′*
of the lower [*inferioris*]	*55° 10⅚′*
by the revolving quadrant, of the upper [*per Volub. ſuperioris*]	*55° 45′*
of the lower [*inferioris*]	*55° 11½′*

	From Aldebaran [Ab Aldeb.]	Decli-nation [Decl.]	Altitude of the lower limb [Alt. inf. limbi]	The Lesser Dog, east [Can. min. or.]
8 3½	38° 49′	21° 38½′		4 55
		21° $7\frac{1}{6}$′		

		Decli-nation [Decl.]	Altitude of the lower limb [Alt. inf. limbi]	The Lesser Dog, east [Can. min. or.]
8 8⅓	38° 51′	21° 38¾′ 21° 6′	55° 11′	3 41
8 12⅓	38° 51⅚′	21° 39′ 21° 7′	55° 9′	2 38
8 17 } corrected [corr.] 11 }	38° 54′	21° 39⅙′ 21° 6⅚′	55° 7½′	1 39
	The Moon should have been at 90 from the horizon at about 8⅓^{h} [Debuit ☾ eße in 90 ab Horizonte H. 8⅓ circiter]			
	From Regulus [A Regulo]			
8 21⅙ } corrected [corr.] 15½ }	} 41° 21′ }	21° 38′ 21° 7½′	55° 4′	0 39 The Lesser Dog, west [Can. min. occ.]
8 24⅔	41° 20′	21° 39′ 21° 7⅙′	54° 59′	0 18
8 27⅔ } corrected [corr.] 20¾ }	} 41° 19′ }	21° 39′ 21° 7′	54° 55′	0 50
8 30⅙	41° 17′	21° 40′ 21° 6⅓′	54° 51′	1 33
8 32½	41° 16⅙′	21° 41′ 21° 5⅓′	54° 45′	2 7

	The western limb, again from Aldebaran [Occ. limb. iterum ab Aldeb.]			
8 36 } corrected [corr.] 29 }	39° 1⅓′	21° 40⅙′ 21° 7′		54° 40′ 2 53
8 39½	39° 2⅔′	21° 39⅚′ 21° 7′		54° 35′ 3 38
8 42⅓	39° 3⅙′	21° 39′ 21° 5′		54° 30′ 4 22
8 45	39° 4¾′	21° 39⅔′		54° 23′ 5 10
	Again from Regulus [Iterum a Regulo]	21° 6′		
8 49½	41° 10¼′	21° 38½′ 21° 4⅚′		6 8

	The western limb, again from Aldebaran [Occ. limb. iterum ab Aldeb.]		
8 53⅝	41° 9′	Because of the obstruction of the beam the declination was not taken [propt. imped. trabis non accipiebatur decl.]	53° 59′ 7 15
8 58½	41° 8½′		53° 46′ 8 25

N. B. In these observations no perceptible part of the western limb of the Moon was observed in longitude, so that the whole semidiameter can properly be applied. [N. B. In his obſeruationibus nulla ſenſibilis particula de ☾ limbo occidentali obſeruabatur in long., ita vt ſemidiameter integra rite applicari poßit.]

N. B. These observations of the Moon were taken quite carefully this evening, and you can use them safely. I myself was present until the Moon had passed the 90th degree from the rising, and I took care that everything was carried out carefully. [*N. B. Hæ obſeruationes in ☾ erant hac veſpera ſatis diligenter acceptæ, quibus tuto vti potes. Ipſemet aderam vſque dum ☾ 90 gradum ab ortu tranſierat, & quod omnia diligenter adminiſtrarentur, curabam.*]

25 February, evening [DIE 25 FEBRUARIJ, VESPERI.]

The clock was corrected at about the sixth hour by the bright foot of Orion. [Horologium corrigebatur circa horam ſextam ad lucidum pedem Orionis.]

Time by the clock [Tempus Horol.]	Distance between the Moon and the bright foot of ♊ [Diſt. inter ☾ & luc. ped. ♊]	Northern declination, upper and lower [Decl. Bor. ſuper. infer.]	Altitude of the lower limb [Altit. infer. limb.]	For the clock: the Lesser Dog, east [Pro horol. Can. min. or.]
7^h $45½^m$ [7 45½]	47° 42′	16° 38½′	40° 40′	4 15
		16° 7′		
7^h 48^m [7 48]	47° 42½′	16° 38′	40° 55′	3 35
		16° 6′		
7^h $49⅔^m$ [7 49⅔]	47° 43′	16° 38′	41° 7′	3 14
		16° 6⅚′		
		Vice versa [Viceverſa]		
	Distance from the tail of ♌ [Diſt. a cauda ♌]			
7^h $54⅙^m$ [7 54⅙]	27° 24⅔′	16° 38⅙′	41° 37′	2 1
		16° 5⅙′		
7^h $56⅔^m$ [7 56⅔]	27° 24½′	16° 37′	41° 51′	1 25
		16° 6½′		
7^h $59⅓^m$ [7 59⅓]	27° 22′	16° 36½′	42° 9′	0 45

Time by the clock [Tempus Horol.]	Distance between the Moon and the bright foot of ♊ [Dift. inter ☾ & luc. ped. ♊]	Northern declination, upper and lower [Decl. Bor. ſuper. infer.]	Altitude of the lower limb [Altit. infer. limb.]	For the clock: the Lesser Dog, east [Pro horol. Can. min. or.]
		16° 6½′		

21 March [DIE 21 MARTIJ.]

The Moon in the 90th degree at 6^h 11^m [hora 6 M. 11]. [☾ in 90 gradu hora 6 M. 11.]

The clock was corrected at about the middle of the sixth evening hour, and the Moon was observed near the nonagesimal, as follows. [Corrigebatur horologium circa medium ſextæ horæ veſpertinæ, & obſeruabatur circa nonageſimum vt ſequitur.]

5 52⅚	Altitude of the upper horn by the steel instrument [Altit. ſup. cornu per Chal.]	55° 55′
	of the lower horn by the revolving quadrant [inf. cornu per Vol.]	55° 26′
	of the upper by the revolving quadrant [ſuper. per Volub.]	55° 54½′

Then the western limb of the Moon was on the meridian. [Tunc erat occid. limbus ☾ in meridie.]

H. M.	Declination [Declinatio]: lower horn [inf. cornu]	of the upper [ſuperioris]	Altitude of the lower horn by the revolving quadrant [Altit. inf. cornu per Volub.]
6^h 0½^m [6 0½]	21° 21′	21° 49′	55° 24′
6^h 2⅔^m [6 2⅔]	21° 22′	21° 49′	55° 22½′
6^h 4½^m [6 4½]	21° 21⅙′	21° 48⅓′	55° 21′
6^h 7^m [6 7]	21° 22⅙′	21° 50′	55° 19′
6^h 10^m [6 10]	21° 21′	21° 49′	55° 16′
6^h 13^m [6 13]	21° 22⅓′	21° 49′	55° 11′
6^h 14⅚^m [6 14⅚]	21° 20⅚′	21° 49⅚′	
6^h 17⅔^m [6 17⅔]	21° 22⅓′	21° 48⅚′	55° 6′

22 March [DIE 22 MARTIJ.]

At 7^h 33^m [H. 7 M. 33] the Moon was in the 90th. [H. 7 M. 33 Erat ☾ in 90mo.]

7 33½ }	Declination [Declinatio]	20° 59′	21° 30¼′
7 21 corrected[1] [corr.[1]] }	The Lesser Dog, west [Canis minor occid.]		11 13
	Between cor ♌ and the western limb of the Moon [Inter cor ♌ & occ. limb. ☾]		32° 14⅔′
	It was about 4 degrees the meridian[2]. [Erat circiter 4 gradus meridianum[2].]		
7 36½ }	Distance from cor ♌ [Diſt. a corde ♌]		32° 15′
7 24½ corrected [corr.] }	Declination [Declinatio]	20° 58⅔′	21° 30′
	The Lesser Dog, west [Canis minor occid.]		12 9
7 38⅔ }	Declination [Declinatio]	20° 59½′	21° 29′
7 26 45 corrected [corr.] }	Distance [Diſtantia]		32° 14¼′
	The Lesser Dog, west [Canis minor occid.]		12 44
	The altitude of the lower horn of the Moon was then, by the revolving quadrant [Altit. inf. cornu ☾ tunc erat per Volub.]		54° 30′
7 41½ }	Distance [Diſtantia]		32° 14′
7 29⅙ corrected [corr.] }	Declination [Declinatio]	20° 58′	21° 28½′
	The Lesser Dog [Canis minor]		13 21
7 44 }	Declination [Declinatio]	20° 58⅓′	21° 28⅚′
7 31⅙ corrected [corr.] }	Distance [Diſt.]		32° 12⅔′
	The Lesser Dog [Canis minor]		13 58
	Vice versa [Viceverſa]		
7 49⅚ }	Declination [Declinatio]	20° 57⅚′	21° 28½′
7 37 20 corrected [corr.] }	The Lesser Dog [Canis minor]		15 30
	Distance from the bright foot of Erichthonius [Diſt. a luc. pede Erichtonij]		35° 36¼′
7 52⅓	Declination [Declinatio]	20° 57′	21° 28½′
	Distance from the bright foot of Erichthonius [Diſt. a luc. pede Ericht.]		35° 38⅙′
	The heart of Hydra, east [Cor Hydræ orient.]		11 10

[1] The corrected times are found only in codex V. [Tempora correcta in codice V. ſolo reperiuntur.] [2] Thus in the codex. [Sic in codice.]

7 54⅔	Declination [Declinatio]	20° 58⅓′	21° 26⅚′
	Distance [Diſtantia]		35° 37′
	The heart of Hydra [Cor Hydræ]		10 36

7 57 Distance 35° 37½′, the heart of Hydra [Diſt. 35 37½, Cor Hydræ] 9 51

The declination was not taken because of the obstruction of the beam. [Non ſumebatur declinatio propter imped. trab.]

23 April, evening [DIE 23 APRILIS, VESPERI.]

The Moon near the 90th degree. [☾ circa 90 gradum.]

Time by the clock [Tempus horol.]	Distance between cor ♌ and the western limb of the Moon [Diſt. inter cor ♌ & occ. limb. ☾]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the lower horn [Altit. inf. cornu]	Time in the equator: Spica ♍, west [Temp. in æquat. Spica ♍ occ.]
$10^h\ 58^m$ [10 58]	27° 27′	7° 4½′	34° 20′	10 13
		6° 35′		
$11^h\ 2^m\ 50^s$ [11 2 50]	27° 30′	7° 3⅔′	33° 55′	11 23
		6° 35′		
$11^h\ 6^m\ 30^s$ [11 6 30]	27° 29′	7° 1′	33° 32′	12 32
		6° 33⅚′		
$11^h\ 9^m\ 30^s$ [11 9 30]	27° 30′	7° 1¼′	33° 12′	13 9
		6° 32½′		
		Vice versa [Viceverſa]		
	From Spica ♍ [A Spica ♍]			
$11^h\ 13^m\ 30^s$ [11 13 30]	27° 13⅔′	7° 0′	32° 50′	14 18
		6° 33′		
$11^h\ 17^m\ 10^s$ [11 17 10]	27° 13′	6° 59½′	32° 25′	
		6° 32⅔′		
$11^h\ 20^m\ 30^s$ [11 20 30]	27° 12½′	7° 0′	32° 10′	
		6° 33′		

Spica ♍ crossed the meridian at $10^h\ 22⅓^m$ [H. 10 M. 22⅓]. [Spica ♍ tranſibat per meridianum H. 10 M. 22⅓.]

24 April, evening [DIE 24 APRILIS, VESPERI.]

The Moon was observed near 90. [Obſeruabatur ☾ circa 90.]

Time [Tempus]	Between the western limb and cor ♌ [Inter occ. limb. & cor. ♌]	Declination of the upper/lower horn [Declin. ſup./inf. cornu]	Altitude of the lower horn [Altit. inf. cor.]	The head of Ophiuchus, east [Caput Ophiuchi orient.]
12h 8½m [12h 8½m]	39° 44¾′	2° 27′	27° 35′	34 50
		1° 54′		
12h 15½m [12h 15½m]	39° 43′	2° 25′	26° 48′	32 57
		1° 54¾′		
12h 25½m [12h 25½m]	39° 42′1	2° 22½′	25° 38′	30 13½
		Vice versa [Viceverſa]		
	The western limb of the Moon from Spica [Occ. limb. ☾ a Spica]			
12h 35m [12h 35m]	25° 25½′	2° 21′	24° 40′	27 51
12h 38½m [12h 38½m]	25° 25′		24° 12′	26 53
12h 42½m [12h 42½m]	25° 24⅓′	2° 19¼′	23° 43′	25 47
		1° 49′		

The Moon near 90 at 12h 10m [H. 12 M. 10]. [☾ iuxta 90 H. 12 M. 10.]
The air was unsteady. Cloudy. [Aër erat intranquillus. Nubiloſum.]

23 August, evening [DIE 23 AUGUSTI, VESPERI.]

The Moon was observed near the nonagesimal. [Obſeruabatur ☾ circa nonageſimum.]

H. M.	Between the western limb of the Moon and the lower one in the right horn of ♍ [Inter occid. limb. ☾ & inf. in dext. cornu ♍]	Declination of the upper/lower horn [Declin. ſup./inf. cornu]	Altitude of the upper limb [Altit. ſup. limbi]	The Vulture, west [Vult. occid.]
8h 51⅚m [8h 51⅚m]	38° 14′		10° 57′	1 25
8h 57⅚m [8h 57⅚m]		15° 19′	11° 18′	2 50
		15° 51⅔′		
9h 6m [9h 6m]	33° 19⅔′		12° 20′	4 50
9h 13½m [9h 13½m]	33° 20′	15° 16½′	Lower limb [Inf. limb.]	6 42
		15° 51½′	12° 28′	
9h 19½m [9h 19½m]	33° 23½′	Altitude of the upper limb [Alt. ſup. limb.]	13° 25′	

These observations were made between recurring small clouds; the observation vice versa, however, could not be made, because denser clouds had

come up. [Hæc obſeruata ſunt inter nubeculas recurrentes, obſeruatio autem viceverſa fieri non potuit propter ſubortas denſiores nubes.]

16 December [DIE 16 DECEMBRIS.]

The Moon was observed, on account of the coming eclipse, near the 90th degree from the ascendant. [Obſeruabatur ☾ propter futuram Eclipſin, circa 90^{um} gradum ab aſcendente.]

The clock had been corrected a little before. [Horologium paulo antea correctum eſt.]

H. M.	Distance of the western limb of the Moon from Aldebaran [Diſt. occ. limb. ☾ ab Aldebora]	Declination of the upper and lower horn [Decl. ſup. inf. cornu]	Altitude of the upper limb [Altit. ſup. limb.]	The bright star of the jaw of the Whale, east [Luc. mandibulæ Ceti or.]
6^h 46^m [6 46]	16° 17′	13° 0′	41° 2⅓′	
		12° 27′		
6^h $54⅙^m$ [6 54⅙]	16° 15⅙′		41° 46′	22 2
7^h $0¼^m$ [7 0¼] }	16° 11′	13° 2′		20 28
cor- rected [corr.] 0^m [0] }		12° 30½′		
7^h $8⅓^m$ [7 8⅓]	16° 6⅔′			
	From the outermost one of the wing of Pegasus [ab extrem. alæ Peg.]			
7^h $14⅚^m$ [7 14⅚] }	47° 24½′		43° 24′	16 58
cor- rected [corr.] $13⅙^m$ [13⅙] }				
7^h $22⅙^m$ [7 22⅙] }	47° 27′	13° 7½′	43° 59½′	
cor- rected [corr.] $20¾^m$ [20¾] }		12° 34′		
	N. B. Here the Moon was nearest the 90th, according to the calculation. [N. B. Proxima hic ☾ fuit 90mo iuxta calculum.]			
7^h 28^m [7 28]	47° 31′			
7^h $34⅓^m$ [7 34⅓]	47° 35′	13° 10′	44° 47′	

H. M.	Distance of the western limb of the Moon from Aldebaran [Diſt. occ. limb. ☾ ab Aldebora]	Declination of the upper and lower horn [Decl. ſup. inf. cornu]	Altitude of the upper limb [Altit. ſup. limb.]	The bright star of the jaw of the Whale, east [Luc. mandibulæ Ceti or.]
		12° 37½′		
	From Aldebaran [ab Aldebora]			
7^h 41¼^m [7 41¼]	15° 51′		45° 35′	10 31½
7^h 48½$_{12}^m$ [7 48½$_{12}$]	15° 49′			8 50
7^h 53^m [7 53]		...		
		12° 38′	45° 52′	

[1] 52 in codices E and V. [52 in codd. E et V.]

	The upper horn could not be observed here because of the timber. [Superius cornu propter tignum obſeruari hic non poterat.]		
8^h 2⅓^m [8 2⅓]	15° 42′		5 17
8^h 48½^m [8 48½]	The western limb of the Moon on the meridian [Occ. limb. ☾ in Merid.]		west [occid.]
	in the revolving quadrant [in Volub.]		7 3
8^h 50^m [8 50]	Meridian altitude of the horn [Altit. Merid. cornu]		

	upper [ſup.]	lower [infer.]
By the steel quadrant [per Q. Chalyb.]	47° 34′	46° 57½′
By the revolving quadrant [per Volub.]	47° 30′	46° 56′
Declination [Declin.]	13° 26½′	12° 52½′

For the clock: at 8^h 24^m [H. 8 M. 24] the bright star of the jaw of the Whale crossed the meridian, which by the calculation was to cross at 8^h 21^m [H. 8 M. 21]. The clock therefore ran ahead of the true time by three minutes, by which it was corrected. [Pro horologio H. 8 M. 24 pertranſijt Meridianum Lucida mandibulæ Ceti, iuxta calculum tranſitura H. 8 M. 21. Tribus igitur minutis horologium verum tempus antevertit, in quibus corrigebatur.]

19 December [DIE 19 DECEMBRIS.]

With the instruments corrected, and the things prepared that were needed for observing the eclipse of the Moon, we kept watch this whole night, waiting for clear sky around the eclipse itself. But thick, unbroken clouds, with Caecias blowing gently, spread everywhere beneath our hemisphere, shut off from us entirely, for that whole night, the appearances of the Moon and the stars, and

took away every opportunity of observing this eclipse. We noticed only that a little after the second hour after midnight darkness began to come on, first from the failing of the light of the Moon, by which, when full, it otherwise lights up the terrestrial globe, and thickened gradually until the third hour; after the third hour, however, from about the fourth to the fifth, it was very dense, and no less than if it had even been new moon. [Inſtrumentis correctis præparatisque ijs quæ ad Eclipſin ☾ᵉ obſeruandam neceßaria fuerunt, totam hanc noctem aduigilauimus ſerenitatem circa ipſum deliquium expectantes, ſed nubes craßæ contiguæque flante leniter Cæcia hemiſpherio noſtro vndequaque ſubſtratæ ☾ᵉ ſtellarumque apparentias tota illa nocte omnino nobis intercluſerunt, omnemque obſeruandi hanc Eclipſin opportunitatem ademerunt; animadvertimus autem ſolum paulo poſt horam ſecundam p. m. n. tenebras primum ex defectu luminis ☾ᵉ, quo alias terrenum globum plena exiſtens colluſtrat, ingruere & paulatim vſque ad tertiam horam condenſari, poſt tertiam autem horam, circa quartam vſque ad quintam denſas admodum fuiße, nec minores extitiße, quam ſi vel novilunium fuißet.]

21 December [DIE 21 DECEMBRIS.]

After midnight the Moon was observed near the 90th degree, which it would have reached at $2^h\ 43^m$ [H. 2 M. 43] according to the computation. [P. M. N. obſeruabatur ☾ circa 90 gradum quo peruenißet H. 2 M. 43 iuxta ſupputationem.]

At $1^h\ 46¾^m$ [H. 1 M. 46¾] the eastern limb of the Moon crossed the meridian. [H. 1 M. 46¾ Pertranſijt orientalis limbus ☾ per Merid.]

	Meridian altitude of the Moon [Altit. ☾ Merid.]: upper horn [cornu ſuper.]	lower [infer.]
By the steel instrument [Per Chalyb.]	55° 25′	54° 52⅙′
By the revolving quadrant [Per Volub.]	55° 24′	54° 52⅓′
Declination of the centre of the Moon from the altitude [Declin. centri ☾ ex altit.]		21° 3′

Cor ♌, east, 19 4. The clock was corrected, advanced by 8^m [8 M.], by which it was running slower than it should. [Cor ♌ orient. 19 4. Corrigebatur horologium promotum in 8 M. quibus tardius iuſto mouebatur.]

H. M. S.	Distance of the eastern limb from Saturn [Diſt. or. limb. a ♄]	Declination of the Moon [Declinatio ☾]: upper [ſuper.]	lower [infer.]
$1^h\ 58^m\ 5^s$ [1 58 5]	25° 48′	21° 17½′	20° 54½′
$2^h\ 3^m$ [2 3]	25° 50′		
$2^h\ 13⅔^m$ [2 13⅔]	25° 55½′	21° 18′	20° 50′

H. M. S.	Distance of the eastern limb from Saturn [Dist. or. limb. a ♄]	Declination of the Moon [Declinatio ☾]: upper [super.]	lower [infer.]	
	Saturn appeared better here. [♄ hic melius apparebat.]			Altitude of Arcturus by the revolving quadrant [Altit. Arcturi per Vol.]
	From the tail of ♌ [a cauda ♌]			
2h 25m [2 25] } corrected [corr.] 26m [26] }	41° 38⅓′			27° 40¼′
	These were observed on the Moon between close-set small clouds passing before it. [Hæc in ☾ inter contiguas obuerſantes nubeculas obſeruata ſunt.]			Arcturus, east [Arctur. or.]
2h 45m [2 45]				66 45
	From Saturn [a ♄]			
3h 6½m [3 6½]	26° 18′	21° 18′	20° 47½	62 45
	From cor ♌ [a corde ♌]			
3h 9½m [3 9½]	18° 38⅙′			
3h 11⅓m [3 11⅓] } corrected [corr.] 16⅓m [16⅓] }	18° 38⅓′			59 15
3h 16⅕m [3 16⅕]	18° 37½′ }	These two cut off by clouds. [Hæ duæ nubibus interceptæ.]		
3h 19⅓m [3 19⅓]	18° 35′ }			

Places of the Moon [LOCA LUNÆ.]

FOR THE PLACE OF THE MOON ON 19 FEBRUARY, FROM THE OBSERVATION OF ITS CONJUNCTION WITH ALDEBARAN[1] [PRO LOCO ☾ AD DIEM 19 FEBRUARIJ EX ANIMADVERſIONE CONIUNCTIONIS EIUS CUM ALDEBORA[1].]

At 10h 2¼m [H. 10 M. 2¼], the most corrected time, there was a conjunction of the Moon and Aldebaran. [H. 10 M. 2¼ tempus correctiß. fuit ☌ ☾ et Aldeb.]

Of Aldebaran [Aldeboræ] }	Longitude [Longit.]	4° 4′ 20″ ♊
}	Latitude [Latit.]	5° 31′ 0″ south [M.]

Distance of the centre of the Moon from Aldebaran at the same time: 50′ subt. [Diſtantia centri ☾ ab Aldebora eodem tempore 50ᴹ ſubt.]

So the apparent Moon was [Fuit itaque viſa ☾] }	Longitude [Longit.]	4° 4⅓′ ♊
}	Latitude [Latit.]	4° 41′ south [M.]

The true latitude of the Moon from our tables [Vera Latitudo ☾ ex noſtris tabulis]	3° 51′ 47″
The parallax of latitude of the Moon [Parall. latit. ☾]	49 13

[1] From codex V. For the place of the Moon on 5 January see above, p. 119. [E codice V. Pro loco lunæ die 5 Januarii vide ſupra p. 119.]

For the parallax of the Moon from the Prutenic Tables in the circle of altitude. [Pro Parallaxi ☾ ex Tabulis Prutenicis in circulo altitudinis.]

Observed altitude of the Moon [Altitudo ☾ obſeruata]	26° 0′ approximately [ἐν πλάτει]
Therefore the true altitude [Ergo vera altitudo]	26° 0′
And the double distance from the vertex [Et duplex diſtantia a vertice]	128° 0′
Double longitude of the Moon [Duplex longitudo ☾]	158° 0′
Equated anomaly of the Moon [Anomalia ☾ coæquata]	234 0
Resp. parallax in the circle of altitude [Reſp. Parallaxis in circulo alt.]	56 14″
Parallax of declination [Parallaxis declinationis]	34 35
of right ascension [Aſcenſionis R.]	46 24
of longitude [Longitudinis]	41 23
of latitude [Latitudinis]	39 48
Observed parallax of latitude [Obſeruata parallaxis latitud.]	49 13
Difference [Differentia]	9 25

Yet in these no account was taken of refraction. [Nec tamen in his habita eſt ratio refractionis.]

CALCULATION FOR THE PLACE OF THE MOON FROM THE OBSERVATIONS RECORDED FOR 22 FEBRUARY[1] [CALCULUS PRO LOCO ☾ EX OBSERVATIONIBUS DIEI 22 FEBRUARIJ ADSCRIPTIS[1].]

8^h 29^m [H. 8 M. 29]	Distance between the centre of the Moon and Aldebaran [Diſtantia inter centrum ☾ et Aldeb.]	39° 17⅓′
	Declination of the centre [Declin. centri]	21° 23′
	The diameter of the Moon was taken as [Diameter ☾ aßumta eſt]	34′
8^h 15⅓^m [H. 8 M. 15⅓]	Distance from cor ♌ [Diſtantia a corde ♌]	41° 4′
	Right ascension of Aldebaran [Aſc. R. Aldeb.]	63° 8′ 15″
	Therefore the right ascension of the Moon at the earlier time [Ergo Aſc. R. ☾ ad prius tempus]	104° 14′ 5″
	Right ascension of cor ♌ [Aſc. R. cordis ♌]	146° 37⅔′
	Right ascension at the later time [Aſc. R. ad poſterius tempus]	104° 5′ 35″

But since the semidiameter of the Moon observed on the meridian seems to have been applied here larger than it should be, while it is assumed as 17 minutes in taking the centre of the Moon in each distance, this inconsistency can be saved by limiting the observations to the intermediate time, which is 8^h 22^m [H. 8 M. 22]. [Verum quoniam ſemidiameter ☾ in merid. obſeruata maior iuſto hic applicata videatur, dum ſupponitur 17 minutorum pro centro ☾ in vtraque diſtantia habenda, ſaluari poteſt hæc inconcinnitas limitatis obſeruationibus ad tempus intermedium quod eſt H. 8 M. 22.]

Limited right ascension [Aſc. R. limitata]	104° 10′
Declination, north [Declinatio B.]	21° 23′
Resp. longitude [Reſp. Longitudo]	13° 10½′ ♋
Latitude [Latitudo]	1° 30′ south [M.]

Subtract 2′ 10″ for the arc of inclination, so that the true [Subtrahe pro arcu inclinationis 2′ 10″ vt ſit vera]

Longitude [Longitudo]	13° 8⅓′

[1] From codex V. [E codice V.]

Repetition of the calculation for the Moon. [Replicatio calculi ☾.]

At 8^h 20^m [H. 8 M. 20] the Moon was in the 90th degree. [H. 8 M. 20 ☾ fuit in 90 gradu.]

Limited distance of its centre from [Diſt. limitata centri eius ab] } }	Aldebaran [Aldeb.]	39° 14½′
	cor ♌ [corde ♌]	41° 2′

Declination 21° 23′. [Declinatio 21° 23′.]

FOR THE EXAMINATION OF ☊ FROM THE OBSERVATION OF 22 FEBRUARY[1] [PRO EXAMINATIONE ☊ EX OBſERUATIONE DIEI 22 FEBRUARIJ[1].]

At 7^h 56^m [H. 7 M. 56] the Moon crossed the meridian. [H. 7 M. 56 tranſiit ☾ per Merid.]

Altitude of the centre [Alt. centri]	55° 28⅙′
Therefore the declination [Ergo declinatio]	21° 22⅔′
True longitude of the Moon at this time [Longitudo vera ☾ ad hoc tempus]	12° 56′ ♋
Of the simple motion of the Moon [Simplicis motus ☾]: double longitude of the Moon [Duplex longitudo ☾]	7ˢ 18° 48′ [7ſig.·18°48′]
Equated anomaly [Anomalia coæquata]	8 20 17

The distance of the Moon from the Earth, in units of which the semidiameter of the eccentric is 100000: resp. 99387; in units of which the mean distance from the Earth is 60 semidiameters of the Earth: resp. 59°38 semidiameters; and so the parallax in altitude 55 28, resp. 32′ 40″. The corrected parallax 35′. [Diſtantia ☾ a terra qualium ſemidiamet. Eccent. eſt 100000. Reſp. 99387 qualium media diſt. a terra 60 ſemidiam. terræ. Reſp. 59°38 ſemid. ideoque parallaxis in altit. 55 28 reſp. 32′ 40″. Parallaxis correcta 35′.]

Therefore the true declination [Ergo declinatio vera]	21° 57′ 40″
Declination of the ecliptic [Declinatio Eclipticæ]	22° 53′ 40″
True latitude [Vera latitudo]	0° 56′ 0″
Resp. distance from ☊ [Reſp. diſtantia a ☊]	10° 21′
Therefore ☊ [Ergo ☊]	23° 17′ ♋
Cop.	22 4
Difference [Differentia]	1 13

Compare with the other principal ones in ✶ and △ of the Moon, and you will see the change of ☊ etc. [Confer cum aliis præcipuis in ✶ et △ ☾ et videbis mutationem ☊ etc.]

21 MARCH, P. M.[1] [DIE 21 MARTIJ, P. M[1].]

Computation of the place of the Moon from the observations near the nonagesimal degree, which it reached at 6^h 11^m [H. 6 M. 11]. [Supputatio loci ☾ ex obſeruat. circa nonageſ. grad. quo proveniebat H. 6 M. 11.]

At 5^h $52\frac{5}{6}^m$ [H. 5 M. 52⅚] the western limb of the Moon was on the meridian. [H. 5 M. 52⅚ occid. limbus ☾ erat in mer.]

Declination of the centre of the Moon [Declinatio centri ☾]	21° 35′ north [B.]
Semidiameter of the Moon [Semidiameter ☾]	15′

The clock was corrected at $5\frac{1}{2}^{h}$ [H. 5½]. [Horologium corrigebatur H. 5½.]

Altitude of the Sun about that time [Altitudo ☉ circa id tempus]	7° 40′
Hence the refraction in the Sun, subt. [Vnde refractio in ☉ ſubt.]	11
This refraction of the Sun adds to the time of the equator [Hæc ☉ refractio tempori æquat. addit]	5 M.
Further, the correction of the circle of the equator adds [Porro correctio circuli æquat. addit]	8
And the semidiameter of the Moon adds [Semidiameter vero ☾ addit]	15

The hours, however, $5^{h}\ 52\frac{5}{6}^{m}$, resolved into equatorial times, together with the items above to be added, accumulate [Horæ autem 5 M. 52⅚ in tempora æquatoria reſolutæ accumulant vna cum ſuperioribus addendis]	88 40⅓
Right ascension of the Sun [Aſc. R. ☉]	9° 38⅚′
Therefore the right ascension of the centre of the Moon [Ergo Aſc. R. centri ☾]	98° 19′ 20″
Declination of the centre of the Moon [Declinatio centri ☾]	21° 35′ north [B.]
Resp. longitude [Reſp. Longitudo]	7° 44¾′ ♋
Latitude [Latitudo]	1° 43′ south [M.]

But if an error was made in the clock since the time of the correction, it is brought in here many times over; but in 23 M., at least, it is not likely to have been large. [Verum ſi error in Horologio a tempore correctionis commißus ſit, hic multiplex ingeritur, ſed in 23 M. ſaltem haud magnum fuiße veriſimile eſt.]

22 MARCH[1] [DIE 22 MARTIJ[1].]

For the place of the Moon from the observations. [Pro loco ☾ ex obſeruationibus.]

$7^{h}\ 32^{m}$ [H. 7 M. 32]	Distance of the centre of the Moon from cor ♌ [Diſtantia centri ☾ a corde ♌]	31° 57′
	Declination of the centre [Declinatio centri]	21° 14′
	Right ascension of cor ♌ [Aſc. R. cordis ♌]	146° 37⅔′
	Angular difference of ascension [Ang. diff. aſc.]	32° 42′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	113° 55⅔′
$7^{h}\ 38^{m}$ [H. 7 M. 38]	Distance of the centre from the bright foot of Erichthonius [Diſtantia centri a lucido pede Erichtonij]	35° 52′
	Its right ascension [Aſc. R. eius]	75° 7′ 30″
	Angular difference of ascension [Ang. diff. aſc.]	38° 54′ 0″

	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	114° 1′ 30″
7^h 35^m [H.7 M.35]	Limited right ascension of the Moon [Aſc. R. ☾ limitata]	113° 58½′
	Declination of the Moon [Declinatio ☾]	21° 13½′ north [B.]
	Resp. longitude [Reſp. Longitudo]	22° 15′ 36″ ♋
	Longitude from the corrected tables [Long. ex tab. correctis]	22° 34¾′ ♋

Afterwards, with everything repeated, the Moon was found to have been in the nonagesimal degree at 7^h 32^m [H. 7 M. 32]. [Poſtea omnibus reiteratis inuenta eſt ☾ fuiße in nonageſimo gradu H. 7 M. 32.]

Its place computed anew for this moment [Ad hoc momentum locus eius denuo ſupputatus] {	Longitude [Long.]	22° 15′ ♋
{	Latitude [Lat.]	0° 28′ south [M.]

REPETITION OF THE CALCULATION FOR THE MOON FROM THE OBSERVATIONS OF 22 MARCH [REPETITIO CALCULI ☾ EX OBſERUATIONIBUS DIEI 22 MARTIJ.]

At 7^h 32^m, when the Moon was exactly in the 90th degree [H.7 M.32 cum ☾ exacte eßet in 90 gradu]:

		from cor ♌ [a corde ♌]	from the horn of ♉ [a cornu ♉]
Distance [Diſtantia] {	western [occ.]	32° 12′ 30″	35° 33′ 30″
{	of the centre [cent.]	31° 57′ 0″	35° 49′ 0″
Declination of the centre of the Moon [Declinatio centri ☾]			21° 13′ 30″

	Right ascension [Aſc. R.]	Declination [Declin.]
Of cor ♌ [Cordis ♌]	146° 36′ 56″	13° 56′ 30″
The horn of ♉ [Cornu ♉]	75° 6′ 30″	28° 11′ 15″

From these, the right ascension of the Moon limited for ⅓ of the difference with respect to cor ♌, which is more certainly established [Ex hiſce Aſc. R. ☾ limitata pro ⅓ differentiæ reſpectu cordis ♌ quæ certius conſtat]	113° 55¾′
Therefore the longitude [Ergo Longitudo]	22° 12⅝′ ♋

Latitude [Latitudo]	28° 3′ south [M.]
Add for the latitude [Adde pro latit.]	20

From the observation you will be able to place the Moon without perceptible error at 22° 13′ ♋. [Poteris collocare ☾ ex obſeruatione ſine ſenſibili errore in 22 13 ♋]

These were repeated most carefully because of the greatest departure of the Moon from the mean motion. [Hæc ſunt diligentißime iterata pro maxima digreßione ☾ a motu medio.]

FOR THE PLACE OF THE MOON FROM THE OBSERVATIONS OF 24 APRIL[1] [PRO LOCO ☾ EX OBſERUAT. AD 24 APRILIS[1].]

12^h 11^m [H. 12 M. 11]	The Moon about the nonagesimal degree [☾ circa nonageſ. grad.]	
12^h $29\frac{1}{3}^m$ [H. 12 M. 29⅓]	Distance of the western limb from cor ♌ [Diſtantia occid. limbi a corde ♌]	39° 52′
	For the semidiameter add [pro ſemidiam. adde]	15′
	Distance of the centre of the Moon from cor ♌ [Diſtantia centri ☾ a corde ♌]	40° 7′
	Declination of the centre of the Moon [Declinatio centri ☾]	2° 7′ north [B.]
	Angular difference of ascension, supp. [Ang. diff. aſcenſ. ſupp.]	38° 47′ 20″
	Right ascension of cor ♌ [Aſc. R. cordis ♌]	146° 37¾′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	185° 25′ 48″
12^h $39\frac{1}{6}^m$ [H. 12 M. 39⅙]	Distance of the western limb from Spica [Diſtantia occid. limbi a Spica]	15° 26′
		15
	Distance of the centre [Diſtantia centri]	15° 11′
	Declination of the Moon [Declinatio ☾]	2° 5′ 30″
	Declination of Spica [Declinatio Spicæ]	8° 57½′
	Right ascension of Spica [Aſc. R. Spicæ]	195° 56′ 45″
	Angular difference of ascension [Ang. diff. aſcenſ.]	10° 26′ 30″
	Therefore the right ascension of the centre of the Moon [Ergo Aſc. R. centri ☾]	185° 30′ 15″
12^h 34^m [H. 12 M. 34]	Emended right ascension [Aſc. R. emend.]	185° 28′ 30″
	Declination [Declinatio]	2° 7′ north [B.]
	Resp. longitude [Reſp. Longitudo]	4° 11′ 26″ ♎
	Latitude [Latitudo]	4° 6′ 4″ north [B.]
	Longitude afterwards [Longit. poſtea]	4° 11¾′
	Arc of inclination, to be added [Arcus inclinat. add.]	3′ 30″
	Parallax [Parall.]	45
	True place [Verus locus]	4° 16′ ♎

23 AUGUST[2] [DIE 23 AUGUSTI[2].]

Calculation for the true place of the Moon from the observations at $9^h\ 5^m$ [hora 9 M. 5], when, according to the calculation, the Moon was near the nonagesimal degree. [Calculus pro vero loco ☾ ex obſeruationibus hora 9 M. 5 cum ☾ iuxta nonag. gradum verſaretur ſecundum calculum.]

Distance of the centre of the Moon from the lower horn of ♍ [Diſt. centri ☾ ab infer. cornu ♍]	33° 35′
Apparent declination of the centre of the Moon [Decl. viſa centri ☾]	15° 19′ south [M.]

[1] From codex V. [E codice V.] [2] From codex E. [E codice E.]

Apparent altitude of the centre of the Moon [Altitudo viſa centri ☾]	12° 4′
Declination freed from the refractions [Declin. a refractionibus liberata]	15° 28′
Angle of the ascensional difference between the Moon and the lower horn of ♍ [Angulus differentiæ aſcenſionalis inter ☾ & infer. cornu ♍]	34° 55′ 30″
Right ascension of the lower horn of ♍, add [Aſc. R. infer. cornu ♍ adde]	299° 30′ 45″
Right ascension of the Moon [Aſcenſio Recta ☾]	334° 26′ 15″

For the παραλλάξει [Greek: parallaxei, "parallax", dative] of the Moon in the circle of altitude, 12° resp., from the old Tables, for the time presupposed from the Prutenic Tables: [Pro παραλλάξει ☾ in circulo altit. 12° reſp. ex Tabulis vet. ad præſuppoſitum tempus ex Tab. Prut.]

Longitude [Longit.]	0° 42′ 47″ ♓
Latitude [Latit.]	4° 30′ 34″ south [M.]

Simple longitude of the Moon from the Sun [Simplex Long. ☾ a ☉]	$2^s\ 53°\ 27′\ 35″$ [$2^s 53° 27′ 35″$]
Simple anomaly of the Moon [Simplex Anomalia ☾]	2 5 46 48
Double distance from the vertex [Duplex diſtantia a ver.]	156° 0′ 0″
Difference of limits I and II, subt. [I. & II. limit. differ. ſubt.]	2 11
Parallax of limit II [II. limitis Parallaxis]	51 56
Parallax of limit III [III. limitis Parallaxis]	61 45
Difference of limits III and IV, to be added [III. & IV. limitum differ. add.]	3 24
Double longitude of the Moon from the Sun [Duplex longit. ☾ a ☉]	346° 55⅙′
Proportional minutes of the lesser epicycle [Epicycli minoris ſcrupula proport.]	0 47
Corresponding part of difference I, subt. [Pars congruens de differ. I. ſubt.]	1″ 43‴ [1″43‴]
Corresponding part of difference II, to be added [Pars congruens de differ. II. add.]	2 40
Parallax of limit II, emended [παράλλαξις II. limit. emend.]	51 54

Parallax of limit III, emended [παράλλαξις III. lim. emend.]	61 48
Difference of the parallaxes [Differentia παραλλάξεων]	9 54
Simple anomaly of the Moon [Anomalia ☾ ſimplex]	2 5 46 48
Subtract the prosthaphaeresis of the second epicycle [Greek: προστα. ἐπικ. (prosta. epik.), abbreviated, "prosthaphaeresis of the epicycle"] [Subtrahe προστα. ἐπικ. 2^{di}]	3 32 2
Equated anomaly of the Moon [Anomalia ☾ coæquata]	122 14 46
Minutes of the greater epicycle [Epicycli maioris ſcrupula]	45 3
Corresponding part of the difference of the parallax and of the minutes, to be added [Pars congruens de differ. παραλλ. & ſcrup. add.]	7 26
The parallax of altitude sought [Parallaxis altit. quæſita]	59 20

And this parallax of the Moon was of latitude alone. For when the Moon is about the 90th degree in the ecliptic, the true and the apparent longitude coincide, and this by reason of the greatest obliquity of the zodiac above the horizon (where the Moon holds its place), bounded equally on either side at the point of the vertical circle. Therefore, with the parallax of altitude of the Moon subtracted from the apparent latitude, there remains the true southern latitude of the Moon, 3° 31′ 14″. But these can be repeated, for the parallaxes of the Moon either are larger than they should be, or are not owed in their entirety to the latitude of the Moon, because the Moon had passed the 90th degree. [Atque hæc παράλλαξις ☾^{æ} Latitudinis ſola fuit. Nam ☾ circa 90 gradum in Ecliptica exiſtente vera & viſa longitudo coincidunt, idque ratione obliquitatis maximæ Zodiaci ſupra finitorem (vbi locum ☾ tenet) vtrinque æqualiter in punctum verticalis circuli determinatæ. Quare Parallaxis altitudinis ☾ a latitudine viſa ſubducta, relinquitur vera latitudo ☾ meridionalis 3°31′14″. Sed hæc poßunt repeti, nam παραλλάξεις ☾ aut maiores iuſtis ſunt, aut non totæ debentur latitudini ☾, quod ☾ 90 gradum tranſierat.]

Comparison of the calculation of the Moon. [Collatio Calculi ☾]

	From the observations [Ex obſeruationibus]	From the Copernican calculation [Ex calc. Copern.]	From the Alphonsine calculation [Ex calc. Alph.]
Longitude of the Moon [Longit. ☾]	0° 42′ 47″ ♓	0° 44′ ♓	0° 30′ ♓
Apparent latitude [Latit. viſa]	4° 30′ 34″ south [M.]	3° 43′ 44″ south [M.]	3° 40′ south [M.]

16 DECEMBER [DIE 16 DECEMBRIS.]

Calculation for the apparent place of the Moon in the zodiac from the preceding observations. [Calculatio pro loco apparenti ☾^{æ} in Zodiaco ex antecedentibus obſeruationibus.]

$7^h\ 0^m$ [H. 7 M. 0]	The centre of the Moon was distant from Aldebaran [Diſtabat centrum ☾ᵉᵉ ab Aldebora]	15° 55′
	Declination of the centre of the Moon [Declinatio centri ☾]	12° 46′ north [B.]
BA 74 23	Right ascension of the Moon from Aldebaran [Aſc. R. ☾ ab Aldeb.]	46° 59′ 30″
CA 77 14	Resp. longitude [Reſp. Longitudo]	18° 7¾′ ♉
BC 15 55	Latitude [Latitudo]	4° 42⅓′ south [M.]
BAC 16 9½		
63 9		

The same evening, at $7^h\ 20¾^m$, when by the computation the Moon was nearest about the nonagesimal degree in the ecliptic from the ascendant, its centre was distant from the outermost one of the wing of Pegasus [Eadem veſpera H. 7 M. 20¾ cum ☾ iuxta ſupputationem proxima eßet circa nonageſimum gradum in Ecliptica ab Aſcendente, diſtabat centrum eius ab Extrema Alæ Pegaſi]	47° 43′
Declination of the centre of the Moon, north [Declinatio centri ☾ᵉᵉ B.]	12° 50′

Hence are given [Hinc dantur]:

DA	77 6
CA	77 10
DC	47 43
DAC	49 2 20
	358 7

Right ascension of the Moon from the outermost one of the wing of Pegasus [Aſc. R. ☾ᵉᵉ ab extrem. alæ Pegaſi]	47° 9′ 20″

Therefore at this last time, namely $7^h\ 21^m$ [H. 7 M. 21], at which the Moon was observed about 90°, its right ascension was 47° 9½′. [Ergo ad vltimum tempus hoc videlicet H. 7 M. 21, quo ☾ circa 90° obſeruata eſt, fuit Aſc. R. eius 47 9½] The declination, however, north 12° 50′. [Declin. vero B. 12 50]

		From the Prutenic [Ex Pruten.]	Alphonsine [Alphonſinis.]
Longitude [Longit.]	18° 18′ ♉	18° 34′ ♉	18° 32′ ♉
Latitude [Latit.]	4° 41⅙′ south [M.]	3° 42′ south [M.]	3° 40′ south [M.]

21 December [DIE 21 DECEMBRIS.]

Computation of the place of the Moon from the above observations, namely after the eclipse, when it was about the 90th degree. [Supputatio loci ☾ ex ſuperioribus obſeruationibus ſc. poſt Eclipſin, quando circa 90 g. fuit.]

2^h 14^m [H. 2 14′]	Right ascension of the Moon [Aſcenſio Recta ☾]	127° 48′ 50″
	Declination, north [Declinatio B.]	21° 3′
	Resp. longitude [Reſp. Longitudo]	4° 55′ 42″ ♌
	Latitude [Latitudo]	2° 0′ 39″ north [B]
3^h 16^m [3 16]	Right ascension of the Moon [Aſcenſio Recta ☾]	128° 14′ 40″
	Declination, north [Declinatio B.]	21° 2′
	Resp. longitude [Reſp. Longitudo]	5° 19′ 9″ ♌
	Latitude [Latitudo]	2° 5′ 35″ north [B.]

Observations of Saturn [OBSERUATIONES SATURNI.]

13 January, evening [DIE 13 JANUARIJ, VESPERI.]

Meridian altitude of Saturn by the steel instrument [Altit. merid. ♄ per Chalyb.]	56° 16½′

Hours, minutes [H. M.]	Between Saturn and the eye of ♉ [Inter ♄ & ocul. ♉]	Declination of Saturn [Declinatio ♄]		The Lesser Dog, east [Can. min. or.]
10^h $45\frac{1}{6}^m$ [10 45⅙]	18° 53′			9 1
10^h 48^m [10 48]	18° 52¼′	22° 11′	22° 10′	8 12
Then the altitude of Saturn by the revolving quadrant was 53° 19′ [Tunc erat Altit. ♄ per Volub. 53 19]				
10^h $52\frac{2}{3}^m$ [10 52⅔]	18° 52¾′	22° 10½′	22° 10⅔′	20
	Vice versa [Viceverſa]			
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. caput ♊]			
10^h 59^m [10 59]	26° 15′			5 59
11^h $2\frac{1}{3}^m$ [11 2⅓]	26° 14⅚′	22° 11⅙′	22° 11′	5 19
11^h $6\frac{2}{3}^m$ [11 6⅔]	26° 15½′			4 19

22 January, evening [DIE 22 JANUARIJ, VESPERI.]

Hours, minutes [H. M.]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	Declination of Saturn by the largest armillae [Declin. ♄ per Arm. max.]	The following shoulder of Orion, east [Seq. hum. Orion. or.]
6^h $31\frac{1}{3}^m$ [6 31⅓]	18° 28⅙′	22° 13′	22° 11½′30 3
Altitude of Saturn by the revolving quadrant 50° 35′ [Altit. ♄ per Volub. 50 35]			
6^h $36\frac{1}{3}^m$ [6 36⅓]	18° 31′ better [mel.]		28 44
6^h $40\frac{1}{2}^m$ [6 40½]	18° 30⅚′	22° 12⅓′	22° 13⅓′27 47
6^h $42\frac{5}{6}^m$ [6 42⅚]	18° 30¾′		27 18
	Vice versa [Viceverſa]		
	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]		
6^h $49\frac{1}{6}^m$ [6 49⅙]	26° 36′	22° 12½′	22° 13⅔′25 34
6^h $51\frac{5}{6}^m$ [6 51⅚]	26° 36′		24 53
6^h $56\frac{1}{6}^m$ [6 56⅙]	26° 36′	22° 12⅙′	22° 13′

At this time, as far as could be discerned by sight, Saturn was altogether midway between the πρόποδα [Greek: propoda, "forefoot"] of ♊ and the southern horn of ♉, deviating a little to the north from the straight line. [Hoc tempore, quantum viſu diſcernere licebat, erat ♄ omnino medius inter πρόποδα ♊ & auſtrale cornu ♉ deflectens parum ad ſeptentrionem a recta linea.]

9 FEBRUARY [DIE 9 FEBRUARIJ.]

In the evening Saturn was observed. [Veſperi obſeruabatur ♄.]

Hours, minutes [H. M.]	Between Saturn and the breast of ♉ [Inter ♄ & pectus ♉]	Declination of Saturn [Declin. ♄]	The bright shoulder of Orion, west [Luc. hum. Or. occ.]
9^h $52\frac{1}{6}^m$ [9 52⅙]	27° 36½′	22° 14⅔′	22° 15′ 34 5
Altitude of Saturn by the revolving quadrant 46° 59½′ [Altit. ♄ per Volub. 46 59½]			
	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]		
9^h $55\frac{5}{6}^m$ [9 55⅚]	18° 9′		35 1
9^h $58\frac{1}{2}^m$ [9 58½]	18° 10′ } doubtful [dub.] }	22° 15′	22° 15⅙′35 41½
10^h $0\frac{1}{3}^m$ [10 0⅓]	18° 9¼′		36 10
10^h 2^m [10 2]	18° 9¼′		36 38

	Vice versa [Viceverſa]			
	Between Saturn and the lower head of ♊ [Inter ♄ & infer. caput ♊]			
10h 5⅙m [10 5⅙]	26° 57′			37 32
10h 8½m [10 8½]	26° 57½′		22° 14⅚′	22° 15′ 38 1
10h 11⅓m [10 11⅓]	26° 57′			39 6

17 February [DIE 17 FEBRUARIJ.]

In the evening Saturn was observed as follows. [Veſperi obſeruabatur ♄ vt ſequitur.]

Hours, minutes [H. M.]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn, north [Declin. B. ♄]	Altitude of Saturn by the revolving quadrant [Altit. ♄ per Vol.]	The bright star of Hydra, east [Luc. Hydræ or.]
9h 52⅓m [9 52⅓]	18° 9½′	45° 30′1 }	41° 10′	7 14
		with both pinnules [vtroq. pin.] }		
9h 56½m [9 56½]	18° 11¼′	45° 30′	40° 30′	6 32
		45° 29′		
9h 59⅓m [9 59⅓]	18° 10⅔′	45° 29′		5 35
		45° 27′		
		Vice versa [Viceverſa]		
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			The bright star of Hydra, west [Luc. Hydræ occid.]
10h 52⅔m [10 52⅔]	26° 53′	45° 30′	33° 0′	8 2
		45° 31′		
10h 56⅙m [10 56⅙]	26° 54′	45° 31′		8 52
		45° 30½′		
10h 59½m [10 59½]	26° 54′	45° 30⅙′		9 37
	or 53⅚′ [vel 53⅚]			

25 February [DIE 25 FEBRUARIJ.]

In the evening Saturn was observed as follows. The clock was corrected at about the sixth hour by the bright foot of Orion. [Veſperi obſeruabatur ♄ vt ſequitur. Horologium corrigebatur circa horam ſextam ad lucidum pedem Orionis.]

Hours, minutes [H. M.]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	Declination of Saturn, north [Declin. ♄ B.]	Altitude of Saturn by the revolving quadrant [Altit. ♄ per Vol.]	The Lesser Dog, east [Can. min. orient.]
7^h $2\frac{2}{3}^m$ [7 2⅔]	18° 20′	22° 18⅚′ } with one pinnule [vno pinn.] }	53° 58′	10 38
7^h 24^m [7 24]	18° 20′	22° 18⅚′ *	53° 42′	9 53
* With one pinnule; with the other it could not be taken because of the beam. [* vno pinnac., altero capi non poterat propter trabem.]				
7^h $28\frac{1}{2}^m$ [7 28½]	18° 19⅚′	22° 19′ } with both [vtroq.] } Vice versa [Viceverſa]	53° 22′	8 40
	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab infer. cap. ♊]			
7^h $31\frac{2}{3}^m$ [7 31⅔]	26° 45′	22° 19⅓′	53° 8′	7 46
		22° 19′		
7^h $34\frac{1}{3}^m$ [7 34⅓]	26° 46′	22° 19⅙′		7 4
		22° 19′		
7^h 39^m [7 39]	26° 45′	22° 19¼′	52° 33′	6 3
		22° 19⅙′		

[1] Both pinnules seem to have been moved, for the declination of Saturn was about 22° 16′. [Ambo pinnacidia mota fuiße videntur, nam declinatio Saturni circiter 22° 16′ erat.]

17 March [DIE 17 MARTIJ.]

In the evening Saturn was observed as follows. [Veſperi obſeruabatur ♄ vt ſequitur.]

Time by the clock [Tempus horol.]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination, north [Decl. Bor.]	Altitude of Saturn by the revolving quadrant [Alt. ♄ per Vol.]	The Lesser Dog, west [Can. min. occ.]
7^h $11\frac{5}{6}^m$ [7 11⅚]	19° 11′	22° 25⅓′	45° 25′	12 3½
		22° 25½′		
7^h $17\frac{1}{2}^m$ [7 17½]	19° 12′	22° 25′		13 23
		22° 24⅙′		

Time by the clock [Tempus horol.]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination, north [Decl. Bor.]	Altitude of Saturn by the revolving quadrant [Alt. ♄ per Vol.]	The Lesser Dog, west [Can. min. occ.]
7^h 21^m [7 21]	19° 11⅓′		44° 28′	14 22
7^h $24¾^m$ [7 24¾]	19° 11⅓′	22° 24⅓′	43° 55′	15 23
		22° 24⅙′		
		Vice versa [Viceverſa]		
	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]			The bright star of Hydra, east [Luc. Hyd. orient.]
7^h $30½^m$ [7 30½]	25° 54½′	22° 24⅚′		10 28
		22° 25′		
7^h 34^m [7 34]	25° 54¾′		42° 45′	9 34
7^h 38^m [7 38]	25° 55′	22° 24⅔′		8 25
		22° 24¼′		

11 October [DIE 11 OCTOBRIS.]

In the evening Saturn was observed in this way. [Veſperi obſeruabatur ♄ in hunc modum.]

	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn, north [Decl. ♄ B.]	Altitude of Saturn [Altit. ♄]	The bright star of the jaw of the Whale, east [Luc. mandib. Ceti or.]
11 21⅓	39° 1′	22° 20¼′	18° 22½′	26 10
		22° 19⅚′		
11 29⅚	39° 0′ 30″ [39 0 30″]		19° 32½′	24 13
		Vice versa [Viceverſa]		
	From the lower head of ♊ [Ab inf. cap. ♊]			
…	8° 38⅔′	22° 20′	20° 22′	
		22° 19¾′		
11 43	{ 8° 38⅔′		21° 22⅓′	
	{ exactly the same as the previous one [eadem omnino cum priore.]			

This evening the sky was very clear, when a small star was seen above Saturn in this position: [Erat hac veſpera bene ſerenum vbi parua ſtella ſupra ♄ in tali ſitu conſpiciebatur.]

Diagram. Two star marks set at the left edge of the left column, beside the lines "parua ſtella ſupra ♄ in tali ſitu" and "conſpiciebatur": a small six-rayed star above, and a larger six-rayed star below it and a little to the right. No letters or labels are printed beside either mark.

Calculation[1] for finding the place of Saturn on 11 October, when it was in the first station, from the observations taken on both sides. [Calculus[1] pro inquirendo loco ♄ ad diem 11 Octob. cum eßet in 1 ſtatione ex obſeruationibus vtrinque habitis.]

11½^{h} [H. 11½]	Distance of Saturn from Aldebaran [Diſtantia ♄ ab Aldeb.]	39° 0½′
	Corrected declination of Saturn [Declinatio ♄ correcta]	22° 19′ north [B.]
	Declination of Aldebaran [Declinatio Aldeboræ]	15° 37′ north [B.]
	Right ascension of Aldebaran [Aſc. R. Aldeboræ]	63° 8′ 45″
	Angular difference of ascension by supp. [Ang. diff. aſcenſ. per ſupp.]	40° 45¾′
	Therefore, from this, the right ascension of Saturn [Ergo hinc Aſc. R. ♄]	103° 54½′
11⅔^{h} [H. 11⅔]	Distance of Saturn from the lower head of ♊ [Diſtantia ♄ ab inf. cap. ♊]	8° 38⅔′
	Declination of the lower head of ♊ [Declinatio inf. cap. ♊]	28° 57′
	Its right ascension [Aſc. R. huius]	110° 3′ 30″
	Angular difference of ascension by supp. [Ang. diff. aſcenſ. per ſupp.]	6° 9′ 15″
	Therefore, from this, the right ascension of Saturn [Ergo hinc Aſc. R. ♄]	103° 54′ 15″
	Limited right ascension [Aſc. R. lim.]	103° 54′ 20″
	Resp. longitude [Reſp. Longitudo]	12° 50′ 52″ ♋
	Latitude [Latitudo]	0° 35′ 15″ south [M.]
	Arc of inclination, subt. [Arcus inclinationis ſubt.]	1′ 20″ [1′20″]
	True longitude of Saturn observed [Vera Long. ♄ obſeruata]	12° 49′ 30″ ♋

25 October [DIE 25 OCTOBRIS.]

In the morning, about the 4th hour of the morning, when the star of Saturn was near the meridian, I observed that it was as close as possible to the little star in the belly of the southern ♊, distant from it towards the south only by the amount of the lunar semidiameter, or at most 20′. Moreover, it had very nearly the same right ascension as the said little star; for the straight line that ran from the star of Saturn through this one in ♊ looked towards the zenith and, extended further from there, to the pole star; nor, as far as could be discerned by the sight of the eye alone, could any deviation of any moment have come between. I considered this observation myself while I was crossing from the nearest shore of Zealand to this island of Hven in the morning, with dawn coming on[2]. And hence the place of Saturn in longitude and latitude is given in the following way. [Mane circa horam 4^{tam} matutinam quando ♄^{ni} ſtella fuit prope meridianum, obſeruabam quod quam proxima eßet ſtellulæ in ventre meridionalis ♊, diſtans ſaltem ab hac verſus auſtrum ad quantitatem ſemidiametri lunaris uel ad ſummum 20 ſcrupulis, habebat autem quam proxime eandem Aſcenſionem Rectam cum dicta ſtellula; nam linea recta quæ procedebat

a ♄ni ſtella per hanc in ♊ reſpiciebat Zenith, atque inde vlterius producta ad ſtellam polarem, quantum ſolo oculari intuitu dignoſcere licuit, neque alicuius momenti potuit intercidere deuiatio; hanc obſeruationem ipſemet conſideraui cum ex littore proximo Seelandico in hanc inſulam Huennenſem matutino tempore inſtante Aurora traiicerem[2]. Atque hinc locus ♄ iuxta longum & latum datur in hunc qui ſequitur modum.]

Right ascension of the star in ♊ named above [Aſcenſ. R. ſtellæ in ♊ ſupra nominatæ]	103° 53′ 27″

Let the right ascension of Saturn be the same, according to Tycho's observation. [Sit eadem Aſcenſ. R. ♄ni iuxta animaduerſionem Tychonis.]

Declination of the same star, north [Declin. eiuſdem ſtellæ B.]	22° 40½′
Let about 20′ be subtracted, and the declination of Saturn comes out [Subtrahantur 20′ circiter & prouenit declinatio ♄]	22° 20′ north [B.]

	Resp. [Reſp.]	Copernican calculation [Calc. Copern.]	Alphonsine [Alph.]
Longitude [Longit.]	12° 50′ ♋	12° 53⅓′ ♋	15° 43⅓′ ♋
Latitude [Latit.]	0° 35⅓′ south [M.]	1° 28½′ south [M.]	0° 40′ south [M.]

[1] From codex V. [E codice V.] [2] According to the meteorological diary, "Tycho returned" from Zealand on 25 October. Yet this observation in codex E is not written in his own hand. [Iuxta diarium meteorologicum »rediit Tycho« e Seelandia die 25 Octobris. Tamen hæc obſeruatio in codice E non ipſius manu conſcripta eſt.]

4 December [DIE 4 DECEMBRIS.]

In the evening Saturn was observed. [Veſperi obſeruabatur ♄.]

Clock [Horol.]	Corrected time [Temp. corr.]		
8h 49⅙m [8 49⅙]	9h 39½m [9 39½]	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	36° 56½′
		Altitude of Saturn by the revolving quadrant [Altit. ♄ per Vol.]	37° 56′
		The bright star of the jaw of the Whale, west [Luc. mandib. Ceti occ.]	6 15
		Declination of Saturn, north [Declin. ♄ Bor.]	22° 33⅔′

Clock [Horol.]	Corrected time [Temp. corr.]		
The beam was in the way [impedimento erat tignum]			22 32
8^h 59^m 55^s [8 59 55]	9^h 50^m [9 50]	Between Aldebaran and Saturn [Inter Aldeb. & ♄]	36° 56⅓′
9^h 4⅓^m [9 4⅓]	9^h 54⅓^m [9 54⅓]		36 56½
		The bright star of the jaw of the Whale, west [Lucida mand. Ceti occ.]	9 57
		Declination of Saturn with one pinnule [Decl. ♄ vno pin.]	22° 31⅔′
		Vice versa [Viceverſa]	
9^h 15^m 25^s [9 15 25]	10^h 4½^m [10 4½]	Between Saturn and the lower head of ♊ [Inter ♄ & infer. cap. ♊]	9° 51⅓′
		The jaw of the Whale [Mandibula Ceti]	12 30
9^h 23⅚^m [9 23⅚]	10^h 13^m [10 13]	Between Saturn and [Inter ♄ &]	9° 55⅓′
9^h 27⅙^m [9 27⅙]	10^h 17^m [10 17]	the lower head of ♊ [infer. cap. ♊]	9° 55½′
9^h 33^m [9 33]	10^h 23^m [10 23]		9 55⅓
		Declination of Saturn with one pinnule [Decl. ♄ vno pin.]	22° 33′

The air was unsteady here. [Aër erat hic intranquillus.]

5 December, evening [DIE 5 DECEMBRIS, VESPERI.]

We observed Saturn in the following way. [Obſeruabamus ♄ in modum qui ſequitur.]

{ 9 13⅙	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldebora]	36° 52⅓′
{ 8 24 40 corrected [8 24 40 corr.]	Altitude of Saturn [Altit. ♄]	28° 9′
Then the bright star of the jaw of the Whale, east, was 11 20 [Erat tunc luc. mand. Ceti or. 11 20]		
{ 9 24	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	36° 52½′
{ 8 34 corrected [8 34 corr.]	Declination of Saturn, north [Declin. ♄ B.]	22° 33½′
		22 34
	The bright star of the jaw of the Whale [Lucida mandibula Ceti]	8 57
	Vice versa [Viceverſa]	
{ 9 35 40	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	9° 56⅚′
{ 8 44⅚ corrected [8 44⅚ corr.]	Altitude of Saturn [Altit. ♄]	31° 22½′
	The bright star of the jaw of the Whale, east [Lucida mandib. Ceti or.]	6 17
{ 9 45¼	Between Saturn and the same one of ♊ [Inter ♄ & eandem ♊]	9° 57⅓′

{ 8 54½ corrected [8 54½ corr.]	The bright star of the Whale [Lucida Ceti]	3 52
{ 9 49	Between Saturn and the same one of ♊ [Inter ♄ & eandem ♊]	9° 57⅙′
{ 8 58 corrected [8 58 corr.]	The bright star of the Whale, east [Lucida Ceti or.]	2 57
{ 10 2 40	Declination of Saturn [Declinatio ♄]	22° 33⅙′
{ 9 9⅙		22 34
	The bright star of the Whale, east [Lucida Ceti orient.]	0 12

6 December, evening [DIE 6 DECEMBRIS, VESPERI.]

12 10′20″	Between Saturn and the bright foot of ♊ [Inter ♄ & lucid. pedem ♊]	9° 29′
	Altitude of Saturn [Altit. ♄]	54° 36′

12 22⅓ }	Saturn was distant [Diſtabat ♄]	
corrected 16′ } [corr.16′]	from the bright foot of ♊ [a lucid. pede ♊]	9° 28¾′
	Declination of Saturn with one pinnule [Declin. ♄ vno pinn.]	22° 31′
12 28⅔	Between Saturn and the bright foot of ♊ [Inter ♄ & luc. ped. ♊]	9° 28½′
	The eye of ♉, west [Oculus ♉ occ.]	26 25
	Vice versa [Viceverſa]	
12 37⅓	Between Saturn and the lower head of ♊ [Inter ♄ & infer. caput ♊]	10° 0¼′
12 42 (corrected 12 35½) [12 42 (corr. 12 35½)]		10 1½
12 45⅙		10 0¼
12 49½		10 1⅓
	The eye of ♉, west [Oculus ♉ occ.]	31 22
12 52	Between Saturn and the same one of ♊ [Inter ♄ & eandem ♊]	10° 2′

The instrument was wavering, driven by the violence of the wind. [Vacillabat inſtrumentum, vehementia venti actum.]

1 1	Between Saturn and [Inter ♄ &]	18° 1⅚′
1 5½	the Lesser Dog [canem minorem]	18° 3¾′
1 9⅚		18 3⅓
1 14½		18 2⅔

1 20⅓	Saturn was crossing the meridian, having an altitude [Tranſibat ♄ per Meridianum habens altit.]	
	by the steel instrument [per Chalyb.]	56° 36⅔′
	by the revolving quadrant [per Volub.]	56° 37′
	The Lesser Dog, east [Canis minor orient.]	26 20
1 32	Declination of Saturn [Declin. ♄]	22° 31½′
	by the armillae [per Armillas]	22° 31⅔′

N.B. The air was more unsteady this evening. Moreover, Saturn was placed almost in a straight line with the bright foot of ♊ and the lower head of the same, though deviating very slightly towards the horizon. [N. B. Aër erat intranquillior hac veſpera. Porro erat ♄ conſtitutus fere in recta linea cum lucido pede ♊ & inferiori capite eorundem, paululum tamen deflectens Horizonta verſus.]

For finding the place of Saturn for 4 December from the third-last preceding observations. [Pro ♄ loco inveniendo ad diem 4 Decembris ex antepenultimis præcedentibus obſeruationibus.]

9^h 54^m [H. 9 M. 54]	Right ascension [Aſcenſio R.]	101° 39′ 40″
10 13		101 37 0
10 3	Limited right ascension [Aſcenſ. R. limitata]	101° 38⅓′
	Resp. longitude [Reſp. Longitudo]	10° 44½′ ♋
	Latitude [Latitudo]	0° 33′ south [M]

	According to Copernicus [Iuxta Copernicum]	According to Alfonso X [Iuxta Alphonſum]
Longitude [Long.]	10° 43′ ♋	13° 43′ ♋
Latitude [Latit.]	1° 32½′ south [M.]	0° 39′ south [M.]

For the place of Saturn for 5 December from the second-last observations. [Pro loco ♄ ad diem 5 Decembris ex penultimis obſeruationibus.]

8^h 34^m [H. 8 M. 34]	Right ascension from Aldebaran [Aſcenſ. R. ab Aldeb.]	101° 35′ 17″
8 45	from the lower head of ♊ [ab inf. cap. ♊]	101° 33′ 37″
	Limited right ascension [Aſc. R. limitata]	101° 34½′

	From observation [Ex obſerv.]	Copernicus [Copernico]	Alfonso X [Alphonſo]
Longitude [Long.]	10° 40⅚′ ♋	10° 37⅓′ ♋	13° 38′ ♋

	From observation [Ex obſerv.]	Copernicus [Copernico]	Alfonso X [Alphonſo]
Latitude [Lat.]	0° 32½′ south [M.]	1° 32⅔′ south [M.]	0° 39′ south [M.]

Calculation for investigating the place of Saturn from the immediately preceding observations, on 6 December. [Calculus pro ♄ loco inveſtigando ex obſeruationibus proxime præcedentibus die 6 Decembris.]

$12^h\ 16^m$ [H. 12 16′]	Distance from the bright foot of ♊ [Diſt. a luc. pede ♊]	9° 28¾′
	Declination of Saturn, north [Declin. ♄ B.]	22° 31⅓′
	Right ascension [Aſcenſio R.]	101° 26′ 1″
12 35½	Distance from the lower head of ♊ [Diſt. ab inf. cap. ♊]	10° 1½′
	Right ascension [Aſcenſio R.]	101° 29′ 40″

$12^h\ 16^m$ [12ᴴ16′]	From observation [ex obſerv.]	Copernicus [Copernico]	Alfonso X [Alphonſo]
Longitude [Long.]	10° 36′ ♋	10° 31½′ ♋	13° 32½′ ♋
Latitude [Lat.]	0° 34½′ south [M.]	1° 32⅓′ south [M.]	0° 39′ south [M.]

9 December [DIE 9 DECEMBRIS.]

Saturn was observed near the meridian as follows. The clock was corrected. [Obſeruabatur ♄ circa meridianum vt ſequitur. Horologium corrigebatur.]

	Between Aldebaran and Saturn [Inter Aldeb. & ♄]	Declination of Saturn [Declinatio ♄]	The right shoulder of Orion, west [Dext. hum. Or. occ.]
12 7½	36° 33′	22° 35′ with one [vno]	6 34
12 14	36° 32$^{11}/_{12}$′ [36 32$^{11}/_{12}$]		7 2
25			
12 22	36° 33⅙′		10 35
12 28	36° 32¾′	22° 35½′	22° 35′
12 45		22° 35′	22° 34⅙′

12 47¾	Saturn was crossing the meridian, having an altitude [Tranſibat ♄ per Meridianum habens altit.]	
	by the revolving quadrant [per Volub.]	56° 39¾′
	by the steel instrument [per Chalyb.]	56° 39′
	The Lesser Dog, east [Canis minor orient.]	5 20
Vice versa, Saturn was observed from cor ♌ [Viceverſa obſeruabatur ♄ a corde ♌]		
1 31	Between Saturn and cor ♌ [Inter ♄ & cor ♌]	43° 50⅙′
1 34 50	The same distance repeated [Eadem diſt. repetita]	43° 50⅙′
	The Lesser Dog, west [Canis minor occid.]	5 3

1 40 10	Between Saturn and cor ♌ [Inter ♄ & cor ♌]	43° 49½′
1 43 35		43 50⅙

These distances can safely be trusted, because the sky was exceptionally clear and the air calm, and no care that could be applied was neglected anywhere. [His diſtantijs tuto eſt fidendum, quia apprime fuit ſerenum & aër tranquillus, nec vlla diligentia, quæ adhiberi potuit, vspiam neglecta eſt.]

N.B. Around the time of these observations the star of Saturn was acronychal, near opposition to the Sun, and was situated near its own perigee and the solar apogee. For this reason, on two counts, consideration of its motion is of the greatest use for restoring its appearances exactly, and above all for verifying the place of the apogee precisely, since, by reason both of its own eccentricity and of the solar one, it introduces the least possible difference from uniformity, as will become clear elsewhere once the investigation has been made. [N.B. ♄ni ſtella circa has obſeruationes erat Acronychia iuxta ☍ ☉ & verſabatur prope Perigæum proprium & Apogæum ſolare, quocirca conſideratio motus eius duplici nomine conducit plurimum ad apparentias eius exacte reſtituendas, præſertim pro loco Apogæi ad amußim verificando, ex quo tam ratione propriæ quam ſolaris Eccentricitatis quam minimam ab æqualitate ingerat differentiam, vt alias perueſtigatione facta pateſcet.]

Since, therefore, Saturn was nearest to the earth by reason both of the eccentric and of the epicycle, as people commonly say, it appeared somewhat larger than usual, so much so that in its visible size it very nearly matched the bright star in the mouth of Sirius (if you take away the rays that its scintillation throws off). Its visible diameter was therefore at least 2′, or rather a little more. From this it will be possible to reason about its true size, assuming, that is, its nearest distance from the earth. [Ex quo igitur eßet ♄ tam ratione Eccentrici quam Epicycli, vt communiter loquuntur, terræ proximus, ſolito nonnihil maior apparuit, adeo vt ſua viſibili magnitudine lucidam in ore Syrij (ſi radios quos ſcintillatio vibrat demas) quam proxime referret. Habuit itaque ad minimum in viſibili diametro 2 minuta vel potius paulo plus. Hinc de vera eius quantitate ratiocinari licebit præſuppoſita videlicet proxima ad terram remotione.]

For the place of Saturn from the observations, for 9 December. [Pro loco ♄ ex obſeruationibus ad 9 diem Decembris.]

$12^h\ 14^m$ [H. 12 14′]	Saturn was distant from Aldebaran [Diſtabat ♄ ab Aldeb.]	36° 33′
	Declination of Saturn, north [Declin. ♄ B.]	22° 34′
	Right ascension [Aſcenſio R.]	101° 13′ 55″
	Saturn was distant from cor ♌ [Diſtabat ♄ a corde ♌]	43° 50′
	Right ascension [Aſcenſio R.]	101° 12′ 22″
12 52	Emended right ascension [Aſc. recta emendata]	101° 13′ 0″

	From observation [Ex obſerv.]	Copernican calculation [Calc. Copern.]	Alphonsine calculation [Calc. Alph.]
Longitude [Long.]	10° 21′ ♋	10° 17½′ ♋	13° 18½′ ♋
Latitude [Lat.]	0° 33¼′ south [M.]	1° 32′ south [M.]	0° 39′ south [M.]

10 December [DIE 10 DECEMBRIS.]

Saturn was observed near the meridian in this way. A little before, the clock was corrected. [Obſeruabatur ♄ circa meridianum in hunc modum. Paulo ante corrigebatur Horologium.]

Transit of the jaw of the Whale through the meridian at $8^h\ 48^m$. [Tranſitus mandibulæ Ceti per meridianum H. 8 M. 48.]

11 55½	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	36° 28½′
	The jaw of the Whale, west [Mandibula Ceti occ.]	47 10
12 0⅓	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	36° 29′
12 2⅔		36 28⅚
12 6⅔		36 28¾
	Declination of Saturn with one pinnule [Declin. ♄ vno pinnac.]	22° 35′ 0″
	The jaw of the Whale, west [Mandib. Ceti occid.]	50 14
	Vice versa from cor ♌ [Viceverſa a corde ♌]	
12 14½	Between Saturn and cor ♌ [Inter ♄ & cor ♌]	43° 53⅓′
12 18⅓		43 53⅓
	The jaw of the Whale, west [Mandib. Ceti occid.]	53 33
12 23½	Between Saturn and cor ♌ [Inter ♄ & cor ♌]	46° 53½′
	Declination of Saturn [Declin. ♄] 22° 35′,	22° 34⅓′

12 45½	Saturn was crossing the meridian, having an altitude [Tranſibat ♄ per meridianum habens altit.]	
	by the steel instrument [per Chalyb.]	56° 39⅙′
	by the revolving quadrant [per Volub.]	56° 39¼′
	The jaw of the Whale, west [Mandibula Ceti occid.]	60 47

It was very clear this evening. [Erat hoc veſpere bene ſerenum.]
For the place of Saturn on the 10th. [Pro ♄ loco die 10]

	Declination [Declinatio]	22° 33′ 45″
	Right ascension [Aſcenſio R.]	101° 9′ 19″
		101 9 0
$12^h\ 10^m$ [H. 12 M. 10]	Emended right ascension [Aſc. R. emendata]	101° 9⅙′

	From observation [Ex obſerv.]	Copernican calculation [Calc. Copern.]	Alphonsine calculation [Calc. Alph.]
Longitude [Long.]	10° 16′ 26″ ♋	10° 12½′ ♋	13° 13½′ ♋
Latitude [Lat.]	0° 33′ 45″ south [M.]	1° 32½′ south [M.]	0° 39′ south [M.]

16 December [DIE 16 DECEMBRIS.]

Saturn was observed near the meridian. The Moon here was not far from Aldebaran, and therefore its brightness interfered. [Obſeruabatur ♄ circa Meridianum. ☾ hic non longe diſtabat ab Aldebora, ideoque ſplendor eius oberat.]

	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	Declination of Saturn [Declinatio ♄]	The bright foot of Orion, east [Luc. pes Orion. or.]
10 15⅝	35° 59⅔′		4 50
10 22⅙	35° 59′	22° 38′	
		22° 39′	west [occid.]
10 49½	35° 58′		4 3¼
10 54⅙	35° 58′	22° 39¼′	
		22° 38′	
10 57⅔	35° 58⅙′		

Afterwards Saturn was observed distant from cor ♌, not far from the meridian. [Poſtea ♄ obſeruabatur a corde ♌ diſtans non procul a Meridiano.]

	Between Saturn and cor ♌ [Inter ♄ & cor ♌]	The bright foot, west [Luc. pes occ.]
11 48⅙	44° 23′	18 39
11 53½	44° 23½′	20 0
12 0	44° 23¼′	21 35

12 20 40″	Saturn was crossing the meridian, having an altitude [Tranſibat ♄ per meridianum habens altitud.]		
	by the steel instrument [per Chalyb.]	56° 41′	
	by the revolving quadrant [per Volub.]	56° 41⅙′	
	Declination [Declin.]	22° 37⅓	The bright foot, west [Luc. pes occ.]
	by the armillae [per Armillas]	22° 38′ 27 9⅔	

Computation of the apparent place of Saturn from the immediately preceding observations. [Supputatio loci apparentis ♄ ex proximis præcedentibus obſeruationibus.]

10^h 57^m [H. 10 57′]	Distance between Saturn and Aldebaran [Diſt. ♄ & Aldeb.]	35° 58′
	Declination of Saturn, north [Declin. ♄ B]	22° 35½′
11 48	Distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	44° 23′

BA	74 22½	DA	76 3½
CA	67 24½	CA	67 24½
BC	35 58	DC	44 23
BAC	37 26 56	DAC	46 1 50
	63 9 30		146 39
Right ascension [Aſc. R.]	100° 36′ 26″		100 37 10

Therefore, 11^h 22^m [Ergo H.11 M.22]	Limited right ascension [Aſc. R. limit.]	100° 36′ 48″

	Resp. from observation [Reſp. ex obſ.]	Calculation of Copernicus [Calc. Copernici]	Alphonsine calculation [Calc. Alph.]
Longitude [Long.]	9° 47⅔′ ♋	9° 42⅔′ ♋	12° 43⅔′ ♋
Latitude [Latit.]	0° 34¼′ south [M.]	1° 32′ south [M.]	0° 37′ south [M.]

21 December [DIE 21 DECEMBRIS.]

Saturn was observed around the point opposite the Sun, nearest to it. [Obſeruabatur ♄ circa oppoſitum $\odot^{is}$ proximus.]

	The clock was corrected here [Horol. hic corrigebatur]		
11 7 50	11 10	Distance of Saturn from [Diſt. ♄ ab]	
		the eye of ♉ [oculo ♉]	35° 35⅙′
		Declination of Saturn, north [Decl. ♄ Bor.]	22° 40′
11 15½	11 19½	The same distance [Diſt. eadem]	35° 35½′
11 29⅓	11 34½		35 35½
11 46 25	11 51½	the same [eadem]	35° 35′
11 52 25	11 57⅙	Saturn was crossing the meridian, having an altitude [Tranſibat ♄ per merid. habens altitudinem]	
		by the revolving quadrant [per Volub.]	56° 44′
		by the steel instrument [per Chalyb.]	56° 43⅚′

	The clock was corrected here [Horol. hic corrigebatur]		
		The Lesser Dog, east [Canis minor orient.]	9 13
		Vice versa [Viceverſa]	
12 10½	12 16⅖	Distance of Saturn [Diſt. ♄]	
		from cor ♌ [a corde ♌]	44° 47⅙′
		The Lesser Dog, east [Canis min. or.]	4 24½
12 14 55		The distance repeated [Diſt. repetita]	44° 49⅔′
12 22⅙		The same distance [Diſt. eadem]	44° 47′
12 31	12 37½	the same [eadem]	44° 48¼′
12 34⅓	12 40⅔	the same [eadem]	44° 48⅓′
		Declination [Declinatio]	22° 39⅔′
		The Lesser Dog [Canis minor]	
		west [occ.]	1 39

In these distances the brightness of the Moon was more of a hindrance. But the last two distances are believed to be better. [In his diſtantijs ſplendor ☾ magis impedimento fuit. Sed vltimæ duæ diſtantiæ meliores creduntur.]

Computation of the place of Saturn from the immediately preceding observations. [Supputatio loci ♄ ex antecedentibus obſeruationibus proximis.]

11 52	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	35° 35′
	Declination of Saturn, north [Declin. ♄ B.]	22° 38½′
	Right ascension [Aſcenſio R.]	100° 11′ 45″
12 38	Distance from cor ♌ [Diſt. a corde ♌]	44° 48′
	Right ascension [Aſcenſio R.]	100° 9′ 15″
Therefore, 12^h 15^m [Ergo H. 12 M. 15]	Limited right ascension [Aſc. R. lim.]	100° 10½′

	Resp. from observation [Reſp. ex obſ.]	Copernican calculation [Calc. Copern.]	Alphonsine calculation [Calc. Alph.]
Longitude [Long.]	9° 23′ ♋	9° 15⅔′ ♋	12° 18⅔′ ♋
Latitude [Lat.]	0° 33′ south [M.]	1° 32′ south [M.]	0° 37′ south [M.]

24 December [DIE 24 DECEMBRIS.]

The clock was corrected here a little before the eighth hour. [Horologium hic paulo ante octauam corrigebatur.]

8 30′ 40″	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	35° 21$\frac{1}{12}$′ [35 21$\frac{1}{12}$]
	Altitude of Saturn [Altit. ♄]	
	by the revolving quadrant [per Volub. Q.]	45° 4′
8 36 30	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	35° 21$\frac{1}{12}$′ [35 21$\frac{1}{12}$]
	The right shoulder [Dexter hum.]	
	of Orion, east [Orion. or.]	23 0
8 42 50	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	35° 21′
	Declination of Saturn, north [Declin. ♄ B.]	22° 41¼′
		22 41⅓

Transit of the right shoulder of Orion through the meridian at 10^h 9⅓^m. [Tranſitus dextri humeri Orionis per Meridianum H. 10 M. 9⅓.]

	Vice versa [Viceverſa]	
8 48 30	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	11° 4′
	The right shoulder [Dexter humer.]	
	of Orion, east [Orion. or.]	20 4
…[1]	The distance repeated [Repetita diſtantia]	11° 4⅓′
	The right shoulder [Dexter hum.]	
	of Orion, east [Orionis or.]	18 40
8 55⅚	The same distance [Eadem diſt.]	11° 3′
	The right shoulder [Dexter hum.]	
	of Orion, east [Orionis or.]	18 4
9 4⅚	The same distance [Diſt. eadem]	11° 4½′
	The right shoulder [Dexter hum.]	
	of Orion, east [Orion. or.]	15 44
9 19½	Between Saturn and [Inter ♄ &]	
	the lower head of ♊ [infer. cap. ♊]	11° 2⅔′
	Declination [Declinatio]	22° 42⅔′
		22 43⅓
9 24½	The distance repeated [Diſtantia repetita]	11° 2¾′
9 31⅓		11 4¼

Here the clock was corrected. [Hic corrigebatur Horologium]

10 49⅙	Between Saturn and cor ♌ [Inter ♄ & cor ♌]	45° 3′
	The right shoulder [Dexter hum.]	
	of Orion, west [Orion. occ.]	10 9
10 54 15	Between Saturn and cor ♌ [Inter ♄ & cor ♌]	45° 3$\frac{1}{12}$′ [45 3$\frac{1}{12}$]
	The same shoulder [Idem hum.]	
	of Orion, west [Orion. occ.]	11 25
10 59 55	Between cor ♌ and Saturn [Inter cor ♌ & ♄]	45° 3$\frac{1}{12}$′ [45 3$\frac{1}{12}$]

11 14 50	Saturn was crossing the meridian, having an altitude [Tranſibat ♄ per merid. habens Altit.]	
	by the steel instrument [per Chalyb.]	56° 45′
	by the revolving quadrant [per Volub.]	56° 45¼′
	The Lesser Dog was east [Erat Can. minor or.]	9 53

For the place of Saturn on the 24th. [Pro loco ♄ die 24.]

$8^h\ 43^m$ [H. 8 43′]	Distance of Saturn from Aldebaran [Diſt. ♄ ab. Aldeb.]	35° 21′
	Declination, north [Declinatio B.]	22° 39′ 40″
	Right ascension [Aſcenſio R.]	99° 55′ 50″
10 49	Distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	45° 3′
	Right ascension [Aſcenſio R.]	99° 54′ 15″
Therefore, $9^h\ 45^m$ [Ergo H. 9 M. 45]	Limited right ascension [Aſc. R. limit.]	99° 55′
	Resp. longitude [Reſp. Longitudo]	9° 8′ 50″ ♋
	Latitude [Latitudo]	0° 32′ 55″ south [M.]

25 December [DIE 25 DECEMBRIS.]

Saturn was observed near the meridian. The clock was corrected. [Obſerua-batur ♄ circa meridianum. Corrigebatur horologium.]

9 10⅙	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	35° 15¾′
	Declination of Saturn, north [Declin. ♄ B.]	22° 42½′
		22 43
9 13⅚	The distance repeated [Repetita diſtantia]	35° 15⅚′
10 5⅚	Between Saturn and Aldebaran [Inter ♄ & Aldeb.]	35° 16′
10 9⅚	The same distance [Eadem diſtantia]	35° 15¼′
10 12		35 15½ good [bona]
	Vice versa [Viceverſa]	
10 17⅙	Between Saturn and cor ♌ [Inter ♄ & cor ♌]	45° 8′
	The right shoulder of Orion [Dexter humer. Orion.]	2 48
10 29⅓	The same distance [Eadem diſtantia]	45° $8\frac{1}{12}$′ [45 $8\frac{1}{12}$]
11 0	The same [Eadem]	45° 8′
11 12½	Meridian altitude of Saturn [Altit. Meridiana ♄]	
	by the steel quadrant [per Quadr. Chalyb.]	56° 45½′
	by the revolving quadrant [per Volub.]	56° 45¾′
	The Lesser Dog, east [Canis minor orient.]	9 35

Calculation for the place of Saturn. [Calculus pro loco ♄]

$10^h\ 12^m$ [H. 10 M. 12]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	35° 15′ 30″
	Declination of Saturn, north [Declin. ♄ B.]	22° 40′
	Right ascension [Aſcenſio R.]	99° 49′ 42″
10 17	Distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	45° 8′
	Right ascension [Aſcenſio R.]	99° 48′ 26″
10 15	Right ascension [Aſcenſio Recta] limited [limitata]	99° 49′
	Resp. longitude [Reſp. Longitudo]	9° 3′ 20″ ♋
	Latitude [Latitudo]	0° 32′ 56″ south [M.]

[1] In codex E, 8 53 35 is struck through with lines, but "retineatur" [let it be kept] is written beside it. [In codice E 8 53 35 lineis inducta ſed adſcriptum eſt »retineatur«.]

Collection of the appearances of the star Saturn that were obtained from the acronychal observations in the month of December, when it was nearest to the meridian and opposite the mean motion of the Sun, near the perigee both of its own eccentric and of the Sun's; together with a comparison, made at the same time, of the Copernican and Alphonsine calculation of the motions of Saturn for the same times. [Collectio apparentiarum ſtellæ ♄ quæ ex obſeruationibus Acronychijs Menſe Decembri habitæ ſunt, quando proxime circa Meridianum fuit medioque motui ☉ oppoſitus circa Perigæum, tum proprij tum Solaris Eccentrici: inſtituta vna collatione Calculi Copernici & Alphonſini in motibus ♄ ad eadem tempora.]

Day, December [Dies Dec.]	Hours, minutes [H. M.]	From the observations [Ex obſeruationibus]		Calculation of Copernicus [Calculus Copernici]		Calculation of Alfonso X [Calculus Alphonſi]	
		Longitude [Longit.]	Latitude [Latit.]	Longitude [Longit.]	Latitude [Latit.]	Longitude [Longit.]	Latitude [Latit.]
4	$10^h\ 3^m$ [10 3]	10° 44½′ ♋	0° 33′ south [M.]	10° 43′ ♋	1° 32½′ south [M.]	13° 43′ ♋	0° 39′ south [M.]
5	$8^h\ 40^m$ [8 40]	10° 40⅚′	0° 32½′	10° 37⅔′	1° 32⅖′	13° 38′	0° 39′
6	$12^h\ 36^m$ [12 36]	10° 36′	0° 34′	10° 31½′	1° 32⅓′	13° 32½′	0° 39′
9	$12^h\ 52^m$ [12 52]	10° 21′	0° 33¼′	10° 17½′	1° 32½′	13° 18½′	0° 39′
10	$12^h\ 10^m$ [12 10]	10° 16′ 26″	0° 33¾′	10° 12½′	1° 32½′	13° 13½′	0° 39′
16	$11^h\ 22^m$ [11 22]	9° 47⅔′	0° 34¼′	9° 42⅔′	1° 32′	12° 43⅔′	0° 37′
21	$12^h\ 15^m$ [12 15]	9° 23′	0° 33′	9° 15⅔′	1° 32′	12° 18⅔′	0° 37′
24	$9^h\ 45^m$ [9 45]	9° 8′ 50″	0° 32′ 55″	8° 59⅔′	1° 31′	12° 1⅙′	0° 37′

Day, December [Dies Dec.]	Hours, minutes [H. M.]	From the observations [Ex obſeruationibus]	Calculation of Copernicus [Calculus Copernici]		Calculation of Alfonso X [Calculus Alphonſi]	
25	$10^h\ 15^m$ [10 15]	9° 3′ 20″	0° 32′ 56″	8° 54½′	1° 31′	11° 55′ 0° 37′

When the time of the opposition of the apparent motion of Saturn with the simple Sun was investigated between 16 December and the 25th of the same month, that opposition fell on 21 December at $3^h\ 33^m$. Place of the simple Sun 9° 25′ ♐; apparent place of Saturn 9° 25′ ♋ approximately; diurnal motion of Saturn 4′ 57″. [Inſtituta indagatione temporis ☍ apparentis motus ♄ cum ſimplici ☉ inter 16 diem Decembris & 25 eiuſdem, incidit ☍ illa in diem 21 Decembris H. 3 33′. Locus ☉ ſimplicis 9 25 ♐, Locus apparens ♄ 9 25 ♋ proxime, Motus diurnus ♄ 4′ 57″.]

According to the observations and the restitution of the solar motions, Saturn was in opposition to the simple Sun in the month of December, on the 21st day, at $3^h\ 40^m$ P. M., the time of opposition having been investigated between the 16th and the 21st day. [Fuit ♄ in ☍ ſimplicis ☉ iuxta obſeruationes ac reſtitutionem motuum ſolarium Menſe Decembri die 21 H. 3 M. 40 P. M., facta temporis ☍ inquiſitione inter diem 16 & 21.]

Place of the simple Sun [Locus ☉ ſimplicis]	9° 25⅓′ ♐	Place of Saturn [Locus ♄]	9° 25⅓′ ♋

Calculation[1] for the opposition of Saturn with the simple Sun on 21 December at $12^h\ 15^m$. [Calculus[1] pro ♄ ☍ cum ſimplici ☉ die 21 Decembris H. 12 M. 15.]

Longitude of Saturn from the observations limited vice versa: 9° 23′ 0″ ♋. Hence the time of opposition with the simple Sun on 21 December at $3^h\ 30^m$, Saturn in 9° 24′ 47″ ♋. [Longitudo ♄ ex obſeruationibus viceverſa limitatis 9 23 0 ♋. Hinc tempus oppoſ. cum ſimplici ☉ die 21 Decembris H. 3 M. 30, ♄ in 9° 24′ 47″ ♋.]

Further, when a comparison is made between the 16th day and the 25th day of December, the time of opposition is found on the 21st day at $3^h\ 24^m$, longitude of Saturn 9° 24′ 30″ ♋. [Porro facta collatione inter diem 16 & diem 25 Decembris invenitur tempus ☍ Die 21 H. 3 M. 24, Longitudo ♄ 9 24 30 ♋.]

These being limited against one another, the time of the opposition of the true place of Saturn, with respect to the zodiac, with the simple Sun is set in the year 91, in the month of December, on the 21st day, at $3^h\ 27^m$. The observed place of Saturn in 9° 24′ 40″ ♋. [Limitatis hiſce inter ſe ponitur tempus ☍ veri loci ♄ reſpectu Zodiaci cum ſimplici ☉ Anno 91 Menſe Decembri Die 21 H. 3 M. 27. Locus ♄ obſeruatus in 9 24 40 ♋.]

Let the true opposition of Saturn with the simple Sun therefore be set[2] on 21 December [Ponatur[2] itaque vera ☍ ♄ cum ſimplici ☉ Die 21 Decembris]

at 3^h 35^m in [H. 3 M. 35 in]	9° 25′ 0″ ♋
Subt.[3] for the right ascension limited afterwards [Subt.[3] pro Aſc. R. poſtmodum limitata]	30
So that the longitude of Saturn is [Vt ſit longitudo ♄]	9° 24′ 30″
Subt. likewise for the arc of inclination of the latitude of Saturn [Subt. item pro arcu inclinat. latit. ♄]	50
True place of Saturn [Verus locus ♄]	9 23 40

[1] What follows is from codex V. [Quæ ſequuntur e codice V.] [2] Again from codex E. [Denuo e codice E.] [3] The rest added later in another hand. [Cetera poſtea alia manu adſcripta.]

Observations of Jupiter [OBSERUATIONES IOUIS.]

5 January, morning [DIE 5 JANUARIJ, MANE.]

6 31½	The meridian altitude of Jupiter was [Erat Altit. merid. ♃]	
	by the steel instrument [per Chalyb.]	18° 56⅓′
	Spica ♍, west [Spica ♍ occid.]	26 54

But Jupiter had passed the meridian a very little. [Erat autem ♃ paululum transgreßus meridianum.]

6 57⅓	Between Jupiter and Spica ♍ [Inter ♃ & Spicam ♍]	26° 39⅚′
	Declination of Jupiter [Declinatio ♃]	15° 9⅚′
		15 10
	Spica ♍, west [Spica ♍ occid.]	33 21

More could not be observed because of the dawn. [Plura non potuerunt obſeruari propter auroram.]

9 January [DIE 9 JANUARIJ.]

It should be noted that on the morning of 9 January Mästlin [Mæſtlinus] saw Jupiter wholly occulted by Mars. I too saw, when I was going at 6^h to hear a lecture; I saw them joined, I say, Jupiter not fully covered.[1] [Notandum quod die 9 Januarij mane Mæſtlinus viderit Iouem totum occultatum a Marte. Vidi et ego cum irem H. 6 ad lectionem audiendam, vidi inquam copulatos, non plane tectum Iouem[1].]

22 January, morning [DIE 22 JANUARIJ, MANE.]

	Meridian altitude of Jupiter by the steel instrument [Altit. merid. ♃ per Chalyb.]	18° 25⅚′
6^h $35⅓^m$ [H. 6 $35⅓$]	Between Spica ♍ and Jupiter [Inter Spicam ♍ & ♃]	28° 32½′
	Declination of Jupiter [Declinatio ♃]	15° 40′
		15 41½
6 38⅚	Between Spica ♍ and Jupiter [Inter Spicam ♍ & ♃]	28° 33½′
	Declination of Jupiter [Declinatio ♃]	15° 39⅚′
		15 40⅚
	Spica ♍, west [Spica ♍ occid.]	37 45½
6 43⅙	The same distance [Eadem diſtantia]	28° 32⅓′
	Spica, west [Spica occid.]	38 54½

23 January, morning [DIE 23 JANUARIJ, MANE.]

Meridian altitude of Jupiter [Altitudo ♃ merid.]	
by the steel instrument [per Chalyb.]	18° 24½′
by the revolving quadrant [per Volub.]	18° 24⅙′

28 January, morning [DIE 28 JANUARIJ, MANE.]

Among rather thin clouds. [Inter rariuſculas nubes.]

Hours, minutes [H. M.]	Between Jupiter and Spica ♍ [Inter ♃ & Spicam ♍]	Declination of Jupiter [Declinatio ♃]		Spica, west [Spica occid.]
5^h $47⅚^m$ [5 $47⅚$]	5 29° 2¾′			32 21
	Jupiter at this time was near the meridian, having passed it a very little [♃ hoc tempore erat circa merid., paululum transgreßus]			
5^h $51⅙^m$ [5 $51⅙$]		15° 48′	15° 49½′	33 23
5^h $54⅓^m$ [5 $54⅓$]	5 29° 3′	15° 48′	with both [vtroque]	34 9
5^h $57½^m$ [5 $57½$]	5 29° 3⅙′			34 57

	Vice versa [Viceverſa]			
	Between Jupiter and the left knee of Ophiuchus [Inter ♃ & ſin. genu Ophiuchi]			
6^h 1^m [6 1]	25° 53′	15° 48⅙′	15° 48⅔′	35 50

6^h 19^m [6 19]	25° 52⅙′	

3 February, morning [DIE 3 FEBRUARIJ, MANE.]

Hours, minutes [H. M.]	Between Jupiter and Spica ♍ [Inter ♃ & Spicam ♍]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter by the revolving quadrant [Altit. ♃ per Volub.]	Spica, west [Spica occid.]
6^h $9⅙^m$ [6 9⅙]	29° 26′	15° 54′	16° 42′	46 38
		with both [vtroque]		
6^h $13½^m$ [6 13½]	29° 27′		16° 33′	47 45
6^h 18^m [6 18]		15° 54′		48 50
		15° 53⅔′		

19 February, morning [DIE 19 FEBRUARIJ, MANE.]

Meridian altitude of Jupiter [Altit. merid. ♃]	
by the steel instrument [per Chalyb.]	18° 5⅔′
by the revolving quadrant [per Volub.]	18° 6′

Hours, minutes [H. M.]	Distance between Jupiter and Spica ♍ [Diſt. ♃ & Spicæ ♍]	Southern declination [Declinatio auſtrina]	The northern scale-pan, west [Lanx bor. occ.]
5^h 9^{m}* [5 9*]	30° 0⅙′		19 25
5^h $11⅓^m$ [5 11⅓]	29° 59⅚′	16° 0⅓′	20 1
5^h $12½^m$ [5 12½]	30° 0′	16° 0′	20 21
	Vice versa, the distance of Jupiter from the 12th of Ophiuchus, in the right thigh [Viceverſa diſtantia ♃ a 12 Ophiuchi in femore dextro.]		
5^h $15⅔^m$ [5 15⅔]	24° 57¼′	16° 0½′	21 8
		16° 0¼′	
5^h $23⅓^m$ [5 23⅓]	24° 56′		23 9

* At 5^h 9^m Jupiter was then about 10° from the south. [* H. 5 9′ ♃ erat tunc circiter 10° a meridie.]

23 February, morning [DIE 23 FEBRUARIJ, MANE.]

Between Jupiter and the star in the right thigh of Ophiuchus, number 12. [Inter ♃ & ſtellam in dextro femore Ophiuchi numero 12.]

Hours, minutes [H. M.]	Distance [Diſt.]	Southern declination [Decl. auſt.]	Altitude by the revolving quadrant [Altit. per Volub.]	The northern scale-pan, west [Bor. lanx occid.]
5^h 31½^m [5 31½]	24° 55⅓′	16° 1′	16° 20′	1 48
		16° 0⅓′		
5^h 39⅔^m [5 39⅔]	24° 55′	16° 0′	16° 5′	5 15
		16° 1½′		
5^h 44^m [5 44]	24° 54′	16° 0′		6 32
		16° 0′		
5^h 47½^m [5 47½]	24° 54′	15° 59⅚′	15° 40′	

Because of thinner clouds arising and the dawn, nothing further was obſerved. [Propter nubes oborientes rariores & auroram vlterius nihil obſeruabatur.]

[1] Written in the hand of Johannes Aurifaber [Joannis Aurifabri]. [Manu Joannis Aurifabri conſcripta.]

26 February, morning [DIE 26 FEBRUARIJ, MANE.]

Hours, minutes [H. M.]	Distance of Jupiter from Spica [Diſt. ♃ a Spica]	Southern declination of Jupiter [Decl. ♃ auſt.]	Altitude of Jupiter [Altit. ♃]	Jupiter, west [♃ occid.]
5^h 18½^m [5 18½]	30° 2′	15° 59⅚′	12° 50′	
		16° 0′		
5^h 25⅓^m [5 25⅓]	30° 1⅓′	15° 59¾′	14° 35′	30 5
		16° 0′		

The clock was corrected yesterday evening at 6^h. [Horologium corrigebatur heſterna veſpera H. 6.]

4 April, evening [DIE 4 APRILIS, VESPERI.]

Here Jupiter was retrograde. [Hic erat ♃ retrogradus.]

Hours, minutes [H. M.]	Between Jupiter and Spica [Inter ♃ & Spicam]	Southern declination of Jupiter [Decl. ♃ auſt.]	Altitude by the revolving quadrant [Alt. per Volub.]	Spica ♍, east [Spica ♍ orient.]
10h 52m [10 52]	27° 31′	16° 46½′	14° 37½′	2 34
		16° 47′		
10h 58½m [10 58½]	27° 30½′	16° 47⅓′	15° 4⅔′	0 48
11h 6½m [11 6½]	27° 32′	16° 47′	15° 35′	Spica, west [Spica occ.]
	uncertain [incerta]	16° 46¾′		1 9
	Vice versa, from the left knee of Ophiuchus [Viceverſa a ſiniſtro genu Ophiuchi]			
11h 16⅚m [11 16⅚]	20° 34¼′	16° 46⅓′	16° 15′	4 1
		16° 46⅔′		
11h 22m [11 22]	20° 35′	16° 46½′	16° 33½′	5 31
11h 28⅙m [11 28⅙]	20° 34⅙′			6 57

14 APRIL, EVENING [DIE 14 APRILIS, VESPERI.]

Hours, minutes [H. M.]	Distance between Jupiter and Spica [Diſt. inter ♃ & Spicam]	Southern declination [Decl. auſt.]	Altitude of Jupiter [Altit. ♃]	Spica, west [Spica occ.]
10h 47m [10 47]	26° 19½′	14° 53⅚′	16° 20′	1 46
		14° 50½′		
10h 50⅚m [10 50⅚]	26° 20⅔′	14° 51½′		2 39
		14° 52¼′		
10h 53⅚m [10 53⅚]	26° 21′	14° 50′	16° 42½′	3 20
		14° 51½′		
16h 57⅓m [16 57⅓]	26° 21′	14° 50¼′		
		14° 51⅔′		
	Vice versa, from the left knee of Ophiuchus [Viceverſa a ſiniſtro genu Ophiuchi]			
11h 2m [11 2]	21° 35⅙′	14° 50⅔′	17° 6′	5 24
		14° 51⅓′		
11h 5⅔m [11 5⅔]	21° 35½′	14° 50⅙′		6 21
		14° 51½′		
11h 10m [11 10]	21° 36′	14° 51¼′*	17° 30′	7 24

* with one pinnule at least [*vno ſaltem pinnacidio]

Computation for the place of Jupiter from Spica, 14 April at 11^h 0^m. [Supputatio pro loco ♃ a Spica die 14 Aprilis H. 11 M. 0.]

BA	75 9½	Right ascension of Spica [Aſc. R. Spicæ]	195° 56′ 52″
CA	81 2¼	Right ascension of Jupiter [Aſc. R. ♃]	222° 13′ 17″
BC	26 21	Southern declination [Declin. M.]	14° 50½′
BAC	26 16 25		

Resp. longitude [Reſp. Longitudo]	14° 16′ 8″ ♏
Latitude [Latitudo]	1° 23′ 35″ north [B.]

Jupiter seems to have had some refraction here because of the density of the air, although the armillae correct this too by themselves. The southern declination is greater by a minute, the longitude... smaller. [Videtur hic ♃ habuiße aliquam refractionem propter aëris denſitatem, licet et hanc Armillæ per ſemet ipſas corrigunt. Declinatio auſtrina minuto maior, Longitudo... minor.]

20 April, morning [DIE 20 APRILIS, MANE.]

Jupiter was observed near the opposite of the Sun, in this way. [Obſeruabatur ♃ circa oppoſitum ☉ in hunc modum.]

Hours, minutes [H. M.]	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Altit. ♃]	The left knee of Ophiuchus, west [Genu ſin. Oph. occ.]
2^h $35½^m$ [2 35½]; corrected $21⅚^m$ [corr. 21⅚]	25° 43′	14° 40¾′	14° 50′	8 27
2^h 44^m [2 44]	25° 42⅚′	14° 41′	14° 13′	10 35
2^h $49⅔^m$ [2 49⅔]	25° 42¾′	14° 40⅔′	13° 47′	12 7
		14° 41′		
	Vice versa. [Viceverſa.]			
	From the 12th of Ophiuchus [a 12 Ophiuchi]			The twelfth, west [Duodecima occ.]
2^h $59½^m$ [2 59½]	29° 7⅙′	14° 40⅓′	12° 55′	6 34½
3^h 7^m [3 7]	29° 6′	14° 40′	12° 17′	8 35
		14° 40½′		
3^h 14^m [3 14]	29° 7⅓′	14° 39¾′	11° 40′	10 21
3^h $19⅔^m$ [3 19⅔]	29° 7½′	14° 39′	11° 8′	12 3
		14° 39½′		

Computation for the place of Jupiter from the preceding observations [Supputatio pro loco ♃ ex præcedentibus obſeruationibus]

At 2^h $21\frac{5}{6}^m$ [H. 2 21⅚]	Distance of Jupiter from Spica [Diſtantia ♃ a Spica]	25° 43′
	Declination limited for refraction [Declin. pro refract. limit.]	14° 42′
	Hence, from Spica, right ascension [Hinc a Spica Aſc. R.]	221° 35′
	To these there corresponds, from the old table, [Quibus reſpondet ex tabula veteri]	
	Longitude [Longitudo]	13° 38¼′ ♏
	Latitude [Latitudo]	1° 20⅔′ north [B]

22 April, evening [DIE 22 APRILIS, VESPERI.]

Jupiter was observed in the following way. [Obſeruabatur ♃ in modum qui ſequitur.]

The clock was corrected at about the 11th hour. [Horologium circa 11^{mam} horam corrigebatur.]

Hours, minutes [H. M.]	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	Declination of Jupiter [Declin. ♃]	Altitude of Jupiter [Altit. ♃]	Spica, west [Spica occid.]
11^h $34\frac{1}{2}^m$ [11 34½]	25° 21¼′	14° 35′	19° 20′	18 25
		14° 35⅔′		
11^h 41^m [11 41]	25° 21 1/12′		19° 24′	20 9
11^h $46\frac{1}{3}^m$ [11 46⅓]	25° 21′	14° 35′	19° 25′	21 30
		14° 35½′		
12^h 2^m [12 2]; corrected 7^m [corr. 7′]	Altitude of Jupiter passing through the meridian [Altit. ♃ tranſeuntis per merid.]			
	by the steel instrument [per Chalyb.]		19° 30⅚′	
	by the revolving quadrant [per Volub.]		19° 30⅓′	25 25

Afterwards it was observed vice versa [Poſtea obſeruabatur viceverſa]

	From the uppermost in the forehead of ♏ [a ſuprema in fronte ♏]		Merid. scale-pan of ♎, west [Merid. lanx ♎ occid.]
12^h $16\frac{1}{3}^m$ [12 16⅓]	14° 11′*	14° 35′ 19° 25′	8 31
		14° 35⅔′	
12^h $24\frac{1}{2}^m$ [12 24½]	14° 11⅙′		10 34
12^h 29^m [12 29]	14° 11¼′		12 0

* The altitude of the uppermost of the forehead of ♏ was about 13° 8′. [* Altitudo ſupremæ frontis ♏ erat circiter 13° 8′.]

From these most recent observations the place of Jupiter is found by triangular computation from the data that follow. [Ex his proximis obſeruationibus invenitur per ſupputationem triangularem locus ♃ ex datis, quæ ſequuntur.]

At 11h 48m [H. 11 48′]	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	25° 21′
	Southern declination of Jupiter [Declin. M. ♃]	14° 34′ 35″
	Southern declination of Spica [Declin. Spicæ M.]	8° 57′ 45″
	Right ascension of Jupiter [Aſc. R. ♃]	221° 13′ 10″
12 18	Distance of Jupiter from the upper star of the three in the forehead of ♏ [Diſt. ♃ a ſtella ſup. trium in fronte ♏]	14° 11′
	Declination of Jupiter [Declin. ♃]	14° 34½′
	Southern declination of the upper one in the forehead of ♏ [Decl. M. ſup. in fr. ♏]	18° 35⅚′
	Right ascension of Jupiter [Aſc. R. ♃]	221° 14′ 6″
At 11h 52m [H. 11 52′]	Limited right ascension of Jupiter [Aſc. R. ♃ limitata]	221° 13½′
	Southern declination of Jupiter [Declin. ♃ M.]	14° 34⅗′
Reſp. from the old table [Reſp. e tabula veteri]	Longitude [Longit.]	13° 15′ 51″ ♏
	Latitude [Latit.]	1° 21′ 25″ north [B.]

The diurnal motion of Jupiter according to the observations is a little greater, 7′ 47″ [M. 7 47″], and that in going retrograde. [Motus diurnus ♃ iuxta obſeruationes paulo maior eſt M. 7 47″, idque retrogradiendo.]

23 April, evening [DIE 23 APRILIS, VESPERI.]

Hours, minutes [H. M.]	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Altit. ♃]	Spica, west [Spica occ.]
10h 22⅙m [10 22⅙]	25° 12′	14° 32⅙′ 14° 32⅓′	16° 58′	1 51
10h 28m [10 28]	25° 12′	14° 32⅓′ 14° 31⅚′	17° 11′	3 11
10h 33m 40s [10 33 40]	25° 11 11/12′	14° 32′ with both [vtroque]	17° 32′	4 40
11h 33m [11 33]	25° 13′	14° 32⅚′ 14° 32⅔′		19 13
11h 36m 30s [11 36 30]	25° 13½′	14° 32½′ 14° 31⅓′		20 3
11h 40m [11 40]	25° 12⅚′	14° 33′ 14° 32¾′		21 3
11h 46m [11 46]; corrected 52m [corr. 52′]	25° 13′	14° 33⅙′ 14° 32⅚′		22 31

Hours, minutes [H. M.]	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Altit. ♃]	Spica, west [Spica occ.]
$11^h\ 55^m\ 30^s$ [11 55 30]; $12^h\ 2\frac{1}{6}^m$ by the corrected clock [12 2⅙ horol. correcto]	Jupiter was passing through the meridian, having the altitude [Pertranſibat ♃ merid. habens altitudinem]			
	by the steel instrument [per Chalyb.]		19° 33′, truer [19 33 verior]	Spica, west [Spica occ.]
	by the revolving quadrant [per Volub.]		19° 32′	24 58

Computation for the place of Jupiter from the immediately preceding observations, namely when the planet was here near the meridian and was less entangled in clouds. [Supputatio pro loco ♃ e proximis præcedentibus obſeruationibus, quando videlicet planeta hic circa meridianum verſabatur & minus nubibus intricatus erat.]

At $11^h\ 52^m$ [H. 11 52′]	Distance of Jupiter from Spica [Diſtantia ♃ a Spica]	25° 13′
	Southern declination of Jupiter [Declin. ♃ M.]	14° 32½′
	Declination of Spica [Declin. Spicæ]	8° 57¾′
	Resp. right ascension of Jupiter [Reſp. ♃ Aſcenſ. R.]	221° 5⅙′
Resp. from the table [Reſp. e tabula]	Longitude [Longitudo]	13° 7⅔′ ♏
	Latitude [Latitudo]	1° 22′ north [B.]

	Copernicus [Copernico]	Alphonsine [Alphonſinis]
Longitude [Long.]	13° 37′	11° 22⅔′ B.
Latitude [Lat.]	1° 59′	1° 50′ north [B.]

24 APRIL [DIE 24 APRILIS.]

Hours, minutes [H. M.]	Distance of Jupiter and Spica [Diſt. ♃ & Spicæ]	Declination of Jupiter [Decl. ♃]	Altitude [Altit.]	Spica, west [Spica occ.]
$11^h\ 22^m$ [11 22]	25° 5⅙′	14° 30¾′ 14° 30⅓′	19° 12′	16 9
$11^h\ 29^m$ [11 29]	25° 5⅙′	14° 31′ 14° 30⅔′		18 2
$11^h\ 35^m$ [11 35]	25° 5′			19 33

Hours, minutes [H. M.]	Distance of Jupiter and Spica [Diſt. ♃ & Spicæ]	Declination of Jupiter [Decl. ♃]	Altitude [Altit.]	Spica, west [Spica occ.]
11^h $42\frac{5}{6}^m$ [11 42⅚]	25° 4⅓′	14° 30⅚′		21 39[1]
11^h 41^m [11 41]		14° 30½′		
11^h $56\frac{1}{2}^m$ [11 56½]; corrected $58\frac{1}{3}^m$ [corr. 58⅓]	Meridian altitude of Jupiter [Altit. ♃ meridiana]			
	by the steel instrument [per Chalyb.]		19° 35¼′	25 5½
	by the revolving quadrant [per Volub.]		19° 34½′	

The air was unsteady, so that the instrument wavered, and the Moon was a hindrance. Cloudy. [Erat aër intranquillus, vnde inſtrumentum vacillabat, eratque ☾ impedimento. Nubiloſum.]

26 April, evening [DIE 26 APRILIS, VESPERI.]

Among thin, adjoining little clouds. [Inter nubeculas raras & contiguas.]

Hours, minutes [H. M.]	Distance of Jupiter and Spica [Diſt. ♃ & Spicæ]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	Cor ♌, west [Cor ♌ occ.]
9^h 13^m [9 13]	24° 48⅔′	14° 24⅚′	14° 30′	41 8
		14° 25′		
9^h $18\frac{1}{2}^m$ [9 18½]; corrected $44\frac{1}{3}^m$ [corr. 44⅓]	24° 49½′	14° 25′	14° 40′	Spica, west [Spica occ.]
		14° 25⅙′		6 38
9^h 21^m [9 21]	24° 49⅓′		15° 5′	

Computation for the places of Jupiter for the later observations. [Supputatio pro locis ♃ ad poſteriores obſeruationes.]

24 April at 11^h 41^m P. M. [Die 24 Aprilis H. 11 M. 41 P. M.]

Distance of Jupiter from Spica ♍ [Diſtantia ♃ a Spica ♍]	25° 4⅓′
Southern declination [Declin. merid.]	14° 30½′
Right ascension of Jupiter [Aſcenſio R. ♃]	220° 56′ 26″
Resp. our longitude [Reſp. noſtra Longitudo]	12° 58′ ♏
Latitude [Latitudo]	1° 20 5/12′ north [B.]

[1] The number 39 struck through with a line. [Numerus 39 linea inductus.]

26 April at 9^h $44\frac{1}{3}^m$ P. M. [Die 26 Aprilis H. 9 M. 44⅓ P. M.]

Distance of Jupiter from Spica ♍ [Diſtantia ♃ a Spica ♍]	24° 49½′

Southern declination [Declin. mer.]	14° 26′
Right ascension of Jupiter [Aſcenſio R. ♃]	220° 41⅔′
Resp. our longitude [Reſp. noſtra Longitudo]	12° 44′ ♏
Latitude [Latitudo]	1° 20⅓′ north [B.]

29 April, evening [DIE 29 APRILIS, VESPERI.]

Jupiter was observed when it was east, near the meridian. [Obſeruabatur ♃ cum eßet orientalis circa Meridianum.]

Hours, minutes [H. M.]	Distance of Jupiter and Spica ♍ [Diſt. ♃ & Spicæ ♍]	Decli-nation [Decl.]	Altitude [Altit.]	Spica, west [Spica occ.]
11^h $4\frac{5}{6}^m$ [11 4⅚]	24° 28 11/12′	14° 19′		19 34
		14° 19⅔′		
11^h $10\frac{5}{6}^m$ [11 10⅚]	24° 29 1/12′	14° 19′		20 58
		14° 18⅚′		
11^h 14^m [11 14]	24° 28 11/12′	14° 19½′		21 54
		14° 19⅚′		
11^h $23\frac{1}{3}^m$ [11 23⅓]; corrected $36\frac{1}{3}^m$ [corr. 36⅓]	Meridian altitude of Jupiter [Alt. ♃ merid.]			
	by the revolving quadrant [per Volub.]		19° 46′	24 18
	by the steel instrument [per Chalyb.]		19° 47′	
11^h $30\frac{5}{6}^m$ [11 30⅚]; corrected 40^m [corr. 40′]	24° 28⅓′	14° 19½′		26 12
		14° 18′		
	Vice versa. [Viceverſa.]			
	From the uppermost of the three in the forehead of ♏ [a ſuprema trium in fronte ♏]		The bright star of the Vulture, east [Luc. Vult. or.]	Spica, west [Spica occ.]
11^h $42\frac{1}{2}^m$ [11 42½]; corrected $55\frac{3}{4}^m$ [corr. 55¾′]	15° 4⅙′		65 18	29 7
11^h $51\frac{1}{6}^m$ [11 51⅙]	15° 4½′	14° 19′		
		14° 18¾′		
11^h $54\frac{1}{3}^m$ [11 54⅓]	15° 5⅔′		64 25	
11^h $58\frac{5}{6}^m$ [11 58⅚]	15° 4½′	14° 19⅙′	63 15	
		14° 18¾′		
12^h $2\frac{2}{3}^m$ [12 2⅔]	15° 4⅚′		62 20	

The Moon was a hindrance here. [☾ erat hic impedimento.]

Computation for the place of Jupiter from the immediately preceding obſervations. [Supputatio pro loco ♃ ex proxime præcedentibus obſeruationibus.]

On the 29th at 11h 40m [Die 29 H. 11 M. 40]		
	Distance of Jupiter from Spica [Diſt. ♃ a Spica]	24° 28⅓′
	Southern declination of Jupiter [Declin. ♃ M.]	14° 19′
At 11h 55¾m [H. 11 M. 55¾]	Distance from the uppermost of the three in the forehead of ♏ [Diſt. a ſupr. trium in fronte ♏]	15° 4⅙′
At 11h 48m [H. 11 48′]	Limited right ascension of Jupiter [Aſc. R. ♃ limitata]	220° 21′
Resp. from the table [Reſp. e tabula]	Longitude [Longitudo]	12° 22′ 28″ ♏
	Latitude [Latitudo]	1° 20′ 50″ north [B.]

Place of Jupiter from the calculation [Locus ♃ e calculo]	of Copernicus [Copernici]	of the Alphonsines [Alphonſinorum]
Longitude [Longit.]	12° 47′ ♏	10° 36′ ♏
Latitude [Latit.]	1° 58′ north [B.]	1° 49′ north [B.]

30 April [DIE 30 APRILIS.]

Hours, minutes [H. M.]	Distance between Jupiter and Spica [Diſt. inter ♃ & Spicam]	Declination of Jupiter [Decl. ♃]	Spica, west [Spica occ.]
10h 37½m [10h 37½m]	24° 22′	14° 17′	16 20
		14° 16⅔′	
10h 40½m [10h 40½m]	24° 21½′	14° 17′	17 10
		14° 17⅓′	
10h 42⅚m [10h 42⅚m]	24° 21¼′	14° 18⅙′	17 42
		14° 18′	
10h 46m [10h 46m]	24° 21⅓′	14° 17¾′	18 34
		14° 17′	
	Vice versa, distance of Jupiter from the northern one in the left hand of Ophiuchus. [Viceverſa, Diſt. ♃ a Boreali in ſiniſtra manu Ophiuchi.]		
11h 1⅓m [11h 1⅓m]	21° 17¼′	14° 17¾′	22 29
		14° 17′	
11h 7½m [11h 7½m]	In the meridian [In mer.]	by the steel instrument [per Chal.] 19 49	24 10

Hours, minutes [H. M.]	Distance between Jupiter and Spica [Diſt. inter ♃ & Spicam]	Declination of Jupiter [Decl. ♃]	Spica, west [Spica occ.]
		by the revolving quadrant [per Vol.] 19 48½	
11h 14m [11 14]	21° 17⅓′	14° 16⅔′	25 45
		14° 17¼′	
11h 17m [11 17]	21° 17′		26 35

Investigation of the place of Jupiter by triangular computation from selected preceding observations, 30 April. [Inveſtigatio loci ♃ per ſupputationem Triang. ex præcedentibus obſeruationibus ſelectis, die 30 Aprilis.]

At 11h 7⅓m [H. 11 M. 7⅓]	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	24° 21⅙′
	Southern declination [Declin. M.]	14° 16¾′
11 30⅓	Distance of Jupiter from that northern one in the hand of Ophiuchus [Diſt. ♃ a Boreali illa in manu Ophiuchi]	21° 17′ 15″
	Southern declination [Declin. M.]	14° 16′ 45″

BA	75 43¼	BA	75 43¼
CA	81 2¼	DA	87 25¼
BC	24 21⅙	DB	21 17¼
CAB	24 17¼	BAD	18 0 47
Right ascension [Aſc. R]	220° 14′ 7″	Right ascension [Aſc. R.]	220° 14′ 33″

At 11h 16m [H. 11 M. 16]	Limited right ascension [Aſcenſ. R. limitata]	220° 14¼′
Resp. from the table [Reſp. e tabula]	Longitude [Longitudo]	12° 15′ 53″ ♏
	Latitude [Latitudo]	1° 21′ north [B.]

5 May, evening [DIE 5 MAIJ, VESPERI.]

Hours, minutes [H. M.]	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	Southern declination of Jupiter [Decl. ♃ M.]	Altitude of Jupiter by the revolving quadrant [Alt. ♃ per Volub.]	Spica, west [Spica occid.]
9^h 58^m [9 58]	23° 44′	14° 5⅔′	19° 11¼′	10 54
		14° 6½′		
10^h $1½^m$ [10 1½]	23° 44½′	14° 6½′	19° 19′	12 4
		with both [vtroque]		
10^h 5^m [10 5]	23° 44′		19° 25′	12 50
10^h $7⅙^m$ [10 7⅙]	23° 44⅙′	14° 6′		13 25
		14° 6⅙′		

	Vice versa, from the left knee of Ophiuchus [Viceverſa a ſiniſtro genu Ophiuchi]			
10^h 12^m [10 12]	23° 56⅔′		19° 38′	14 44
10^h $15⅓^m$ [10 15⅓]	23° 57¼′	14° 5¾′		15 37
		14° 6¼′		
10^h $18½^m$ [10 18½]	23° 57⅓′		19° 46′	16 27
10^h 45^m [10 45]	Jupiter was passing through the meridian, having the altitude [Tranſibat ♃ per Meridianum habens alt.]			
	by the steel instrument [per Chal.]		20° 0⅙′	
	by the revolving quadrant [per Volub.]		20° 0′	23 26

12 June, evening [DIE 12 JUNIJ, VESPERI.]

Jupiter was observed. The clock was corrected, because after it had been set right by the Sun it was running 2^m [2 M.] slower than it should. [Obſeruabatur ♃. Horologium correctum eſt, quod 2 M. tardius iuſto, poſtquam ad ☉ rectificatum fuit, mouebatur.]

Time on the clock [Tempus in horol.]	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	Declination of Jupiter [Decl. ♃]	Altitude [Altit.]	The Vulture, east [Vultur or.]
10^h $29¾^m$ [10 29¾]	20° 26′*			44 32
10^h $33¾^m$ [10 33¾]		13° 11⅔′ with one pinnule [vno pin.]	15° 42′	
10^h 40^m [10 40]	20° 25′	13° 12′		41 56
		13° 12½′		
10^h $50⅚^m$ [10 50⅚]			14° 10′	38 56

* When the distance of Jupiter from Spica ♍ was observed, it was at an altitude of about 12° [12 circiter grad.]. [* Cum obſeruaretur diſtantia ♃ a Spica ♍, erat ea in altitudine 12 circiter grad.]

10 30	Distance of Jupiter from Spica ♍ [Diſt. ♃ a Spica ♍]	20° 26′
	Add 2′ for refraction [Adde 2′ pro refract.]	20 28
	Declination, adding 2½ for refraction [Declin., add. 2½ pro refr.]	13° 14½′
	Right ascension [Aſc. R.]	216° 21⅓′
	Resp. longitude [Reſp. Longitudo]	8° 21⅓′ ♏
	Latitude [Latitudo]	0° 59½′ north [B.]

Table containing the places of Jupiter, computed from any two selected observations of the individual days, with a comparison against the calculation of the Alphonsines and of Copernicus, corresponding to the times of the observations. Also the simple motion of the Sun, so that from these the moment of the true opposition of Jupiter with the Sun may be known. [Tabula continens loca ♃ ex ſelectis ſingularum dierum quibusvis obſeruationibus binis ſupputata, cum collatione calculi Alphonſinorum ac Copernici, ad tempora obſeruationi bus congruentia. Item ſimplicem ☉ motum: vt ex his momentum veræ ☍ ♃ cum ☉ cognoſcatur.]

Day of April [Dies Aprilis]	Hours, minutes [H. M.]	Simple Sun [Sim-plex ☉]	Our calculation [Calculus noſter]		Copernican calculation [Cal. Copernicæus]		Alphonsine calculation [Calc. Alphonſ.]	
			Longitude [Longit.]	Lati-tude [Latit.]	Longitude [Longit.]	Lati-tude [Latit.]	Longitude [Longit.]	Lati-tude [Latit.]
14	$11^h\ 0^m$ [11 2 19 24 0]		14° 16⅙′ ♏	1° 23½′ north [B.]	14° 40⅔′ ♏	1° 57′ north [B.]	12° 30′ ♏	1° 51′ north [B.]
20	$2^h\ 22^m$ [2 7 23 24 22]		13° 38¼′	1° 20⅔′	14° 2′	1° 58′	11° 53′	1° 51′
22	$11^h\ 52^m$ [11 10 14 40 52]		13° 15⅚′	1° 21⅖′	13° 40⅔′	1° 58′	11° 30′	1° 50′
23	$11^h\ 52^m$ [11 11 13 48 52]		13° 7⅔′	1° 22′	13° 33′	1° 59′	11° 22⅔′	1° 50′
24	$11^h\ 41^m$ [11 12 12 29 41]		12° 58′	1° 20⅖′	13° 25′	1° 59′	11° 16′	1° 50′
26	$9^h\ 44^m$ [9 14 5 57 44]		12° 44′	1° 20⅓′	13° 10′	1° 58′	11° 1′	1° 50′
29	$11^h\ 48^m$ [11 17 8 27 48]		12° 22½′	1° 20⅚′	12° 47′	1° 58′	10° 36′	1° 49′
30	$11^h\ 16^m$ [11 16]		12° 15′ 53″	1° 21′	12° 39⅔′	1° 58′	10° 28⅔′	1° 49′
June 12 [Junij 12]	$10^h\ 30^m$ [10 30]		8° 21⅓′	0° 59½′	8° 41′	1° 45′	6° 35′	1° 43′

Observations of Mars [OBSERUATIONES MARTIS.]

5 January [DIE 5 JANUARIJ.]

In the morning Mars was observed as follows. [Mane obſeruabatur ♂ vt ſequitur.]

6 49⅝	Distance between Mars and Spica ♍ [Diſt. inter ♂ & Spicam ♍]	24° 53′
6 52⅓	The same [Eadem]	24° 51′
	Declination of Mars with both pinnules [Declin. ♂ vtroque pinn.]	14° 35½′
	Spica ♍, west [Spica ♍ occid.]	32 15
6 54⅝	The same [Eadem]	24° 54′
	Spica, west [Spica occid.]	32 45

22 January, morning [DIE 22 JANUARIJ, MANE.]

Meridian altitude of Mars [Altitudo merid. ♂]	
by the steel instrument [per Chalyb.]	16° 43 1/12′
by the revolving quadrant [per Volub.]	16° 42½′

Hours, minutes [H. M.]	Between Mars[1] and Spica [Inter ♂[1] & Spicam]	Declination of Mars [Declin. ♂]	Spica, west [Spica occid.]
$6^h\ 47^m$ [6 47]	34° 32¾′	17° 23′	17° 24⅝39 58
$6^h\ 50⅝^m$ [6 50⅝]	34° 32′	17° 24½′	17° 25′ 40 50
$6^h\ 54⅓^m$ [6 54⅓]	34° 32¾′		41 47

[1] Written in afterwards: perhaps equatorial. [Poſtea adſcriptum eſt: Forte æquatoria.]

23 January [DIE 23 JANUARIJ.]

Meridian altitude of Mars [♂ Altit. Merid.]	
by the steel instrument [per Chalyb.]	16° 34½′
by the revolving quadrant [per Volub.]	16° 35′

28 January [DIE 28 JANUARIJ.]

6 7⅚	Distance of Mars from Spica ♍ [Diſt. ♂ a Spica ♍]	37° 51′
	Declination of Mars [Declin. ♂]	18° 16⅙′
		18° 15⅚′
	Spica ♍, west [Spica ♍ occid.]	37 34
	Altitude of Mars by the revolving quadrant [Altit. ♂ per Volub.]	15° 52′
6 23½	Between Mars and the left knee of Ophiuchus [Inter ♂ & ſin. genu Ophiuchi]	37° 49⅚′
6 27	The same distance [Eadem diſtantia]	37° 50′

3 FEBRUARY, MORNING [DIE 3 FEBRUARIJ, MANE.]

Hours, minutes [H. M.]	Distance of Mars from the left knee of Ophiuchus [Diſt. ♂ a ſin. genu Ophiu.]	Declination of Mars [Decl. ♂]	Altitude [Alt.]	Spica, west [Spica occid.]
$5^h\ 44^m$ [5 44]	14° 31½′	19° 3½′		40 30½
		19° 4½′		
$5^h\ 46⅙^m$ [5 46⅙]	Meridian altitude [Alt. mer.]	by the steel instrument [per Chal.]	15° 3⅚′	
		by the revolving quadrant [per Vol.]	15° 3¾′	
$5^h\ 51½^m$ [5 51½]	14° 30⅙′	19° 3′		42 19
		19° 2½′		
$5^h\ 55½^m$ [5 55½]	14° 31⅔′			43 20
	Vice versa [Viceverſa]			
	Between Mars and Spica [Inter ♂ a Spicam]			
$5^h\ 59⅙^m$ [5 59⅙]	41° 5½′	19° 3′		44 15
		19° 3½′		
$6^h\ 1½^m$ [6 1½]	41° 5⅔′			44 51
$6^h\ 4⅓^m$ [6 4⅓]	41° 6′			45 26

N.B. Mars was near the uppermost of the three in the forehead of ♏, but a little more to the east, at about the same place in which Copernicus once observed it[1]. [N.B. ♂ erat vicinus ſupremæ trium in fronte ♏, ſed paulo orientalior, circa eundem ferme locum, quo illum olim obſeruauit Copernicus 1.]

19 FEBRUARY, MORNING [DIE 19 FEBRUARIJ, MANE.]

Hours, minutes [H. M.]	Between Mars and the southern scale-pan of ♎ [Inter ♂ & auſt. lanc. ♎]	Southern declination of Mars [Decl. ♂ M.]	Spica, west [Spica occid.]
5^h 27^m [5 27]	28° 11′	20° 50⅙′	20° 50′ 51 57
5^h $28\frac{5}{6}^m$ [5 28⅚]	28° 8⅓′*		52 28
5^h $30\frac{1}{6}^m$ [5 30⅙]			52 47

* It could not be observed better because of the dawn. [*Non poterat melius obſeruari propter auroram.]

5 17⅚	Mars was passing through the meridian, having the altitude [♂ tranſibat per Meridianum habens altit.]	
	by the revolving quadrant [per Volub.]	13° 16¾′
	by the steel instrument [per Chalyb.]	13° 16⅔′
	The northern scale-pan was then, on the equator, west [Lanx borealis erat tunc in Æq. occid.]	21 42

N.B. When Mars was first observed, it was about 2 degrees [2 fere gradibus] west of the meridian. This first observation of Mars concerns the time 5^h 27^m [horam 5 M. 27] noted above here. The transit through the meridian, however, was observed first of all, and the time assigned to it is therefore less. [N. B. Cum ♂ primo obſeruaretur, erat remotus a Meridiano 2 fere gradibus ad occaſum. Hæc prima ♂ obſeruatio concernit horam 5 M. 27 hic ſupra annotatam. Tranſitus autem per meridianum omnium primo obſeruabatur, ideoque illi aſcriptum tempus minus eſt.]

	Between Mars and the same one of Ophiuchus² [Inter ♂ & eandem Ophiuchi²]			Spica, west [Spica occ.]
5 31½	28° 11½′	20 50		53 8
	Vice versa, from the Vulture [Viceverſa a Vulture]			
5 35	54° 12′			53 58
5 $36\frac{2}{3}$	54° 11⅓′			54 25
5 $38\frac{1}{6}$	54° 12′	20 50½	20 $50\frac{2}{3}$	54 55

29 April [DIE 29 APRILIS.]

After midnight. [Poſt mediam noctem.]

Hours, minutes [H. M.]	Distance of Mars and cor ♏ [Diſt. ♂ & cord. ♏]	Southern declination of Mars [Decl. ♂ M.]	Altitude [Altit.]	The Vulture, east [Vultur or.]
1h 29⅙m [1 29⅙]	28° 16′	24° 50′	7° 36′	40 9
		24° 48¾′		
1h 33⅔m [1 33⅔]	28° 15′	24° 49½′*	7° 43′	39 0

* With one pinnule, because of an obstruction by the beam. [* vno pinn. propter impedimentum trabis.]

1h 37m [1 37]	28° 17⅓′	24° 50′	7° 53′	38 9
1h 41⅙m [1 41⅙]; corrected 56¾m [corr. 56¾]	28° 17¼′	24° 50⅙′	8° 0′	37 7
	Vice versa [Viceverſa]			
	Distance of Mars from the northern scale-pan of ♎ [Diſt. ♂ a borea lance ♎]			
1h 47⅙m [1 47⅙]; corrected 2h 3m [2 3 corr.]	49° 22′	24° 49⅚′	8° 15′	35 35
		24° 50′		
1h 50⅓m [1 50⅓]	49° 20½′	24° 50′	8° 20′	34 45
		24° 50¼′		
1h 54⅙m [1 54⅙]	49° 22′		8° 29′	33 44
1h 57⅓m [1 57⅓]	49° 22⅚′	24° 50′	8° 34′	32 54
		with both [vtroque]		

[1] Compare Copernicus, *De revolutionibus*, book V, chapter 19. [Cfr. Copernici De revolutionibus lib. V cap. 19.] [2] Thus in codex E. It should be "the southern scale-pan of ♎" [Sic in codice E. Debet eße »auſt. lancem ♎«.]

Computation for the place of Mars for 29 April, from the observations noted above for the same day. [Supputatio pro loco ♂ ad diem 29 Aprilis ex obſeruationibus ad eundem diem ſupra notatis.]

At 13h 56¾m [H. 13 56¾]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	28° 17¼′
	Observed southern declination [Declin. M. obſeruata]	24° 50′
	Declination corrected for refraction [Declin. pro refr. emend.]	24° 55′
	(Altitude of Mars about 8° [Altit. ♂ circiter 8 grad.].)	
	Right ascension of Mars [Aſcenſio R. ♂]	272° 29⅓′
14 3	Observed distance from the northern scale-pan [Diſt. obſeruata a bor. lance]	49° 22⅚′
	True distance [Diſtantia vera]	49° 25′
	Right ascension of Mars [Aſc. R. ♂]	272° 28′ 15″
14 0′	Corrected right ascension [Aſc. R. emendata]	272° 28′ 45″

Resp. from the table [Reſp. e tabula]	Longitude [Longitudo]	2° 15⅙′ ♍
	Latitude [Latitudo]	1° 24¾′ south [M.]

13 May, morning [DIE 13 MAIJ, MANE.]

N.B. These observations were begun as Mars was approaching opposition to the Sun, around the beginning of its retrogradation. [N.B. ♂ ad ☍ ☉ appropinquante circa initium retrogradationis ſuæ, hæ obſeruationes inchoatæ ſunt.]

Hours, minutes [H. M.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Southern declination [Decl. M.]	Alti-tude [Altit.]	The Vulture, east [Vultur or.]
12^h $53\frac{5}{6}^m$ [12 53⅚]	28° 19⅚′	25° 36⅔′	7° 45′	33 3
		25° 37⅙′		
1^h $0\frac{2}{3}^m$ [1 0⅔]	28° 20½′		7° 56′	31 19
1^h $5\frac{1}{2}^m$ [1 5½]; corrected 1^h $34\frac{1}{3}^m$ [1 34⅓ corr.]	28° 20⅔′	25° 37⅚′	8° 1′	30 5
		25° 38′		
	Vice versa, from the eastern one in the head of ♐ [Viceverſa ab orientali in capite ♐]			
1^h 16^m [1 16]; corrected 1^h 45^m [1 45 corr.]	8° 59′		8° 15′	27 25
1^h 22^m [1 22]	8° 58 11/12′	25° 37⅚′	8° 20′	
		25° 38½′		
1^h 32^m [1 32]	8° 58 11/12′			23 7
Corrected 2^h 14^m [2 14 corr.]	Meridian altitude of Mars [Altitudo ♂ meridiana]			
	by the steel instrument [per Chalyb.]		8° 27⅙′	20 8
	by the revolving quadrant [per Volub.]		8° 28′	

Investigation of the place of Mars from the immediately preceding observations, namely when it was near the meridian at its greatest altitude, the refractions being avoided by limiting. [Inveſtigatio loci ♂ ex proximis præcedentibus obſeruationibus, quando ſcilicet circa meridianum erat in maxima ſua altitudine refractionibus limitando euitatis.]

On the 12th, at 13^h $34\frac{1}{3}^m$ [Die 12, H. 13 34⅓]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	28° 20⅔′
	Declination from the meridian altitude [Declin. ex alt. merid.]	25° 38′

	Declination limited for refraction [Declin. pro refr. limit.]	25° 45′
	Right ascension of Mars [Aſcenſio R. ♂]	272° 39′ 56″
On the same day at 13h 45m [Eodem die H.13 45]	Distance observed vice versa from the eastern one in the head of ♐ [viceverſa diſtantia ab orientali in capite ♐ obſeruata]	8° 59′
	Limited [Limitata]	9 0
	Right ascension of Mars [Aſcenſio R. ♂]	272° 40′ 4″
At 13h 40m [H. 13 40′]	Limited right ascension [Aſc. R. limitata]	272° 40′
Resp. from the table [Reſp. e tabula]	Longitude [Longit.]	2° 24′ 27″ ♍
	Latitude [Latit.]	2° 15′ south [M.]

14 MAY, MORNING [DIE 14 MAIJ, MANE.]

The air was vaporous and less clear, and especially so toward the south. [Aër vaporoſus & minus defæcatus exſtitit, idque circa meridiem præcipue.]

Hours, minutes [H. M.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Southern declination [Declin. M.]	Alti-tude [Altit.]	The Vulture, east [Vultur. or.]
12h 58m [12 58]	28° 16⅙′	25° 41⅔′ 25° 40⅓′	7° 52′	31 6
1h 9⅔m [1 9⅔]	28° 15′ 28° 16⅙′	25° 42′ with both [vtroq.]	8° 2′	28 19
1h 14⅙m [1 14⅙]	28° 15⅓′ Vice versa, from the eastern one in the head of ♐ [Viceverſa ab orientali in capite ♐]		8° 13′	26 56
1h 21m [1 21]; corrected 1h 50m [1 50 corr.]	9° 4½′		8° 19′	25 11
1h 25⅓m [1 25⅓]	9° 4¾′	25° 42′ 25° 42⅙′		24 5
1h 29⅚m [1 29⅚]	9° 4⅚′			23 0½
1h 40m [1 40]; corrected 2h 9⅗m [2 9⅗ corr.]	Mars through the meridian [♂ per merid.]			20 16½
		by the steel instrument [per Chal.]	8° 23′ 25″	
		by the revolving quadrant [per Vol.]	8° 23′ 20″	

Triangular calculation for the place of Mars from the immediately preceding observations, in the manner noted above. [Calculus triangularis pro loco ♂ ex proximis antecedentibus obſeruationibus, iuxta modum ſupra notatum.]

At 13^h 43^m [H.13 43′]	Mars was distant from cor ♏ [diſtabat ♂ a corde ♏]	28° 16′, limited [limit.]
	Observed southern declination [Declin. M. obſeruata]	25° 42′
	Limited [limit.]	25 49
At 13^h 50^m [H.13 50]	Observed distance of Mars from the eastern one in the head of ♐ [Diſt. ♂ ab orientali in capite ♐ obſeruata]	9° 4¾′
	Limited [limitata]	9 5⅔

CA	64 11	CA	64 11
BA	64 35	DA	68 24⅔
BC	28 16	DC	9 5⅔
BAC	31 25¼	DAC	8 47⅔
	241 10		281 23
Right ascension [Aſc. R.]	272° 35′ 15″	Right ascension [Aſc. R.]	272° 35′ 20″

At 13^h 45^m [H. 13 45′]	Limited right ascension of Mars [Aſc. R. ♂ limit.]	272° 35¼′
Resp. from the table [Reſp. e tabula]	Longitude [Longit.]	2° 20′ ♍
	Latitude [Latit.]	2° 18¾′ south [M.]

19 May [DIE 19 MAIJ.]

After midnight Mars was observed near the meridian. [Poſt mediam noctem obſeruabatur ♂ circa meridianum.]

Hours, minutes [H. M.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Southern declination [Decl. M.]	Alti-tude [Altit.]	The Vulture, east [Vultur or.]
12^h $47½^m$ [12 47½]	27° 29¼′	26° 6¼′	7° 51′	26 9
		26° 6′		
12^h $56¾^m$ [12 56¾]	27° 30′			23 44
1^h $4⅙^m$ [1 4⅙]	27° 29⅙′			

Hours, minutes [H. M.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Southern declination [Decl. M.]	Alti-tude [Altit.]	The Vulture, east [Vultur or.]
1^h 8^m [1 8]; corrected 1^h $42¾^m$ [1 42¾ corr.]	Mars was passing the meridian, having the altitude [Tranſibat ♂ meridianum habens alt.]			
		by the steel instrument [per Chalyb.]	8° 1⅓′	21 2⅔
		by the revolving quadrant [per Volub.]	8° 1⅓′	

There were dense vapours about the horizon, raised to the eye to an altitude of about 10° [circa 10 grad.], and so thick that Mars could not be observed from the eastern side. [Denſi vapores circa horizontem fuerunt & viſualiter in altitudinem circa 10 grad. eleuati adeoque großi, vt ♂ ab orientali parte obſeruari non potuerit.]

Calculation of the place of Mars from the preceding observations. [Calculus loci ♂ ex obſeruationibus præcedentibus.]

Distance of Mars from cor ♏, limited [Diſtantia ♂ a corde ♏ limit.]	27° 29⅓′
Apparent declination [Declinatio viſa]	26° 4′
Declination corrected for refraction [Declin. emend. pro refract.]	26° 11′
Resp. right ascension of Mars [Reſp. Aſcenſio R. ♂]	271° 45½′
Hence resp. longitude [Hinc reſp. Longitudo]	1° 34¾′ ♑
Latitude [Latitudo]	2° 40¼′ south [M.]

21 MAY [DIE 21 MAIJ.]

After midnight Mars was observed near the meridian. [Poſt mediam noctem obſeruabatur ♂ circa meridianum.]

Time on the clock [Tempus in horol.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Southern declination [Decl. M.]	Altitude [Altit.]	The bright star of the Vulture, east [Luc. Vult. or.]
12^h $49⅚^m$ [12 49⅚]	27° 4⅚′	26° 15′	7° 21′	32 26
		with both [vtroque]		
12^h $58⅙^m$ [12 58⅙]	27° 5¼′		7° 30′	30 20

Mars could not be observed any further from cor ♏ because of the thickness of the vapours about the horizon. These distances from cor ♏ are not to be trusted, both because of the vapours and clouds about the horizon and because

of the nearness of the Moon. [Amplius a corde ♏, ♂ obſeruari non poterat propter craßitiem vaporum circa horizontem. Diſtantijs his a corde ♏, non eſt fidendum, tum propter vapores & nubes circa horizontem tum ☾ vicinitatem.]

	Distance from the northern one of the left hand of Ophiuchus [Diſt. a bor. manus ſin. Ophiuchi]			
13 10⅝	39° 38′		7 43	27 5
13 16⅓; corrected 13 17 [13 17 corr.]	39° 39′			25 40
13 20⅛	39° 39′			24 32
13 32⅝; corrected 13 33¾ [13 33¾ corr.]	Meridian altitude of Mars [Altit. ♂ merid.]			
		by the steel instrument [per Chal.]	7° 50′	21 26
		by the revolving quadrant [per Vol.]	7° 50 1/12′	
	Distance of the Vulture from Mars [Diſt.Vult. a ♂]			
13 42; corrected 13 44 [13 44 corr.]	39° 55⅝′			18 58
13 47⅔	39° 56⅛′			17 28
13 53¼	39° 55¾′	26 5⅛	7 41	16 2
		26 6		

Diagram. A triangle drawn with straight lines, its three corners marked with small star-marks and lettered in a reproduced hand; set in the right column under the table above and before the N.B. paragraph below, which refers to it (”Hunc fere ſitum”).

- D (upper left): star-mark, with ”Luc. Vult.” written above it — the bright star of the Vulture
- C (right): star-mark, with ”man. Oph.” written above it — the hand of Ophiuchus
- B (bottom): star-mark, with ”♂” written to its left — Mars

N.B. Mars, being near the meridian, held roughly this position with respect to the latter stars from which it was observed, so that it might be known how much distance had to be added from each for the refractions. [N.B. Hunc fere ſitum ♂ circa meridianum exiſtens ad poſteriores a quibus obſeruatus fuit ſtellas obtinuit, ut cognoſceretur quantum diſtantiæ a ſingulis pro Refractionibus addendum fuerit.]

The place of Mars computed from the immediately preceding observations. [Locus ♂ e proximis antecedentibus obſeruationibus ſupputatus.]

On the 21st, at $13^h\ 17^m$ [Die 21 H. 13 17′]	Distance of Mars from the northern one of the left hand of Ophiuchus [Diſt. ♂ a ſiniſtræ manus Ophiuchi Bor.]	39° 38½′
	Limited for refraction [Pro refr. limitata]	39 41½
	Observed declination [Declin. obſeruata]	26° 15½′
	Limited [limitata]	26 23
At $13^h\ 44^m$ [H. 13 44′]	Observed distance from the Vulture [Diſt. a Vult. obſeruata]	39° 56′
	Limited [limitata]	40 1
At $13^h\ 34^m$ [H. 13 34′]	Limited right ascension of Mars [Aſc. R. ♂ limitata]	271° 24′ 40″
	Resp. longitude [Reſp. Longitudo]	1° 15′ 48″ ♑
	Latitude [Latitudo]	2° 52½′ south [M.]

24 May [DIE 24 MAIJ.]

After midnight Mars was observed near the meridian. [Poſt mediam noctem obſeruabatur ♂ circa meridianum.]

Time on the clock [Tempus in horol.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Southern declination of Mars [Decl. ♂ M.]	Alti-tude [Altit.]	The Vulture, east [Vultur. or.]
$13^h\ 2^m$ [13 2]	26° 34′	26° 27⅔′	7° 30′	31 10
		26° 27′		
$13^h\ 12⅓^m$ [13 12⅓]	26° 34½′			28 43
$13^h\ 18½^m$ [13 18½]	26° 33¾′		7° 32′	27 15
$13^h\ 35⅚^m$ [13 35⅚]; corrected $13^h\ 13½^m$ [13 13½ corr.]	26° 33¼′			23 8
$13^h\ 40½^m$ [13 40½]; corrected $13^h\ 18^m$ [13 18 corr.]	Mars passed through the meridian, having the altitude [Pertranſiuit ♂ Merid. habens alt.]			
		by the steel instrument [per Chalyb.]	7° 37¼′	22 3
		by the revolving quadrant [per Volub.]	7° 37½′	

It could not be observed from the eastern side because of the clouds. [Ab orientali parte non poterat obſeruari propter nubes.]

Calculation for the place of Mars from the immediately preceding observations. [Calculus pro loco ♂ e proximis antecedentibus obſeruationibus.]

On the 24th, at $13^h\ 13^m$ [Die 24 H. 13 13′]	Observed distance of Mars from cor ♏ [Diſt. ♂ a corde ♏ obſeruata]	26° 33½′
	Observed declination [Declin. obſeruata]	26° 28′

	Limited [limitata]	26 36
	Hence the right ascension [Hinc Aſcenſio Recta]	270° 45′ 15″
	Resp. longitude [Reſp. Longitudo]	0° 40⅓′ ♍
	Latitude [Latitudo]	3° 5′ south [M.]

29 MAY [DIE 29 MAIJ.]

After midnight Mars was observed near the meridian. [Poſt mediam noctem obſeruabatur ♂ circa meridianum.]

Time on the clock [Tempus in horol.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Declination [Declin.]	Altitude by the revolving quadrant [Altit. per Vol.]	The bright star of the Vulture, east [Luc. Vult. or.]
12^h 27½^m [12 27½]	25° 21′	26° 47⅓′ 26° 48′	6° 53′	33 32
12^h 37⅓^m [12 37⅓]	25° 23′		7° 3′	31 9
12^h 44½^m [12 44½]	25° 21¼′			29 20
12^h 49⅚^m [12 49⅚]; corrected 12^h 37½^m [12 37½ corr.]	25° 21½′	26° 47⅔′	7° 14′	28 0
	From the middle one in the forehead of ♏* [A media in fronte ♏*]			
13 0 0; corrected 12^h 48^m [12 48 corr.]	32° 33½′			25 26
13^h 9^m [13 9]; corrected 12^h 56^m [12 56 corr.]	Meridian altitude of Mars [Altit. ♂ merid.]			23 23
		by the steel instrument [per Chal.]	7° 17⅔′	
		by the revolving quadrant [per Vol.]	7° 17⅙′	
13^h 21¼^m [13 21¼]	32° 33⅚′			20 6
13^h 26⅚^m [13 26⅚]	32° 33⅓′	26° 47⅔′ 26° 48′		18 49

* When this one in the forehead of ♏ was observed, it was at nearly the same altitude as Mars, though a little higher. [*Hæc in fronte ♏ cum obſeruaretur fuit fere in conſimili altitudine cum ♂, paulo tamen eleuatiori.]

These observations were made among rather scattered clouds, with the Moon shining at the same time. [Factæ ſunt hæ obſeruationes inter rariuſculas nubes, ☾ ſimul ſplendente.]

There follows the calculation for the place of Mars. [Sequitur calculus pro loco ♂.]

At 12^h $37½^m$ [H. 12 37½]	Right ascension of Mars [Aſcenſio R. ♂]	269° 25′ 51″
12 47½		269 23 55
12 42	Limited right ascension [Aſc. R. limitata]	269° 25′
	Southern declination [Declin. M.]	26° 56½′
	Resp. longitude [Reſp. Longitudo]	29° 30⅓′ ♐
	Latitude [Latitudo]	3° 25¼′ south [M.]

6 JUNE [DIE 6 JUNIJ.]

Mars was observed near the meridian. [Obſeruabatur ♂ circa Meridianum.]

Time on the clock [Tempus in horol.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Declination [Declin.]	Altitude by the revolving quadrant [Altit. per. Vol.]	The bright star of the Vulture, east [Luc. Vult. or.]
12^h $7¼^m$ [12 7¼]; corrected 12^h 2^m [12 2 corr.]	23° 5′		6° 50′	27 29
12^h 13^m [12 13]; corrected 12^h 8^m [12 8 corr.]	Mars in the meridian [♂ in Mer.]	by the steel instrument [per Chal.]	6° 50⅙′	
		by the revolving quadrant [per Vol.]	6° 50⅔′	
12^h $20¾^m$ [12 20¾]	23° 5⅓′	27° 16½′	6° 50′	23 50
		27° 16¼′		
12^h $33½^m$ [12 33½]	23° 4½′	doubtful because of clouds [dub. propt. nub.]		20 30
	Vice versa, from the left shoulder of ♐, which star is number 6 [Viceverſa ab humero ſiniſtro ♐ quæ ſtella eſt 6 numero]			
12^h 42^m [12 42]; corrected 12^h 38^m [12 38 corr.]	9° 28¾′			18 30
12^h 48^m [12 48]	9° 28′			16 54
12^h $54¼^m$ [12 54¼]	9° 27⅓′	27° 15½′	6° 43½′[1]	15 19
		27° 16′		

Calculation for the place of Mars. [Calculus pro loco ♂.]

At $12^h\ 2^m$ [H. 12 2′]	Right ascension [Aſcenſio R.]	266° 53′ 30″
12 38	Right ascension [Aſcenſio R.]	266° 55′ 0″
12 20	Limited right ascension of Mars [Aſc. R. ♂ limitata]	266° 54¼′
	Southern declination [Declin. M.]	27° 25′
	Resp. longitude [Reſp. Longitudo]	27° 15′ ♐
	Latitude [Latitudo]	3° 55½′ south [M.]

N.B. If the refractions could introduce any obstacle into the distances, so that the calculation, compared on both sides with itself, could not agree in the minutes, I judge that whatever this was has been removed by limiting the right ascension to a single time. For as far as the refractions insinuated into the distances are concerned, the stars from which Mars was observed held almost the same altitudes, both among themselves and with Mars. [N.B. Si quicquam obſtaculi refractiones in diſtantias ingerere poterint, quominus in minutis calculus ſibi inuicem vtrinque collatus reſpondere nequiuerit: hoc quicquid fuerat Aſc. Recta ad vnum tempus limitando ſublatum eße arbitror. Nam quoad refractiones diſtantijs inſinuatas attinet, ſtellæ a quibus ♂ obſeruatus fuit altitudines tum inter ſe tum cum ♂ eaſdem fere obtinebant.]

10 JUNE [DIE 10 JUNIJ.]

Before midnight Mars was observed near the meridian, the clock having been corrected by the bright star of the Vulture. [Ante mediam noctem obſeruabatur ♂ circa Meridianum, correcto horologio ad lucidam Vulturis.]

Time on the clock [Tempus in horol.]	Distance from cor ♏ [Diſt. a corde ♏]	Declination [Declin.]	Altitude by the revolving quadrant [Altit. per. Vol.]	The bright star of the Vulture, east [Luc. Vultur. or.]
$11^h\ 28^m$ [11 28]	21° 52⅔′	27° 27½′ 27° 27′	6° 35′	31 45
$11^h\ 36^m$ [11 36]; corrected $11^h\ 37½^m$ [11 37½ corr.]	21° 52⅔′		6° 38′	29 41

[1] Wrong; it should be 6° 23′. [Falſa, debet eße 6° 23′.]

11 40¼; corrected 11 41¾ [11 41¾ corr.]	21 52¼		6 38½	28 35¼
11 45½; corrected 11 47 [11 47 corr.]	Meridian altitude of Mars [Altit. ♂ merid.]			
		by the revolving quadrant [per Vol.]	6° 39′	27 16½
		by the steel instrument [per Chal.]	6° 38⅓′	

		27 27⅔		
	Distance from the eastern one in the head of ♐ [Diſt. ab or. in cap. ♐]	27 27⅓		
12 0	15° 33′		6 35	23 38
12 4½	15° 35′		6 34	22 50
12 5¾	15° 34′		6 33	22 8
12 9⅓	15° 34′		6 30	21 13

The sky was moderately clear this night, but the fixed star in the head of ♐ was made out with difficulty, because of the presence of the continual twilight. [Erat mediocriter ſerenum hac nocte, ſed ſtella fixa in capite ♐ difficulter conſpiciebatur, propter crepuſculi perpetui præſentiam.]

Calculation for the place of Mars from the immediately preceding observations. [Calculus pro loco ♂ ex proxime præcedentibus obſeruationibus.]

At 11^{h} 40^{m} [H. 11 40′]	Right ascension [Aſcenſio R.]	265° 32′ 0″
12 0		265 33 20
11 50	Limited right ascension [Aſc. R. limitata]	265° 32⅔′
	Southern declination of Mars [Declinatio ♂ M.]	27° 36′
	Resp. longitude [Reſp. Longitudo]	26° 2′ 36″ ♐
	Latitude [Latitudo]	4° 8′ 20″ south [M.]

11 June [DIE 11 JUNIJ.]

Before midnight Mars was observed near the meridian, the clock having been corrected by the bright star of the Vulture. [Ante mediam noctem obſeruabatur ♂ circa Meridianum, correcto horologio ad Lucidam Vulturis.]

Time on the clock [Tempus in horol.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Declination [Declin.]	Alti-tude [Altit.]	The bright star of the Vulture, east [Luc. Vultur. or.]
11^{h} 7¾^{m} [11 7¾]		27° 29′ 27° 28¾′	6° 19′	36 0
11^{h} 12⅓^{m} [11 12⅓]	21° 32′		6° 24′	34 48
11^{h} 15½^{m} [11 15½]	21° 33⅓′		6° 26′	34 4
11^{h} 18½^{m} [11 18½]	21° 33¼′		6° 30′	33 16½
11^{h} 22¾^{m} [11 22¾]	21° 34′	27° 30′	6° 34′	32 13
		27° 29¾′		
11^{h} 26^{m} [11 26]	21° 34′ Vice versa, from the lower horn of ♍ [Viceverſa ab inferiori cornu ♍]			31 21½

Time on the clock [Tempus in horol.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Declination [Declin.]	Alti-tude [Altit.]	The bright star of the Vulture, east [Luc. Vultur. or.]
11h 31¾m [11 31¾]	33° 42½′		6° 35½′	29 55½
11h 37m [11 37]	33° 44⅔′			28 43
11h 41¼m [11 41¼]	Mars in the meridian [♂ in mer.]	by the steel instrument [per Chal.]	6° 35⅓′	27 41
		by the revolving quadrant [per Vol.]	6° 36′	
		27° 29¾′		
		27° 30′		
11h 52⅓m [11 52⅓]	33° 46′			25 2½
11h 56½m [11 56½]	33° 46¼′		6° 33′	24 7½

The star in the horn of Capricorn [Capricorni] was made out with difficulty because of the dawn and the rather scattered clouds. [Stella in cornu Capricorni difficulter conſpiciebatur propter auroram & rariuſculas nubes.]

For the place of Mars. [Pro loco ♂.]

At 11h 23m [H. 11 23′]	Right ascension [Aſcenſio R.]	265° 11′ 1″
11 52		265 11 14
11 30	Limited right ascension of Mars [Aſc. R. ♂ limitata]	265° 11⅙′
	Southern declination [Declin. M.]	27° 39′
	Resp. longitude [Reſp. Longitudo]	25° 43½′ ♐
	Latitude [Latitudo]	4° 12′ south [M.]

12 JUNE, IN THE EVENING [DIE 12 JUNIJ, VESPERI.]

Mars was observed near the meridian. [Obſeruabatur ♂ circa Meridianum.]

Mars was then nearly level, with respect to the horizon, with the same star. [Fuit tunc ♂ in æquilibrio Horizontis cum eadem fere ſtella.]

Hours, min-utes [H. M.]	Distance from cor ♏ [Diſt. a corde ♏]	Declina-tion of Mars [Declin. ♂]	Alti-tude [Al-tit.]	The bright star of the Vulture, east [Luc. Vult. or.]
11h 6½m [♐ 15° 15⅓′ 6½]		27° 32′		35 8
		27° 32′		
11h 13⅚m [♐ 14⅓′ 13⅚]				

Hours, minutes [H. M.]	Distance from cor ♏ [Diſt. a corde ♏]	Declination of Mars [Declin. ♂]	Altitude [Altit.]	The bright star of the Vulture, east [Luc. Vult. or.]
11h 20m [11h 20]	[illegible]21° 14′			31 50
11h 33m [11h 33]	[illegible]21° 15½′			28 45
11h 36⅓m [11h 36⅓]	Mars through the meridian [♂ per mer.]	by the steel instrument [per Chal.]	6° 33¾′	28 0
		by the revolving quadrant [per Vol.]	6° 34′	
11h 45¾m [11h 45¾]	[illegible]11′ 13½′			25 38
	Vice versa, from the left shoulder of ♐. It is the sixth by number, level with Mars with respect to the horizon. [Viceverſa a ſiniſtro humero ♐. Eſt numero ſexta, in æquilibrio cum ♂ ad Horizontem.]			
11h 52⅚m [11h 52⅚]	[illegible]11′17′		6° 31′	23 54
11h 58m [11h 58]	[illegible]11° 18′		6° 28′	22 39
12h 2⅚m [12h 2⅚]	[illegible]12° 18′	27° 33′		21 27
		27° 32½′		
12h 9⅚m [12h 9⅚]	[illegible]12° 19′		6° 17′	19 49

To test the sextant instrument, the distance between the bright star of the Vulture and the head of Ophiuchus was observed the same evening [Pro examinando ſextante inſtrumento eadem veſpera obſeruata eſt diſtantia inter lucidam Vulturis & caput Ophiuchi]	33° 30′
	33° 30⅓′
Their distance was observed before as [Quarum diſt. antea obſeruata eſt]	33° 30½′

There follows the calculation for the place of Mars from the preceding observations. [Sequitur calculus pro loco ♂ ex præcedentibus obſeruationibus.]

At 11h 33m [H. 11 33′]	Right ascension of Mars from cor ♏ [Aſc. R. ♂ e corde ♏]	264° 50′ 33″
12 10	Right ascension of Mars from the left shoulder of ♐ [Aſc. R. ♂ e ſin. hum. ♐]	264° 51′ 10″
11 50	Corrected right ascension of Mars [Aſc. R. ♂ emend.]	264° 50′ 50″

	Southern declination of Mars [Declin. M. ♂]	27° 41′
	Resp. longitude [Reſp. Longitudo]	25° 25⅔′ ♐
	Latitude [Latitudo]	4° 14½′ south [M.]

27 June, in the evening [DIE 27 JUNIJ, VESPERI.]

10 45′	Mars was distant from cor ♏ [Diſtabat ♂ a corde ♏]	17° 10½′
11 6⅙	Mars was distant from ♃ [Diſtabat ♂ a ♃]	43° 32⅓′
11 32½	Distance of Mars from ♃ [Diſt. ♂ a ♃]	43° 34′
	Altitude of Mars about 6° [Altitudo ♂ circiter 6°] of ♃ 4° [♃ 4]	nearly, to the eye [fere ad oculum]
	Declination of Mars [Declinatio ♂]	27° 57¾′
		27° 58⅙′

Not so much trust is to be placed in these observations. [His obſeruationibus non eſt adeo adhibenda fides.]

At 11h 41m [H. 11 41′]	For correcting the clock the bright star of the Vulture, east, was used, on the equator [Pro corrigendo horologio adhibebatur lucida Vulturis orientalis in Æquatore]	10 32
11 51	Mars was distant from the western limb of the Moon [Diſtabat ♂ ab occ. limbo ☾]	38° 57¾′
	The Vulture on the equator, east [Vultur in æquat. or.]	8 4

Afterwards clouds drawn over Mars took the sight of it from us. [Poſtea nubes ♂ obductæ eius conſpectum nobis eripiebant.]

28 June, in the evening [DIE 28 JUNIJ, VESPERI.]

Hours, minutes [H. M.]	Distance of Mars from cor ♏ [Diſt. ♂ a corde ♏]	Declination [Declin.]	Altitude by the revolving quadrant [Altit. per Vol.]	The bright star of the Vulture, east [Luc. Vultur. or.]
9h 58⅓m [9h 58⅓]	17° 2⅔′	27° 49⅓′	6° 15′	36 7
		27° 49′		
10h 13⅙m [10h 13⅙]	Mars was passing the meridian [♂ tranſibat merid.]			
		by the steel instrument [per Chalyb.]	6° 16′	32 53

Hours, minutes [H. M.]	Distance of Mars from cor ♏ [Dist. ♂ a corde ♏]	Declination [Declin.]	Altitude by the revolving quadrant [Altit. per Vol.]	The bright star of the Vulture, east [Luc. Vultur. or.]
		by the revolving quadrant [per Volub.]	6° 16′	
10h 19⅔m ♐ [10¾′ 19⅔]		27° 49′		31 15
		27° 50′		
	Mars was level with cor ♏ with respect to the horizon [Erat ♂ in æquilib. Horiz. cum corde ♏]			
10h 25½m ♐ [17 1 fere] 25½]				29 39
10h 30½m ♐ [16⅝′ 30½]				28 42
	Vice versa, toward the east, from the sixth in the left shoulder of Sagittarius [Viceverſa ad ortum, a ſexta in humero ſiniſtro Sagittarij]			
10h 37⅚m ♑ [19′ 37⅚]			6 5 38	26 55
10h 48⅓m ♑ [13′ 48⅓]		It presented itself here with difficulty because of the nearness of the Moon [Difficulter hic obijciebatur propter ☾ propinquitatem]		
10h 52m [15° 32′ 52]				
10h 55m [15° 32¼′ 55]				

N.B. This star of ♐ too was nearly level with Mars with respect to the horizon when Mars was observed here, but yet a little higher. [N.B. Erat & hæc ſtella ♐ fere in æquilibrio Horizontis cum ♂, cum ♂ hic obſeruaretur, ſed paulo tamen eleuatior.]

These observations can safely be trusted. For if there is anything doubtful because of the presence of the Moon, it was confirmed anew by a good many repetitions of the observations. [His obſeruationibus tuto eſt fidendum. Nam ſi propter ☾ præſentiam quicquam dubij eſt, id obſeruationum compluribus reiterationibus denuo certificabatur.]

Calculation for the place of Mars from the preceding observations. [Calculus pro loco ♂ ex præcedentibus obſeruationibus.]

At 10h 14m [H. 10 14′]	Right ascension [Aſcenſio R.]	260° 2′ 40″
10 38		260 5 28

Something is to be added to each distance for refraction.[1] [Vtrique diſtantiæ addendum eſt aliquid pro refractione[1].]

10 26	Corrected right ascension of Mars [Aſc. R. ♂ emend.]	260° 4′
	Southern declination [Declinatio M.]	27° 58½′
	Resp. longitude [Reſp. Longitudo]	21° 12⅓′ ♐
	Latitude [Latitudo]	4° 45⅓′ south [M.]

16 July [DIE 16 JULIJ.]

In the evening Mars was observed as follows. [Veſperi obſeruabatur ♂ vt ſequitur.]

N.B. These observations of Mars were taken after it had again become direct. [N.B. Hæ obſeruationes habitæ ſunt in ♂ poſtquam factus eſt iterum diretus.]

Hours, minutes [H. M.]	Distance of Mars and cor ♏ [Diſt. ♂ & cordis ♏]	Declination [Declin.]	Altitude of Mars [Alt. ♂]	The bright star of the Vulture, east [Luc.Vult. or.]
9^h 22½^m [9 22½]; corrected 9^h 24¾^m [9 24¾ corr.]	15° 39⅚′	27° 47½′	5° 48½′	24 57
		27° 48⅓′	Altitude of cor ♏ nearly 5° [Alt. cord. ♏ 5° fere]	
9^h 30½^m [9 30½]; corrected 9 30 55 [9 30 55 corr.]	15° 39⅚′		5° 35′	23 25
		Altitude of cor ♏ nearly 3° [Alt. cord. ♏ 3° ferme]		
	Vice versa, distance of Mars from the left shoulder of ♐ [Viceverſa diſt. ♂ a ſiniſtro humero ♐]			
9^h 36^m [9 36]; 9^h 40^m [9 40]	16° 53′		5° 10′	
	Altitude of the left shoulder nearly 8° [Alt. ſin. hum. 8° fere]			
10 2 13; corrected [Corr.]	16° 53¼′	27° 44′	4½ with the Radius [4½ p.Rad.]	15 33
		with one pinnule [vno pin.]		

Hours, minutes [H. M.]	Distance of Mars and cor ♏. [Diſt. ♂ & cordis ♏.]	Declination [Declin.]	Altitude of Mars [Alt. ♂]	The bright star of the Vulture, east [Luc.Vult. or.]
	The sixth of ♐ was near the meridian [Erat ſexta ♐ circa merid.]			
10h 5½m [10 5½]	The bright star of the Vulture, east [Luc. Vult. orient.]		12 18	
			for correcting the clock [pro horol. corr.]	

For the place of Mars [Pro loco ♂]

At 9h 24¾m [H. 9 24¾]	Right ascension [Aſcenſio R.]	258° 30′ 25″
9 40		258 31 29
9 32⅓	Corrected right ascension [Aſc. R. emendata]	258° 31′
	Southern declination [Decl. M.]	27° 57′
	Resp. longitude [Reſp. Longitudo]	20° 8′ ♐
	Latitude [Latitudo]	4° 50′ south [M.]

26 September, in the evening [DIE 26 SEPTEMBRIS, VESPERI.]

At 6h 41m [H. 6 41′]	Altitude of Mars [Altit. ♂]		
	by the steel instrument [per Chalyb.]	9° 10¼′	
	by the revolving quadrant [per Volub.]	9° 12 1/12′	
	Southern declination of Mars [Declin. ♂ M.]	24° 55⅓′	The bright star of the Vulture, east [Luc. Vult. or.]
		24° 55′	2 18

[1] Yet nothing has been added. [Tamen nihil additum eſt.]

Error of the clock was corrected here.[1] [Error horologij corrigebatur hic[1].]

At 6h 45m [H. 6 45′] the clock here to about 2 minutes.[2] [Horologium hic ad 2 circiter minuta[2].]

Hours, minutes [H. M.]	Distance of Mars and the eastern one of the head of ♐ [Diſt. ♂ & or. cap. ♐]	Declination [Decl.]	Altitude [Altit.]	The Vulture, west [Vultur occ.]
6h 45m [6 45]	9° 3′		9° 6′	2 1
6h 48½m [6 48½]	9° 3⅙′		9° 4′	3. 20½

Hours, minutes [H. M.]	Distance of Mars and the eastern one of the head of ♐ [Diſt. ♂ & or. cap. ♐]	Declination [Decl.]	Altitude [Altit.]	The Vulture, west [Vultur occ.]
6^h $52\frac{5}{6}^m$ [6 52⅚]	9° 3½′	24° 55⅔′	9° 0′	4 26
		24° 55′		

This one, the eastern one of the head of ♐, was about 2 degrees higher than Mars, so account must be taken of refraction in the distance. [Hæc orientalis capitis ♐ 2^{bus} circiter gradibus ♂ eleuatior fuit, vnde refractionis in diſtantia ratio habenda.]

Vice versa, the distance between Mars and the more eastern of the two bright stars in the tail of ♍. This one was at nearly the same altitude as Mars, yet a little higher. [Viceverſa diſt. inter ♂ & orientaliorem duarum lucidarum in cauda ♍. Hæc fere cum ♂ in eadem altitudine fuit, paulo tamen eleuatior.]

7 3¾	29 13¾	8 49	7 10
7 2 40, corrected [7 2 40 corr.]			
7 30, corrected [7 30 corr.]	29 14	8 45	

For the place of Mars from the preceding observations. [Pro loco ♂ ex antecedentibus obſeruationibus.]

At 6^h 57^m [H. 6 57′]	Distance of Mars from the eastern one of the head of ♐ [Diſt. ♂ ab or. cap. ♐]	9° 4′
	Observed declination [Declin. obſeruata]	24° 55′ 15″
	Refraction at altitude 9° [Refract. in alt. 9°]	6 45
	True declination [Declin. vera]	25° 2′ 0″
	Right ascension [Aſcenſio R.]	290° 31′ 20″
7 2⅔	Distance from the tail of ♍, east [Diſt. a cauda ♍ orient.]	29° 14′
	Right ascension [Aſcenſio R.]	290° 35′ 0″
7 0	Limited right ascension [Aſc. R. limitata]	290° 33⅙′
	Resp. longitude [Reſp. Longitudo]	18° 34¼′ ♍
	Latitude [Latitudo]	2° 49¾′ south [M.]

N.B. The obstacle of refraction on both sides in the distances is removed by the proper limitation of the right ascension, which I have applied here. [N.B. Obſtaculum refractionis vtrinque in diſtantijs iuſta limitatione aſcenſionis rectæ, quam hic adhibui, tollitur.]

27 September, in the evening [DIE 27 SEPTEMBRIS, VESPERI.]

6 19⅔	Mars was passing through the meridian [Tranſibat ♂ per meridianum]	
6 33⅔, corrected [6 33⅔ corr.]	having altitude [habens altitud.]	
	by the steel instrument [per Chalyb.]	9° 17½′
	by the revolving quadrant [per Volub.]	9° 18′
	The bright star of the Vulture, east [Lucida Vult. orient.]	1 35
6 25½	Declination [Declinatio]	24° 47¼′
		24 47⅔
	The bright star of the Vulture, east [Lucida Vult. orient.]	0 9
6 40⅔	Between Mars and the eastern one in the head of ♐ [Inter ♂ & orientalem in capite ♐]	9° 36⅔′

6 53 40	good [bona]	9 36½
7 9 36, corrected [7 9 36 corr.]	The Vulture, west [Vultur occ.]	7 24
6 58⅔	Between Mars and the bright star in the tail of ♑ [Inter ♂ & lucid. in cauda ♑]	28° 37⅔′
	The Vulture, west [Vultur occid.]	9 38
7 2⅓	The same distance [Eadem diſt.]	28° 37⅔′
7 5½	Altitude of Mars [Altitudo ♂]	8° 43′
	Declination of Mars [Declinatio ♂]	24° 48′
		24 47⅔

From these observations. [Ex his obſeruationibus.]

Account of the refractions was taken beforehand in the distances. [Ratio refractionum antea habita eſt in diſtantijs.]

At 6^h 34^m [H. 6 34]	Right ascension [Aſcenſio R.]	291° 13′ 48″
7 10		291 14 13
6 52	Limited right ascension [Aſc. R. limitata]	291° 14′
	Declination free of refraction [Declin. a refractione libera]	24° 55′
	Resp. longitude [Reſp. Longitudo]	19° 12⅙′ ♑
	Latitude [Latitudo]	2° 48⅙′ south [M.]

30 September [DIE 30 SEPTEMBRIS.]

6 20⅔	Altitude of Mars by the revolving quadrant [Altit. ♂ per Volub.]	9° 40′
	Declination of Mars [Declinatio ♂]	24° 26⅙′ 24 25½

The wind was shaking the instrument, and afterwards the sky was covered over with clouds. [Ventus agitabat inſtrumentum & poſtea cœlum nubibus obducebatur.]

2 OCTOBER, IN THE EVENING [DIE 2 OCTOBRIS, VESPERI.]

6 27⅓	Meridian altitude of Mars [Altit. ♂ merid.]	
	by the steel instrument [per Chal.]	9° 55¼′
	by the revolving quadrant [per Volub.]	9° 55½′
	The Vulture, west [Vultur occid.]	1 42
6 34	Between Mars and the eastern one [Inter ♂ & orientalem]	
6 35, corrected [6 35 corr.]	of the two bright stars [duarum lucidarum]	
	in the tail of ♓ [in cauda ♓]	25° 31′
	The Vulture, west [Vultur occid.]	3 15
6 37⅙	Repeated distance [Repetita diſtantia]	25° 30¼′
	The Vulture, west [Vultur occid.]	4 8
6 42	Altitude of Mars by the revolving quadrant [Altitudo ♂ per Volub.]	9° 51′
	Southern declination of Mars [Declinatio ♂ M.]	24° 10¼′
		24 10
	Vice versa [Viceverſa]	
6 50	Distance of Mars from the eastern one of the head of ♐ [Diſt. ♂ ab or. cap. ♐]	12° 26⅔′
6 51⅔, corrected [6 51⅔ corr.]	The Vulture, west [Vultur occ.]	7 24
6 51⅔	Repeated distance [Repetita diſtantia]	12° 26½′
	The Vulture, west [Vultur occid.]	7 50

This evening it was very clear and the air was calm. [Erat hoc veſpere bene ſerenum & aër tranquillus.]

[1] Written beside it: "The clock is not rightly corrected." [Adſcriptum eſt »Non iuſte corrigitur horologium«.] [2] Thus in codex E. [Sic in codice E.]

Calculation for the place of Mars from the preceding observations. [Calculus pro loco ♂ ex præcedentibus obſeruationibus.]

At 6^h 35^m [H. 6 35]	Right ascension of Mars [Aſcenſio R. ♂]	294° 38′ 47″
6 51⅔		294 39 5
6 42	The corrected ascension is set at [ponitur Aſc. emend.]	294° 39′ 0″
	Declination free of refraction [Declin. a refr. libera]	24° 16′

	Resp. longitude [Reſp. Longitudo]	22° 22′ 25″ ♑
	Latitude [Latitudo]	2° 38½′ south [M.]

9 October, in the evening [DIE 9 OCTOBRIS, VESPERI.]

6 13′ 15″	Between Mars and the bright star [Inter ♂ & lucid.]	21° 1¼′
6 14 25	of the tail of ♑ [caud. ♑]	21° 2′
6 17⅚	Declination of Mars [Declinatio ♂]	23° 10½′
		23 10
	Mars was passing [Tranſibat ♂]	
	through the meridian, having altitude [per merid. habens altitud.]	
	by the steel instrument [per Chalyb.]	10° 56⅔′
	by the revolving quadrant [per Volub.]	10° 57½′
	The Vulture, west [Vultur occid.]	6· 21
	Vice versa [Viceverſa]	
6 32 10	Between Mars and the eastern one [Inter ♂ & orient.]	16° 40⅚′
6 34 45	of the head of ♐ [cap. ♐]	16° 43′
6 36 20	these can be trusted [his eſt fidendum]	16 42
6 37 55		16 42¼

This evening the clock was running 4^m [4 M.] faster than it should. [Horologium 4 M. celerius iuſto mouebatur hac veſpera.]

For the place of Mars [Pro loco ♂]

At 6^h 10^m [H. 6 10′]	Right ascension [Aſcenſio R.]	299° 22′ 18″
6 28		299 23 16
6 20	Limited right ascension [Aſc. R. limitata]	299° 22′ 47″
	Declination corrected for refraction [Decl. pro refr. emend.]	23° 14½′

10 October, in the evening [DIE 10 OCTOBRIS, VESPERI.]

	Declination of Mars near the meridian [Decl. ♂ circa merid.]	23° 0⅔′ 23° 0½′
6 17′ 10″	Between Mars and the bright star [Inter ♂ & lucidam]	20° 19¼′
6 24	of the tail of ♏ [caudæ ♏]	20° 18¾′
6 29 35	Mars was passing [Tranſibat ♂]	
6 21, corrected [6 21 corr.]	through the meridian, having altitude [per merid. habens alt.]	
	by the steel instrument [per Chal.]	11° 5⅓′
	by the revolving quadrant [per Volub.]	11° 6⅓′
	The Vulture, west [Vultur occid.]	7 13
	Vice versa [Viceverſa]	

6 37 45	Between Mars and the eastern one of the head of ♐ [Inter ♂ & orient. cap. ♐]	17° 21½′
6 41 35	Between Mars and the same [Inter ♂ & eandem]	17° 22′

From these observations [Ex hiſce obſeruationibus]

6 16	Right ascension [Aſcenſio R.]	300° 7′ 46″
6 30		300 6 7
6 23	Limited right ascension of Mars [Aſc. R. ♂ limitata]	300° 7′
	Corrected southern declination [Declin. M. emendata]	23° 5′
	Resp. longitude [Reſp. Longitudo]	27° 31′ ♑
	Latitude [Latitudo]	2° 24′ south [M.]

16 October, in the evening [DIE 16 OCTOBRIS, VESPERI.]

6 20		
6 15, corrected [6 15 corr.]	Passage of Mars [Tranſitus ♂]	
	through the meridian, altitude [per meridianum, altit.]	
	by the steel instrument [per Chalyb.]	12° 6½′
	by the revolving quadrant [per Volub.]	12° 7′ 45″
	The Vulture, west [Vultur occid.]	11 27
6 26	Declination [Declinatio]	21° 59¼′
		22 0
6 33¼	Between Mars and the eastern one [Inter ♂ & orient.]	
6 28, corrected [6 28 corr.]	in the head of ♐ [in capite ♐]	21° 12′
6 36	Distance from the same [Diſtantia ab eadem]	21° 11⅔′
6 38		21 13
6 43 35		21 12½

Here the brightness of the Moon was a great hindrance. [Hic ſplendor ☾ magno impedimento fuit.]

6 28	Right ascension of Mars from the preceding observations [Aſc. Recta ♂ ex præcedentibus obſeruationibus]	304° 14′ 30″
	Corrected declination [Declin. emendata]	22° 2′
	Resp. longitude [Reſp. Longitudo]	1° 27′ 48″ ♒
	Latitude [Latitudo]	2° 10′ 52″ south [M.]

10 November, in the evening [DIE 10 NOUEMBRIS, VESPERI.]

5 54⅚		
5 43½, corrected [5 43½ corr.]	Mars was passing [Tranſibat ♂]	
	through the meridian, having altitude [per merid. habens alt.]	
	by the revolving quadrant [per Volub.]	17° 24¾′
	by the steel instrument [per Chalyb.]	17° 24⅚′
	The bright star of the Vulture, west [Lucida Vult. occid.]	28 43
6 59	Distance between the upper horn of ♍ and Mars [Diſt. inter ſuperius cornu ♍ & ♂]	22° 9½′, not valid [non valet]
	The Vulture, west [Vultur occid.]	43 38
7 3	Distance [Diſtantia]	22° 12⅓′
6 47, corrected [6 47 corr.]	The Vulture, west [Vultur. occid.]	44 42
7 7⅙	Repeated distance [Diſtantia repetita]	22° 12⅔′

Vice versa, from 18 ♒ in the right knee. [Viceverſa a 18 ♒ in dextro genu.]

7 12⅙	Distance [Diſtantia]	15° 52′
6 55, corrected [6 55 corr.]		
7 15⅔	Repeated distance [Repetita diſtantia]	15° 52¾′
	Declination of Mars [Declinatio ♂]	16° 40′
		16 40½

The clock was running much faster than it should, which can be corrected. [Horologium multum iuſto celerius mouebatur, quod corrigi poteſt.]

N.B. On the preceding day, near the meridian, Mars was seen nearly in conjunction with the following one in the tail of ♍, and higher by about a degree, as far as sight goes. [N.B. Die præcedenti circa Meridianum viſus eſt ♂ fere in ☌ cum ſequenti in cauda ♍ & altior circa gradum quantum ad viſum.]

From the preceding observations. [Ex præcedentibus obſeruationibus.]

At 6^h 47^m [H. 6 47′]	Right ascension [Aſcenſio R.]	321° 39′ 15″
6 55		321 40 30
6 51	Limited right ascension of Mars [Aſc. R. ♂ limitata]	321° 40′
	Corrected declination [Declinatio emendata]	16° 42′
	Resp. longitude [Reſp. Longitudo]	17° 49⅓′ ♒
	Latitude [Latitudo]	1° 13′ south [M.]

II November, in the evening [DIE II NOUEMBRIS, VESPERI.]

Mars was observed near the meridian. [Obſeruabatur ♂ circa Meridianum.]

Hours, minutes [H. M.]		Distance of Mars from the lower horn of ♉ [Diſt. ♂ ab inf. cornu ♉]	Southern declination of Mars [Decl. ♂ M.]	The Vulture, west [Vultur. occid.]
5^h $28\frac{1}{3}^m$ [5 28⅓]		21° 52½′		25 10
5^h $33\frac{5}{6}^m$ [5 33⅚]		21° 53⅔′		
5^h $36\frac{1}{2}^m$ [5 36½]		21° 53′	16° 27′	
			16° 27½′	
5^h $45\frac{1}{6}^m$ [5 45⅙]	Mars passed the meridian, having altitude [Tranſiuit ♂ merid. habens alt.]			
5^h 42^m, corrected [5 42 corr.]	by the steel instrument [per Chal.]			17° 40′
	by the revolving quadrant [per Volub.]			17° 39½29 27

Vice versa, from the right knee of ♒ [Viceverſa a dextro genu ♒]

5 54⅔	15 17	31 42
5 58⅗	15 16⅔	32 40
5 56, corrected [5 56 corr.]		
6 3⅗	15 16⅓	

N.B. In these observations of Mars the lunar rays were something of a hindrance. [N. B. In his obſeruationibus ♂ radij lunares nonnihil impedimento erant.]

From the preceding observations. [Ex præcedentibus obſeruationibus.]

At 5^h 34^m [H. 5 34′]	Right ascension [Aſcenſio R.]	322° 18′ 40″
5 56		322 19 30
5 46	Limited right ascension of Mars [Aſc. R. ♂ limitata]	322° 19′
	Southern declination [Declinatio M.]	16° 27′
	Resp. longitude [Reſp. Longitudo]	19° 23⅘′ ♒
	Latitude [Latitudo]	1° 28′ south [M.]

10 December, in the evening [DIE 10 DECEMBRIS, VESPERI.]

4 45	Mars was passing through the meridian [Tranſibat ♂ per Meridianum]	
	having altitude [habens altitud.]	25° 31⅓′
	On the equator, however, it was still [In æquat. autem erat adhuc]	
	before the meridian [ante meridiem]	0 7
4 57 20	Distance of Mars from the left [Diſt. ♂ a ſiniſtro]	24° 8⅙′
5 2⅓	shoulder of ♒ [humero ♒]	24° 9′
5 8⅓	The same distance [Eadem diſt.]	24° 8⅓′
5 19, corrected [5 19 corr.]	Southern declination of Mars [Declinatio ♂ M.]	8° 35¾′
		8 35
	The bright star of the jaw of the Whale, east [Luc. mandib. Ceti or.]	52 27
	Vice versa [Viceverſa]	
5 19	Distance of Mars from the northern [Diſt. ♂ a boreali]	
	tail of the Whale [cauda Ceti]	17° 43¼′
	The bright star of the jaw [Luc. mandibulæ]	
	of the Whale, east [Ceti or.]	49 42½
5 23⅙	The same distance [Eadem diſtantia]	17° 43′
5 33, corrected [5 33 corr.]	The bright star of the jaw of the Whale, east [Luc. mand. Ceti or.]	48 48
5 26	Repeated distance [Diſtantia repetita]	17° 42¾′

N.B. While we were observing these, the lunar rays were something of a hindrance to us. Nevertheless the observations are in moderately good order, as ones that can be trusted. [N. B. Hæc obſeruantibus radij lunares nonnihil impedimento nobis fuere. Sed tamen obſeruationes mediocriter ſe habent, vtpote quibus fidendum eſt.]

For the place of Mars from the preceding observations. [Pro loco ♂ ex antecedentibus obſeruationibus.]

At 5^h 19^m [H. 5 19′]	Right ascension [Aſcenſio R.]	341° 55′ 57″
5 33		341 53 15
5 26	Limited right ascension of Mars [Aſc. R. ♂ limitata]	341° 54′ 36″
	Resp. longitude [Reſp. Longitudo]	10° 3′ 33″ ♓¹
	Latitude [Latitudo]	0° 16′ 28″ south [M.]

	Copernicus's calculation [Calculus Copernici]	Alphonsine [Alphonſinus]
Longitude [Longitudo]	9° 32′ ♓	11° 29′ ♓
Latitude [Latitudo]	0° 59′ south [M.]	0° 32⅔′ south [M.]

Transcription of the observations of Mars and of some other fixed stars that were made this year, in the months of June and July, at Padua by Magini [Magino] and Gellius Sascerides [Gellio Saſceride], afterwards noted down by the excell. Magini, and sent here about the beginning of November, together

with a letter, by Gellius Sasc. to D. Tycho. [Tranſcriptio obſeruationum in ♂ & alijs quibuſdam ſtellis fixis, quæ hoc anno menſe Junio & Julio a Magino & Gellio Saſceride Patavij habitæ ſunt, & poſtea ab excell. Magino annotatæ, & huc circa initium Nouembris vna cum litteris a Gellio Saſc. D. Tychoni ſubmiſsæ.]

20 June, New Style [DIE 20 JUNIJ, NOVO STILO.]

2^h of the night having just now struck, the distance of Mars from the heart of ♏ was found to be [H. 2 noctis iamiam pulſata, diſtantia ♂ a corde ♏ fuit inventa]	21° 55½′
	not reliable [non eſt tuta]
Shortly after [Paulo poſt]	21 52
And shortly after [Et paulo poſt]	21 52
And the 2nd hour had now struck on another clock, six minutes later [Et iam pulſata fuit hora 2^{da} in alio horologio ſex minutis poſt]	21 51
At $2¾^h$ [Hora 2¾]	21 49½

At exactly the third hour, between Mars and the bright star of the Vulture [H. tertia exacte inter ♂ & lucid. Vult.]	44° 3′
At $3⅙^h$ [Hora 3⅙]	44 5
Shortly after [Paulo poſt]	44 3
Between the heart of ♏ and Spica [Inter cor ♏ & Spicam]	45° 50′
	about [fere]
Between cor ♌ and Spica [Inter cor ♌ & Spicam]	54° 4′
	repeated observation [iterata obſ.]
Between Spica and the northern scale-pan [Inter Spicam et lancem bor.]	27° 30′

[1] Codex V adds: "This right ascension and declination give longitude 10° 2′ 46″, latitude 0° 48′ 9″ south." [»Hæc A. R. et Decl. dat Long. 10° 2′ 46″, Lat. 0° 48′ 9″ M.« add. codex V.]

21 June [DIE 21 JUNIJ.]

At $1¾^h$, between Mars and Antares [H. 1¾ Inter ♂ & Antares]	21° 31′
Shortly after [Paulo poſt]	21 32
At about 2^h, not struck, [H. 2 fere non pulſata,]	
between Mars and the Vulture [inter ♂ & Vulturem]	44° 19′
Between the Vulture and the heart of ♏ [Inter Vulturem & cor ♏]	60° 7′
Shortly after, between Mars and the Vulture [Paulo poſt inter ♂ & Vultur.]	44° 19′
And shortly after [Et paulo poſt]	44 21

Presently [Mox]	44 20½

At 2^{h}, not struck, between Mars [H. 2 non pulſata inter ♂] and the heart of ♏ [& cor ♏]	21° 31′
Between the northern scale-pan and Mars [Inter lancem bor. & ♂]	43° 41′
Now struck [Iam pulſata]	43 43
At 2¼^{h} [H. 2¼]; perhaps not reliable [forte non tuta]	43 44½
At 2⅓^{h} [H. 2⅓]	43 42½

Having first computed, from the given longitudes and latitudes of the Vulture and of the heart of ♏, their distance as 60° 9′, I found by calculation, from the distances of Mars — from the heart of ♏, namely, 21° 51′, and from the bright star of the Vulture 44° 3′ — its longitude for 20 June at 25° 59′ ♐, with latitude 3° 59′ A. [Supputatis prius ex datis longitudinibus & latitudinibus Vulturis & cordis ♏ diſtantia earundem 60° 9′, ex diſtantijs ♂ a corde quidem ♏ 21 51, a lucida vero Vulturis 44 3, inveni per calculum ad diem 20 Junij longitudinem eius in 25° 59′ ♐ cum latitudine 3° 59′ A.]

Likewise on 21 June, the distance of the bright star of the Vulture and the northern scale-pan of ♎ having been computed as 70° 27′, its longitude was found, from the distance of Mars from the bright star of the Vulture, 44° 20′, and from the northern scale-pan of ♎, 43° 43′, at 25° 38′ ♐, the latitude being 4° 4′ A. [Itidem die 21 Junij ſupputata diſtantia lucidæ Vulturis & Borealis lancis ♎ 70° 27′, ex diſtantia ♂ a lucida Vulturis 44 20 & a lance Bor. ♎ 43 43, inuenta eſt longitudo eius in 25° 38′ ♐, Latitudine exiſtente 4° 4′ A.]

8 July; Magini observed [DIE 8 JULIJ obſeruauit Maginus.]

At 1½^{h} of the night, between Mars and the heart of ♏ [H. 1½ noctis inter ♂ & cor ♏]	17° 2′
Shortly after [Paulo poſt]	17 1
Presently [Mox]	17 1
At 2^{h}, not struck [H. 2 non pulſata]	17 2

Likewise at 2^{h}, between Mars [Similiter hora 2 inter ♂] and the northern scale-pan [& lancem Bor.]	40° 12½′

It is not reliable, because its light was faint. [Non eſt tuta, quia eius lumen erat exile.]

At 2½^{h}, between Mars and the bright star of the Vulture [H. 2½ Inter ♂ & lucid. Vult.]	47° 47′
and more. Shortly after [& plus. Paulo poſt]	47 46½

Δοκιμασία [Greek: dokimasia, "testing, verification"] of the earlier calculation for the place of Mars for 20 June. [Δοκιμασία prioris calculi pro loco ♂ ad diem 20 Junij.]

A, the antarctic pole of the ecliptic; B, the bright star of the Vulture; C, the star Mars; D, the heart of ♏. [A polus Eclipticæ Antarcticus, B Lucida Vulturis, C ſtella ♂, D cor ♏.]

DA	85° 33	
BA	119 21½	
DAB	51 56	
DB	60 8 53″	
DC	21° 51′	Distance of Mars from the heart of ♏ [Diſt. ♂ a corde ♏]
CB	44° 3′	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]

DBC	18° 56′, about [fere]	
DBA	64 49 30″	
CBA	45 53 30	
CA	86° 1′ 13″	Complement of the latitude of Mars [Complem. latit. ♂]
DAC	21° 54′ 18″	Difference of longitude from the heart of ♏ [Differ. longit. a corde ♏]
CAB	30° 1′ 45″	Difference of longitude from the Vulture [Differ. longit. a Vulture]

Diagram. A figure of circular arcs standing to the right of the two short tables. From A at the foot one arc rises to B at the upper right, forming the right-hand boundary, and another rises on the left through D to the left end of a straight horizontal line that crosses the figure above D and C and meets the right-hand arc. A third arc rises from A through C to the horizontal line. Two arcs run down to the left from B, crossing the horizontal line, one to D and one towards C; a short arc joins D to C. Four letters are printed on the block.

- A (foot of the figure, where the arcs meet): the antarctic pole of the ecliptic, per the legend line
- B (upper right, at the top of the right-hand arc): the bright star of the Vulture, per the legend line
- C (inside the figure, left of centre, below the horizontal line): the star Mars, per the legend line
- D (left side, on the left-hand arc, below the horizontal line): the heart of ♏, per the legend line

Longitude of the Vulture [Longit. Vulturis]	26° 0′ 40″ ♑	Longitude of the heart of ♏ [Longit. cordis ♏]	4° 4′ 40″
	30 1 45		21 54 18
Longitude of Mars from the Vulture [Longit. ♂ a Vult.]	25° 58′ 55″ ♐	Longitude of Mars from the heart of ♏ [Longit. ♂ a corde ♏]	25° 58′ 58″ ♐

The time of this observation has therefore been reduced to our clock. [Reductum igitur tempus obſeruationis huius ad noſtrum horologium eſt.]

On 20 June, New Style, at about 10^h, the time for which the calculation from these observations assumes the longitude of Mars at about 25° 59′ ♐, and the latitude at very nearly 3° 59′ A. This place of Mars, compared with the one found by calculation for the same time from our own observations, puts the longitude smaller by at least 4′, the latitude falling short of ours by about 9′; and the limitation of the refractions that we have applied seems to cause the whole of this discrepancy. For the distance of Mars from the heart of ♏, wherever taken, agrees to the same minute. But when 3′ are added to the distance of Mars from the Vulture, so that it is 44° 6′, corrected, that is, for refraction, [refraction] easily crept into this distance* while Mars, about 17° above the horizon of Padua, was being rais- [Die 20 Junij nouo ſtilo, Hora 10 fere, quo tempore calculus ex obſeruationibus hiſce ſupponit Long. ♂ 25 59 ♐ fere, Latit. vero 3 59 A. proxime. Hic ♂ locus collatus cum eo, qui ex proprijs obſeruationibus ad idem tempus per calculum inuentus eſt, Longit. ſaltem 4 minutis minorem ponit, Latitudine 9′ circiter a noſtra deficiente, quam diſcrepantiam refractionum limitatio, quam nos adhibuimus, totam cauſari videtur. Diſtantia enim ♂ a corde ♏ habita vbivis in eodem minuto conſentit. Additis autem diſtantiæ ♂ a Vulture tribus minutis vt ſit 44° 6′ emendata ſcilicet pro refractione, diſtantiam hanc facile inſinuata* dum ♂ 17 gradibus circiter ſupra Patavianum horizonta eleuare-] -ed and viewed the Vulture very obliquely. With the calculation repeated, the remaining quantities come out afresh, as follows. The angle DBC 18° 59½′, from which the angle CBA 45° 50′, the side CA 85° 57′ 20″, namely the complement of the latitude of Mars, and the angle DAC 21° 54′ 26″, the difference of longitude from the heart of ♏. Here, therefore, there finally results: [tur & oblique admodum Vulturem intueretur. Reiterato calculo proueniunt reliqua denuo, vt ſequuntur. Angulus DBC 18° 59½′, vnde angulus CBA 45° 50′, latus CA 85° 57′ 20″, complementum ſcilicet latitudinis ♂, & angulus DAC 21° 54′ 26″, differentia longitudinis a corde ♏. Igitur hic vltime prouenit]

Longitude of Mars [♂ Longitudo]	25° 59′ 6″ ♐
Latitude [Latitudo]	4° 2′ 40″ south [M.]

Examination of the later calculation, for 21 June, with account taken of the refractions, which increase the distance in both cases: from the Vulture by 3′, and from the northern scale-pan by two. So that the true distance of Mars from the Vulture is 44° 23′, and from the northern scale-pan 43° 45′. [Examen calculi poſterioris ad 21 diem Junij, habita refractionum ratione, quæ diſtantiam vtrobique augent a Vulture quidem tribus minutis, a borea vero Lance duobus. Vt ſit vera diſtantia ♂ a Vulture 44° 23′, a borea Lance 43° 45′.]

Therefore, on 21 June by the reformed calendar, the Sun set at Padua at 7^h 40^m. To these I add two hours, which passed between sunset and the observations, so that the hours counted from noon are 9^h 40^m. To these I again add the difference of the meridians of our place and of Padua, 12^m, and there results the time agreeing with our clock, counted from noon, namely 9^h 52^m; to this time, according to these observations, correspond: [Igitur 21 Junij iuxta reformatum Kalend. Sol Patavij occidit H. 7 M. 40, quibus addo duas horas, quæ interceßerunt inter occaſum Solis & obſeruationes, vt ſint horæ a meridie numeratæ H. 9 M. 40. His rurſum addo differentiam meridianorum noſtri loci & Patauiani 12 M. & prouenit tempus noſtro horologio a Meridie congruens, ſcilicet H. 9 M. 52, cui tempori iuxta has obſeruationes reſpondent]

Longitude [Longitudo]	25° 39′ ♐
Latitude [Latitudo]	4° 8⅙′ south [M.]

Our calculation exceeds this determination of the place of Mars by 4′ in both respects, in longitude as well as in latitude. See what follows. [Huius loci ♂ constitutionem calculus noſter 4 minutis vtrobique tam Longitudine quam Latitudine excedit. Vide ſequentia.]

For the longitude and latitude of Mars from Magini's observations, for 8 July. [Pro longitudine & latitudine ♂ ex obſeruationibus Magini ad diem 8 Julij.]

Let the earlier figure be repeated, in which things are given as before. The Sun set at Padua at 7^h 40^m. Add 2^h. Our time from noon, 9^h 50^m. [Repetatur figura prior in qua vt antea dantur. Sol occidit Patavij H. 7 M. 40. Adde 2 H. Tempus a merid. noſtro H. 9 M. 50.]

Resp. from the observation, longitude [Reſp. ex obſeruatione Longitudo]	21° 9′ 48″ ♐
Latitude [Latitudo]	4° 49⅓′ south [M.]

Comparison of the calculation from our observations of Mars with the one that results from the observations made at Padua by Master Magini and Master Gellius, each at its own time duly noted. [Collatio calculi obſeruationum noſtrarum in ♂ cum eo qui ex obſeruationibus Domini Magini ac Domini Gellij Patauij habitis, prouenit ſingulis ſuis temporibus rite denotatis.]

By the old calendar [Iuxta vetus Calend.]		Calculation from our observations [Calc. ex noſtris obſeruationibus]		By the reformed calendar [Iuxta reformat. Calend.]			Calculation from the Paduan observations [Calc. ex obſerv. Patav.]	
Days [Dies]	Hours, minutes [H. M.]	Longitude [Longitudo]	Latitude [Latitudo]	Months [Menſes]	Days [Dies]	Hours, minutes [H. M.]	Longitude [Longitudo]	Latitude [Latitudo]
10 June [10 Junij]	$11^h\ 50^m$	26° 2½′ ♐	4° 8½′ south [M.]	June [Junius]	20	10^h, about [10 fere]	25° $59\frac{1}{12}$′ ♐	4° 2⅔′ south [M.]
11	$11^h\ 30^m$	25° 43½′	4° 12′	June [Junius]	21	$9^h\ 52^m$	25° 39′	4° 8⅙′
28	$10^h\ 26^m$	21° 12⅓′	4° 45⅓	July [Julius]	8	$9^h\ 50^m$	21° 9⅚′	4° 49⅓′

N.B. Our observations have been freed from refractions on every side, according to the limitation; to the Paduan ones, however, 3′ have for the most part been added to the distance of Mars from the Vulture on account of refractions, which could have been as great as that in the star of Mars, elevated 17° while it was being observed. [N. B. Obſeruationes noſtræ a refractionibus iuxta limitationem vndequaque liberatæ ſunt: circa Patauinas autem adiecta ſunt vt plurimum tria minuta diſtantiæ ♂ a Vulture propter refractiones, quæ tantæ in Martia ſtella 17 gradibus inter obſeruandum eleuata eße poterant.]

Likewise on 21 June, from the distance there between Mars and the Vulture, namely 44° 23′, and between the heart of ♏ and Mars, 21° 31½′, there results, by the course of the calculation, longitude 25° 39¾′, latitude 4° 9′. This place of Mars nearly agrees with the one above, as can be seen. [Item die 21 Junij ex diſtantia ibi inter ♂ & Vulturem quidem 44° 23′, inter cor vero ♏ & ♂ 21° 31½′ prouenit iuxta calculi tenorem Longit. 25° 39¾′, Lat. 4° 9′. Qui locus ♂ cum ſuperiore fere conuenit, vt videre eſt.]

But since it matters most of all to track down the places of Mars for 6 and 10 June with what precision can be achieved, inasmuch as between these days Mars, opposite to the mean motion of the Sun [☉lis], holds the perigee place in the epicycle according to the hypothesis — therefore, our calculation having been revised and carried out with a little more limitation than before, in this way the longitudes and latitudes of Mars for those same days come to be set down, from the observations that follow. [Quoniam autem maxime omnium intereſt ♂ loca ad diem 6 & 10 Junij, præciſione qua fieri poteſt indagare, quippe quod inter hos ♂ ☉lis medio motui oppoſitus locum Perigæum in epicyclo iuxta Hypotheſin obtineat. Igitur calculo noſtro reuiſo ac limitatius paulo quam antea peracto, hoc modo ad eoſdem dies longitudines & latitudines ♂ ponendæ veniunt ex obſeruationibus quæ ſequuntur.]

Days [Dies]	Hours, minutes [H. M.]	From the heart of ♏ [A corde ♏]	Southern declination [Declin. M.]	Right ascension [Aſc. R.]	Longitude [Longi-tudo]	Latitude [Lati-tudo]
6	$12^h\ 8^m$	23° 5′	27° 24⅔′	266° 53⅓′	27° 14⅙′ ♐	3° 55⅔′ south [M.]
		From the shoulder of ♐ [Ab hum. ♐]				
6	$12^h\ 44^m$	9° 28′	27° 24⅚′	266° 55′ 40″	27° 16¼′	3° 55⅙′
		From the heart of ♏ [A corde ♏]				
10	$11^h\ 39^m$	21° 52½′	27° 36′	265° 31′ 40″	26° 1′ 45″	4° 8¼′
		From the eastern head of ♐ [Ab orient. cap. ♐]				
10	$12^h\ 2^m$	15° 34′	27° 36¼′	265° 34⅖′	26° 4¼′	4° 8⅓′

This last calculation of Mars having therefore been carefully weighed back and forth by Master Tycho himself, its limited places for the days named above are set down as follows. [Hoc igitur poſtremo ♂ calculo vltro citroque ab ipſo Domino Tychone diligenter penſitato, ponuntur ad dies prænominatos loca eius limitata vt ſequuntur.]

Of the old year [Anni veteris]		Longitude of Mars [Longitudo ♂]	Latitude of Mars [Latitudo ♂]	
Days [Dies]	Hours, minutes [H. M.]			
6	$12^h\ 10^m$	27° 15′ 0″ ♐	3° 55′ 30″ south [M.]	N.B. These can be safely trusted. [N. B. His tuto fidendum eſt.]
10	$11^h\ 40^m$	26° 2½′ ♐	4° 8′ 30″ south [M.]	

Both these and the rest of our places have been verified, for the following days on which we observed Mars, in the following way. [Verificata ſunt & hæc & reliqua noſtra loca ad ſequentes dies, quibus ♂ obſeruabamus, modo ſequenti.]

Days of the year [Dies Anni]		Hours, minutes [H. M.]	Our verified places [Noſtra loca verificata]	
Old [Veteris]	New [Noui]		Longitude [Longitudo]	Latitude [Latitudo]
6 June [6 Junij]	16 June [16 Junij]	$12^h\ 20^m$	27° 15′ ♐	3° 55½′ south [M.]
10	20	$11^h\ 50^m$	26° 2′	4° 8½′
11	21	$11^h\ 30^m$	25° 43′	4° 12′
12	22	$11^h\ 50^m$	25° 25′	4° 14½′

Days of the year [Dies Anni]		Hours, minutes [H. M.]	Our verified places [Noſtra loca verificata]	
28	8 July [8 Julij]	$10^h\ 26^m$	21° 12′	4° 45½′
17 July [17 Julij]	27	$9^h\ 32½^m$	20° 8′	4° 50′

Compare Magini's observations with these, wherever they fall, and in each case add 13^m to the times on account of the difference of the meridians. [Cum his confer Magini obſeruationes, ſicubi inciderint, & adde vtrobique tempora 13′ ob differentiam meridianorum.]

Calculation for finding the opposition of Mars with the mean motion of the Sun [CALCULUS PRO ♂ ☍ CUM MEDIO ☉ MOTU INVENIENDA.]

$3^d\ 23^h\ 30^m$, 1° 12½′; 1 day, 18′ 13″: the daily motion of Mars between 6 and 10 June. [Dies 3 H. 23 M. 30 1° 12½′, 1 dies 18′ 13″ motus diurnus ♂ inter 6 & 10 diem Junij.]

Next, on 6 June at $12^h\ 10^m$, the mean motion of the Sun was 24° 36′ 39″ ♊, while the motion of Mars was 27° 15′ ♐. [Deinde die 6 Junij H. 12 10′ fuit medius motus ☉ 24° 36′ 39″ ♊, Martis vero motus 27° 15′ ♐.]

Therefore the degrees remaining beyond the semicircle are 2° 38′ 21″. The mean daily motion of the Sun, moreover, is 59′ 8″; to this I add 18′ 13″, namely the daily motion of Mars, and the sum is 1° 17′ 21″. Now I say: 1° 17′ 21″ give 1 day; how much 2° 38′ 21″? Resp. $2^d\ 1^h\ 8^m$. And I add this time to $6^d\ 12^h\ 10^m$, and they accumulate to $8^d\ 13^h\ 18^m$, namely the time of the opposition of Mars with the mean motion of the Sun. [Quare gradus ſuperſunt vltra ſemicirculum 2° 38′ 21″. Motus autem diurnus medius ☉ eſt 59′ 8″, quibus addo 18′ 13″ motum ſcilicet diurnum ♂, & aggregantur 1° 17′ 21″. Iam dico 1° 17′ 21″ dant 1 diem, quantum 2° 38′ 21″? Reſp. Dies 2 H. 1 M. 8, atque hoc tempus addo D. 6 H. 12 M. 10, cumulanturque D. 8 H. 13 M. 18, tempus ſcilicet ☍ ♂ cum medio motu ☉.]

Further, the δοκιμασία [Greek: dokimasia, "testing, verification"] of the calculation from the daily motion of each is set up thus. For the assumed time of the opposition, namely June, day 8, $13^h\ 18^m$, the simple Sun is found at 26° 37′ 42″ ♊. For Mars, however, according to the apparent daily motion of 18′ 13″, to $2^d\ 1^h\ 8^m$ (for that was the interval between 6 June $12^h\ 10^m$ and the time assigned to the opposition) there correspond about 37′ 18″. If you subtract these from 27° 15′ 0″ ♐, namely the place of Mars found for day 6, $12^h\ 17^m$, there remains the place of Mars at about the opposition, 26° 37′ 42″ ♐. [Porro δοκιμασία calculi ex motu vtriusque diurni ita inſtituitur: Ad tempus ☍ ſuppoſitum nempe menſis Junij D. 8 H. 13 M. 18, inuenitur ſimplex ☉ 26° 37′ 42″ ♊. In ♂ autem iuxta motum diurnum apparentem 18′ 13″, D. 2 H. 1 M. 8 (tantum enim interſtitium fuit inter diem 6 Junij H. 12 M. 10 & tempus ☍ deputatum) competunt 37′ 18″

fere. Hæc ſi ſubduxeris a 27° 15′ 0″ ♐, loco ſcilicet ♂ ad diem 6 H. 12 M. 17 inuento, relinquitur locus ♂ circa ♌ 26° 37′ 42″ ♐.]

The motion of Mars therefore agrees exactly with the mean Sun at the same time. The completed time of the opposition of Mars with the mean motion of the Sun was therefore June, day 7, 13^h 18^m; the Copernican calculation falls short of it by at least three hours, while the Alphonsine does not square with it at all, since it differs from this opposition by more than three whole days. [Conuenit igitur motus ♂ exquiſite cum medio ☉ ad idem tempus. Tempus igitur completum ♌ ♂ cum medio motu ☉ fuit menſis Junij D. 7 H. 13 M. 18, a quo Coperniceus calculus tribus horis ſaltem deficit, Alphonſinus autem omnino non quadrat, vtpote plus integro triduo ♌ hanc differens.]

A collection of the appearances of Mars and of the various calculations, compared with our own [Collectio apparentiarum ♂ ac diverſorum calculorum cum noſtro collatio]

	Days [Dies]	Hours, minutes [H. M.]	Calculation from our observations [Calculus ex noſtris obſ.]		Copernican calculation [Calculus Copern.]		Alphonsine calculation [Calculus Alph.]	
			Longitude [Long.]	Latitude [Lat.]	Longitude [Long.]	Latitude [Lat.]	Longitude [Long.]	Latitude [Lat.]
April [Aprilis]	29	14^h 0^m	2° 15⅙′ ♍	1° 24¾′ south [M.]	2° 11′ ♍	0° 30′ south [M.]	4° 48¾′ ♍	1° 30′ south [M.]
May [Maij]	12	13^h 40^m	2° 24⅓′	2° 15′	2° 33⅓′	1° 6½′	5° 42½′	2° 26½′
	13	13^h 50^m	2° 20′	2° 28¾′	2° 30⅓′	1° 8¾′	5° 42′	2° 30¾′
	19	13^h 40^m	1° 34¾′	2° 40¼′	1° 50¼′	1° 30′	5° 20′	3° 4′
	21	13^h 34^m	1° 15¾′	2° 52′	1° 31⅓′	1° 39′	5° 4¾′	3° 10⅔′
	24	13^h 13^m	0° 40⅓′	3° 5′	0° 52⅓′	2° 0′	4° 37′	3° 19⅔′
	29	12^h 42^m	29° 30⅓′ ♐	3° 25¼′	29° 36½′ ♐	2° 27⅚′	3° 39′	3° 47′
June [Junij]	6	12^h 10^m	27° 15′	3° 55½′	27° 7′	2° 59′	1° 36′	4° 34′
	10	11^h 40^m	26° 2½′	4° 8½′	25° 46′	3° 19′	0° 18′	5° (4′) [5 [4]][1]
	11	11^h 30^m	25° 43′	4° 12′	25° 25′	3° 19′	29° 58′ ♐	5° 5′
	12	11^h 50^m	25° 25′	4° 14½′	25° 3′	3° 21′	29° 39′	5° 8′
	28	10^h 26^m	21° 12′	4° 45½′	20° 22′	3° 50′	24° 54′	5° (11′) [5 [11]]
July [Julij]	17	9^h 32^m	20° 8′	4° 50′	18° 51′	3° 53′	22° 37′	5° (27′) [5 [27]]
Septem-ber [Sept.]	26	7^h 0^m	18° 34¼′ ♍	2° 49¾′	18° 21′	2° 32′	20° 51′	2° (38½′) [2 [38½]]

	Days [Dies]	Hours, minutes [H. M.]	Calculation from our observations [Calculus ex noſtris obſ.]	Copernican calculation [Calculus Copern.]		Alphonsine calculation [Calculus Alph.]	
December [Decemb.]	10	5^{h} 26^{m}	10° 3½′ ♓	0° 16½′ south [M.]	9° 32′ ♓	0° 59′ south [M.]	11° 29′ ♓	0° (32¾′) [0 [32¾]]

8 June, 13^{H} 18^{M} [Die 8 Junij H. 13 M. 18]

At which time Mars was in opposition to the mean motion of the Sun, its place was: [quo tempore ♂ fuit in medij motus ☉ ☌, erat locus eius]

	From the observations [Ex obſeruationibus]	From the Prut. calculation [Ex calculo Prut.]	From the Alphonsine calculation [Ex calc. Alph.]
Longitude [Longit.]	26° 37′ 42″ ♐	26° 27′ ♐	0° 57′ ♑
Latitude [Latit.]	4° 2′ south [M.]	3° 8′ south [M.]	4° 48′

N.B. If at least 8′ are added to the mean apogee of the Prutenic Tables, which for the time of the opposition of Mars and of the mean place of the Sun is S.2, 0° 28′ [S.2 P.0 28′], so that it is 2 0 36; if the prosthaphaeresis of the eccentric that the same tables give is retained, and therefore a like eccentricity; and if our simple Sun is applied, which is then 0^{s} 58° 30′ [0^{s} 58^{p} 30′] from 1 ♈ (for our precession with respect to Spica ♍, just as Ptolemy and Copernicus did it, is 28 7¾), then everything will agree with the apparent motion of Mars itself, as is clear from what follows: [N.B. Si Apogæo Tabularum Prutenicarum medio quod eſt ad tempus ☌ ♂ & medij loci ☉ S.2 P.0 28′, addantur ſaltem 8 minuta, ita vt ſit 2 0 36, retenta Proſthaphæreſi Eccentrici, quem præbent eædem tabulæ, ideoque conſimili Eccentricitate, & applicato noſtro ſimplici Solis, qui eſt tunc a 1 ♈ 0^{s} 58^{p} 30′ (nam præceßio noſtra reſpectu Spicæ ♍ prout fecerunt Ptolemæus & Copernicus, eſt 28 7¾) conuenient omnia motui apparenti ipſius ♂, vt ex ſequentibus patet:]

	Sexagenae, degrees, minutes [ſex. p. M.]	Prutenic correction [Correctio Prutenica]
*Our simple Sun, from the 1st of ♈*2 [*Simplex Solis noſter a 1^{a} ♈*2]	*0 sex. 58° 30′*	*32′ more* [*32^{M}plus*]
Simple motion of the apogee [*Apogæj motus ſimplex*]	*2 sex. 0° 36′*	*8 more* [*8 plus*]
Simple longitude of Mars [*Longitudo ♂ ſimplex*]	*4 sex. 7° 52′*	*10 more* [*10 plus*]
Eccentric anomaly [*Anomalia eccentrici*]	*2 sex. 7° 16′*	*2 more* [*2 plus*]
Anomaly of commutation [*Anomalia commutat.*]	*2 sex. 50° 38′*	*2 more* [*2 plus*]
Prosthaphaeresis of the eccentric, A. [*Proſtaph. eccentrici A.*]	*9° 22′*	
Equated anomaly [*Anomalia coæquata*]	*3 sex. 0° 0′*	

	Sexagenae, degrees, minutes [ſex. p. M.]	Prutenic correction [Correctio Prutenica]
Equated longitude of Mars, 1 ♈ [Longitudo ♂ coæquata 1 ♈]	*3 sex. 58° 30′*	*opposition of the Sun, sup. [☍ ☉ ſup.]*
add our precession [adde præceßionem noſtram]	*0 sex. 28° 8′*	
Longitude of Mars from the equinox [Longitudo ♂ ab æquin.]	*4 sex. 26° 38′*	

This agrees very closely with the observation. [*Quod apprime obſeruationi conſentit.*]

[1] The numbers enclosed in brackets have been computed by us, because the leaf in codex E is worn [Numeri uncis inclusi a nobis ſupputati ſunt ob folium in codice E attritum] That is, from the first star of Aries (γ Arietis). [Id eſt, a ſtella prima Arietis (γ Arietis).]

The difference between the simple place of the opposition of the Sun and the simple longitude of Mars gives the prosthaphaeresis of the eccentric, as here: [*Differentia quæ eſt inter ☉ ☍ ſimplicem locum & ſimplicem longitudinem ♂ dat Proſtaph. eccentrici vt hic*]

4 7 52	*and from this one may work out the rest.* [*atque hinc cætera licebit ratiocinari.*]
3 58 30	
0 9 22	

And these things could be so, if the Prutenic eccentricity of Mars is as it should be (for the Sun, through its own eccentricity, has introduced almost no perceptible error here). [*Atque hæc ita ſe habere poterint, ſi Eccentricitas ♂ Prutenica rite ſe habeat (nam ☉ per ſuam Eccentricitatem hic nihil fere ſenſibilis ſuggeßit vitij).*]

But on examining these things more carefully: since there could not be so great a deviation in the simple longitude of Mars, we shall retain it, together with our simple Sun, as the foundation, presupposing the same eccentricity as Copernicus, since the difference between the simple longitude of Mars and the opposition of the Sun reveals the prosthaphaeresis of the eccentric. Everything will therefore come out as follows. [*Verum conſideratius hæc examinando, quoniam in ſimplici longitudinis ♂ non poterit vsque adeo magna ſubeße deuiatio, illum vna cum ſimplici Solis noſtro pro fundamento retinebimus, præſuppoſita eadem quam Copernicus eccentricitate, quoniam differentia quæ eſt inter ſimplicem longitudinis ♂ & ☉ ☍ Proſtaph. eccentrici patefacit. Omnia itaque prouenient vt ſequitur.*]

	Sexagenae, degrees, minutes [ſex. p. M.]
Our simple Sun [Simplex ☉ noſter]	*0 sex. 58° 30′*
Simple longitude of Mars, Cop. [Simplex long. ♂ Cop.]	*4 sex. 7° 42′*

	Sexagenae, degrees, minutes [ſex. p. M.]	
The difference from the opposition gives the Πρ. [Greek: Pr., abbreviation of prosthaphaeresis] of the eccentric [*Diff. ab ☍ dat Πρ. Ecc.*]	*9° 12′*	
To this corresponds the eccentric anomaly [*huic quadrat An. ecc.*]	*2 sex. 8° 46′*	
This, taken from the longitude of Mars, [*hæc ablata a long.* ♂]	*1 sex. 58° 56′*	*Simple motion of the apogee at the opposition of the simple Sun* [*Apopæj motus ſimplex in ☍ ſimp.* ☉] [recte: Apogæj]
hence the anomaly of commutation [*quare Anomalia com.*]	*2 sex. 50° 48′*	
True, by addition of the Πρ. of the eccentric [*Vera per add. Πρ. Ec.*]	*3 sex. 0° 0′*	
Equated longitude of Mars [*Coæquata long.* ♂]	*3 sex. 58° 30′*	
Our precession [*Noſtra præceßio*]	*0 sex. 28° 8′*	
True place of Mars [*Verus locus* ♂]	*4 sex. 26° 38′*	*agreeing with the observation.* [*cum obſeruatione conueniens.*]

At least 1½° are therefore wanting in the motion of the apogee[1] for everything to agree, the rest being retained as they had come out, and with our mean place of the Sun applied, and the precession of the equinoxes corrected from Spica. [*Deſiderantur itaque ſaltem 1½ gradus in Apogæj motu[1] vt omnia conueniant, retentis cæteris prout prodierant & applicato noſtro loco medio Solis atque præceßione æquinoctiorum e Spica emendata.*]

But if we bring into consideration the Alphonsine equation of the eccentric, which is nearer to the Ptolemaic numbers, 9° 12′ [9ᵖ 12′] corresponds in the equation of the centre by that method. Eccentric anomaly 2 sex. 10° 51′ [ſex. 2 p. 10 M. 51], and thus the simple motion of the apogee will be 1 56 51, which runs ahead of Copernicus's reckoning by 3° 37′ [p. 3 M. 37]. But in each of these, namely in the simple longitude of Mars, in the apogee and in the eccentricity, some error may lie hidden, which is to be looked into another time, D. V. [*At ſi Alphonſinam eccentrici æquationem, quæ Ptolemaicis numeris propior eſt, adhibuerimus in conſilium, reſpondet 9ᵖ 12′ in æquatione centri iuxta eam rationem. Anomalia eccentrici ſex. 2 p. 10 M. 51, ſicque apogæi motus ſimplex erit 1 56 51, quod Copernici numerationem antecedit p. 3 M. 37. Poteſt autem in ſingulis vtpote ſimplici longit.* ♂ *Apogæo atque eccentricitate aliquid latere vitij, quod alias D. V. inquirendum venit.*]

Observations of Venus [OBSERUATIONES VENERIS.]

12 APRIL, IN THE EVENING [DIE 12 APRILIS, VESPERI.]

N.B. Venus appeared here a little larger than the Greater Dog. [N. B. ♀ apparebat hic paulo maior Cane maiore.]

Hours, minutes [H. M.]	Distance of Venus from the bright foot of ♊ [Dist. ♀ a luc. ped. ♊]	Declination [Declin.]	Altitude [Altit.]	cor ♌, west [Cor ♌ occ.]
$7^h\ 47^m$	49° 23′ From the southern horn of ♉ [Ab aust. cornu ♉]	16° 2⅓′	2° 40′	6 0
$7^h\ 52^m$	32° 55¾′	16° 5½′	1° 35′	7 22½ The Lesser Dog, west [Can. min. occ.]
$7^h\ 56⅙^m$	32° 52½′	16° 9′	0° 55′	45 31

23 April, in the evening [DIE 23 APRILIS, VESPERE.]

Hours, minutes [H. M.]	Distance of Venus from the lower head of ♊ [Dist. ♀ ab inf. cap. ♊]	Northern declination [Decl. B.]	Altitude [Altit.]	Spica ♍, east [Spica ♍ or.]
$8^h\ 37⅓^m$	51° 1′	20° 1⅙′ 20° 2½′	2° 37′	23 47
$8^h\ 43^m$	49° 59′	20° 3′	2° 0′	22 11
$8^h\ 48^m$	49° 57½′	20° 7′	1° 45′	20 56

N.B. These observations cannot safely be trusted, both because of the declivity of Venus and also because of the excessive turbulence of the air. [N. B. His obſeruationibus non tuto eſt fidendum, tum propter ♀ decliuitatem, tum etiam aëris nimiam turbulentiam.]

[1] That is, $2^s\ 0° 36′ - 1^s\ 58° 56′ = 1° 40′$. [Scilicet $2^s\ 0° 36′—1^s\ 58° 56′ = 1° 40′$.]

26 April, in the evening [DIE 26 APRILIS, VESPERI.]

The sky was moderately clear near the western horizon. [Erat circa Horizontem occiduum mediocriter ſerenum.]

Hours, minutes [H. M.]	Distance of Venus and the lower head of ♊ [Dist. ♀ & inf. cap. ♊]	Declination [Declin.]	Altitude by the revolving quadrant [Altit. per Vol.]	cor ♌, west [Cor ♌ occ.]
$8^h\ 34⅙^m$	46° 21′	20° 56′	2° 35′	31 8
$8^h\ 39^m$	46° 18½′	20° 59½′	2° 10′	32 16
$8^h\ 43⅙^m$	46° 16′	21° 0¾′	1° 40′	33 20
$8^h\ 46½^m$	46° 14⅙′	21° 2⅙′	1° 20′	34 14

27 April, in the evening [DIE 27 APRILIS, VESPERI.]

Hours, minutes [H. M.]	Distance of Venus from the lower head of ♊ [Dist. ♀ ab inf. cap. ♊]	Declination [Declin.]	Altitude by the revolving quadrant [Alt. per Volub.]	Spica, east [Spica or.]
$8^h\ 46^m$	45° 12′	21° 10′ 21° 9½′	4° 23′	20 15

Hours, minutes [H. M.]	Distance of Venus from the lower head of ♊ [Dist. ♀ ab inf. cap. ♊]	Declination [Declin.]	Altitude by the revolving quadrant [Alt. per Volub.]	Spica, east [Spica or.]
8^h 48⅙^m	45° 11½′	21° 11′ with both [vtroque]	4° 9′	19 39
8^h 52⅙^m	45° 10′	21° 11′ 21° 11⅚′	3° 43′	18 37
8^h 55⅙^m	45° 8⅚′	21° 13′ 21° 12⅔′	3° 20′ Spica was not observed, because of the beam. [Spica præ trabe non obſeruabatur.]	

27 September, in the evening [DIE 27 SEPTEMBRIS, VESPERI.]

This year Venus was observed here first of all near its greatest elongation from the Sun, and this evening the sky was moderately clear. [Omnium primo hoc anno obſeruabatur hic ♀ circa maximam elongationem a ☉, eratque hoc veſpere mediocriter ſerenum.]

5 44	Altitude of Venus [Altitudo ♀]	2° 30′
	Declination of Venus [Declinatio ♀]	23° 33′
		23 32
…	Altitude of Venus [Altitudo ♀]	2° 1½′
	Declination of Venus [Declin. ♀]	23° 31¾′
		23 30

When Venus was being observed here, Mars was near the meridian. [Cum ♀ hic obſeruabatur, erat ♂ circa meridianum.]

5 53	Altitude of Venus with the smallest quadrant [Altit. ♀ minimo Quadr.]	1° 45′
	Southern declination of Venus, with one pinnule [Declin. ♀ M., vno pinn.]	2° 28¾′
5 59⅙	Between Venus and Mars [Inter ♀ & ♂]	48° 23′
6 11, corrected [6 11 corr.]	Altitude of Venus with the Radius [Alt. ♀ per Radium]	1° 0′
6 2⅓	Between Venus and Mars [Inter ♀ & ♂]	48° 21′
	Altitude of Venus with the Radius [Alt. ♀ per Radium]	0½°
6 7	Between Venus and Mars [Inter ♀ & ♂]	48° 19⅓′
6 21½, corrected [6 21½ corr.]	Altitude with the Radius, about [Alt. per Rad., fere]	0° 12′
	The Vulture, east [Vultur or.]	4 53

Calculation for the place of Venus from the observations from the star of Mars, whose place became known above. [Calculus pro loco ♀ ex obſeruationibus a ſtella Martis cuius locus ſuperius innotuit.]

At 6^h 11^m [H. 6 M. 11]	Venus was distant [Diſtabat ♀]	
	from Mars, in the preceding direction [a ♂ in præcedentia]	48° 23′
	For refraction at an altitude of 1° [Pro refr. in alt. 1 g.]	
	add to the distance [in diſt. adde]	12
	True distance of Venus from Mars [Diſt. vera ♀ a ♂]	48° 35′
	Declination of Venus, shortly before [Decl. ♀ paulo ante]	
	observed [obſeruata]	23° 32½′
	Add for the refractions [Adde pro refractionibus]	
	at an altitude of 2½ [in alt. 2½]	13½
	Declination of Venus, free of refraction [Decl. ♀ a refr. libera]	23° 46′
	Set the right ascension of Venus [Pone Aſc. R. ♀]	237° 32′ 42″
	Resp. from the new table [Reſp. e noua tabula]	
	Longitude [Longit.]	0° 31′ 43″ ♐
	Latitude [Latit.]	3° 30′ 53″ south [M.]
	Mean motion of the Sun [Medius motus ☉]	15° 44′ 35″ ♎
	Wandering of Venus from the mean motion of the Sun [Vagatio ♀ a medio motu ☉]	44 47 7

N.B. The declination of Mars here is the same one we used above, as it came out limited from the observations. The alteration of the time demands that it should have been assumed here a little larger; yet this has no weight in investigating the place of Venus. [N.B. Declinatio ♂ hic eadem eſt, qua ſuperius vſi ſumus ex obſeruationibus limitata emergente, quam paulo maiorem hic ſuppoſitum fuiße temporis alteratio efflagitat, nihil tamen in loco ♀ indagando hoc habet momenti.]

According to Copernicus, Venus [Iuxta Copernicum ♀]	Longitude [Longit.]	0° 0½′ ♐
	Latitude [Latit.]	0° 43′ south [M.]
According to Alphons. [Iuxta Alphonſ.]	Longitude [Longit.]	0° 0′ ♐
	Latitude [Latit.]	2° 17′ south [M.]

N.B. The refractions in the distance of Venus from Mars are limited by adding 12′ to a distance observed at an altitude of 1°; at an altitude of 2°, however, 10′; at 3°, 9′. [N. B. Refractiones in diſtantia $♀^{r_i{}^s}$ a $♂^e$ limitantur addendo diſtantiæ in altitudine 1° obſeruatæ 12′, in altitudine vero 2 graduum 10′, 3 graduum 9′.]

Afterwards, when this place had been examined by means of the apparent distance from Mars, 48° 23′, with the apparent declinations of each assumed (of this one 24° 49′, of that one 23° 28′), the right ascension of Venus comes out as 237° 50′ 45″, resp. longitude 0° 44′ 3″, latitude 3° 9′ 45″ south, and the true longitude 0° 41′ 0″, latitude 3° 26½′, account being taken of parallax and refraction. [Poſtea examinatione huius loci facta per viſam diſtantiam a ♂ 48°

23′ & viſas vtriuſque declinationes ſuppoſitas, huius quidem 24° 49′, illius vero 23° 28′, prouenit Aſc. R. ♀ 237 50 45, reſp. Long. 0 44 3, Lat. 3 9 45 M. & vera Long. 0 41 0, Lat. 3 26½ habita ratione parall. & refractionis.]

30 September, in the evening [DIE 30 SEPTEMBRIS, VESPERI.]

5 54′	Declination of Venus [Declinatio ♀]	24° 15′
		24 14
	The altitude of Venus was then [Altitudo ♀ tunc erat]	5°, about [5 fere]
…	Declination of Venus, with one [Declinatio ♀ vno]	24° 13⅔′
	The altitude was then [Altitudo tunc erat]	3°

6 8⅔	Between Venus and Mars [Inter ♀ & ♂]	47° 20′
6 12½, corrected [6 12½ corr.]	Altitude of Venus, about [Altitudo ♀ fere]	2° [2 gr.]
	The bright star of the Vulture, east [Lucida Vult. orient.]	4 8
6 10	Between Venus and Mars [Inter ♀ & ♂]	47° 18½′
	Altitude, almost [Altit. ferme]	0¾°
6 12	Between Venus and Mars [Inter ♀ & ♂]	47° 17′
	Altitude of Venus, about [Altitudo ♀ circiter]	12′ [M. 12]

Venus was still raised only a very little above the horizon. [Paululum adhuc ſupra Horizontem eleuata erat ♀.]

At 6^{h} 12^{m} [H. 6 M. 12]	Venus was distant from Mars [Diſtabat ♀ a ♂]	47° 20′
	For refraction at 2° altitude, add [Pro refract. 2° alt. adde]	10
	True distance [Vera diſtantia]	47° 30′
	Apparent declination of Venus [Declin. ♀ viſa]	24° 15′
	Add for refraction [Adde pro refract.]	
	at an altitude of 5° [in alt. 5°]	9
	Southern declination of Venus [Declin. M. ♀]	24° 24′
	Apparent declination of Mars [Declin. ♂ viſa]	24° 26′
	Add for refraction [Adde pro refract.]	
	at an altitude of 9° [in alt. 9°]	5
	Declination of Mars [Declin. ♂]	24° 31′
	Right ascension of Venus [Aſcenſio R. ♀]	240° 44′ 28″
	Resp. longitude [Reſp. Longitudo]	3° 31⅙′ ♐
	Latitude [Latitudo]	3° 32⅙′ south [M.]
	Mean motion of the Sun [Medius motus ☉]	18° 42′ 2″ ♎
	Elongation of Venus from the mean [Elongatio ♀ a medio] motion of the Sun [motu $\odot^{\text{lis}}$]	44 49 8

2 October, in the evening [DIE 2 OCTOBRIS, VESPERI.]

5 40′	Declination of Venus [Declinatio ♀]	24° 45′
		24 45⅓
	Altitude of Venus about 3°[1] [Altit. ♀ fere 3 grad.[1]] with the smallest quadrant [per Q. minim.]	
5 46⅓	Altitude with the Radius [Altit. per Radium]	1° 45′
	Declination of Venus [Declinatio ♀]	24° 42½′
		24 42
5 51½	Between Mars and Venus [Inter ♂ & ♀]	46° 36′
5 56, corrected [5 56 corr.]	Altitude of Venus [Altitudo ♀]	1⅓°
	The Vulture, east [Vultur orient.]	6 32
5 54⅔	Between Mars and Venus [Inter ♂ & ♀]	46° 35⅓′
	Altitude [Altit.]	1° 0′
	The Vulture, east [Vultur orient.]	5 35
5 57	Declination of Venus [Declinatio ♀]	24° 40′
	Altitude [Altitudo]	0° 55′
6 0⅓	Between Mars and Venus [Inter ♂ & ♀]	46° 35′
6 5⅙, corrected [6 5⅙ corr.]	Altitude with the Radius [Alt. per Radium]	0° 45′
	The Vulture, east [Vultur orient.]	4 12

The clock was corrected here. [Hic corrigebatur horologium.]

Venus, at a lower altitude very close to the horizon, could not be observed any further because of the clouds. [♀ in decliuiori altitudine Horizonti proxime non poterat obſeruari vlterius propter nubes.]

From these observations. [Ex hiſce obſeruationibus.]

5 56′	Distance of Venus from Mars [Diſt. ♀ a ♂]	46° 36′
	Add for refraction [Adde pro refract.]	
	at an altitude of 1⅓ [in alt. 1⅓]	11
	Limited distance [Diſtantia limitata]	46° 47′
	Observed declination [Declin. obſeruata]	24° 45′
	Declination freed from refraction [Decl. liberata a refr.]	24° 57′
	Right ascension of Mars [Aſcenſio R. ♂]	294° 38′
	(1′ is taken off for the alteration of the time) [(adimitur 1′ pro alteratione temporis)]	
	Right ascension of Venus [Aſcenſio R. ♀]	242° 51′ 16″
	Resp. longitude [Reſp. Longitudo]	5° 31′ ♐
	Latitude [Latitudo]	3° 42⅔′ south [M.]
	Remoteness of Venus from the mean [Remotio ♀ a medio]	
	motion of the Sun [motu ☉]	44 51 30

9 October, in the evening [DIE 9 OCTOBRIS, VESPERI.]

5 42′ 20″	Declination of Venus [Declinatio ♀]	26° 4′
		26 3½
	Altitude, about [Altitudo circiter]	4°
5 45	Between Mars and Venus [Inter ♂ & ♀]	44° 32¾′
5 40, corrected [5 40 corr.]	Altitude [Altitudo]	2⅓°
5 46½	Between Venus and Mars [Inter ♀ & ♂]	44° 32′
	Altitude [Altitudo]	2°
5 47½	Between Venus and Mars [Inter ♀ & ♂]	44° 32′
	Altitude of Venus [Altit. ♀]	1½°
5 48 40	Declination of Venus [Declinatio ♀]	26° 0⅓′
	Altitude, about [Altitudo fere]	1°
5 54⅓	The bright star of the Vulture, east, was [Erat luc. Vult. or.]	1 31
5 50, corrected [5 50 corr.]	Venus could not be observed any further, because it had descended into the clouds near the horizon. [Vlterius non poterat ♀ obſeruari, quia deſcenderat circa horizontem in nubes.]	

At 5^h 40^m [H. 5 40′]	Distance of Venus from Mars [Diſtantia ♀ a ♂]	44° 32¾′
	Add for refraction at 2° [Adde pro refract. in 2°]	9⅓
	Corrected distance [Diſtantia emendata]	44° 42′
	Observed declination [Declin. obſeruata]	26° 4′
	Add for refraction [Adde pro refract.]	
	at an altitude of 4° [in alt. 4°]	10
	Corrected declination [Declin. emendata]	26° 14′
	Right ascension of Venus [Aſcenſio R. ♀]	249° 58′ 40″
	Resp. longitude [Reſp. Longitudo]	12° 4′ 19″ ♐
	Latitude [Latitudo]	3° 57′ 19″ south [M.]

10 October, in the evening [DIE 10 OCTOBRIS, VESPERI.]

Altitudes observed with the Radius. [Altitudines per Radium obſeruatæ.]

Hours, minutes [H. M.]	Between Venus and Mars [Inter ♀ & ♂]	Declination of Venus [Decl. ♀]	Altitude of Venus [Altit. ♀]	The Vulture, east [Vultur or.]
5^h 35^m		26° 20⅔′	6, about [6 fere]	
		26° 19′		
5^h 45^m 15^s	44° 20′		3° 45′	4 2
5^h 36^m, corrected [5 36 corr.]				

[1] At first 2° 25′ had been written. [Primum ſcriptum erat 2° 25′.]

Hours, minutes [H. M.]	Between Venus and Mars [Inter ♀ & ♂]	Declination of Venus [Decl. ♀]	Altitude of Venus [Altit. ♀]	The Vulture, east [Vultur or.]
$5^h\ 48^m\ 30^s$	44° 18′		2¼°	
$5^h\ 51\frac{2}{3}^m$	44° 18½′	26° 15′	2°	3 40
$5^h\ 54^m\ 25^s$	44° 17⅓′		1⅓°	
$5^h\ 57^m\ 10^s$	44° 17′		1° 8′	2 56
$6^h\ 0^m$	44° 16′		1° 0′	
$6^h\ 2^m\ 20^s$	44° 18′	uncertain because of the low position of Venus [incerta propter decliuitatem ♀.]		

N.B. The refractions in the distance are taken away by half the quantity that is applied in correcting the declination, because of a position with Mars lower than at the beginning. [N. B. Refractiones in diſtantia per dimidium quantitatis quæ adhibetur in declinatione emendanda tolluntur propter decliuiorem quam ab initio cum ♂ ſtatum.]

At $5^h\ 36^m$ [H. 5 M. 36]	Distance of Venus [Diſt. ♀]	
	and Mars, observed [& ♂ obſeruata]	44° 20′
	Distance corrected for [Diſt. correcta pro] refraction [refract.]	44° 27½′
	Observed declination [Declin. obſeruata]	26° 19′ 50″
	Add for refraction at an altitude of 6° [Adde pr 0 refr. in alt. 6°]	7 10
	Corrected declination [Declin. emendata]	26° 27′ 0″
	Right ascension of Venus [Aſcenſio R. ♀]	251° 0′
	Resp. longitude [Reſp. Longitudo]	13° 0′ 24″ ♐
	Latitude [Latitudo]	4° 2′ 30″ south [M.]
	Elongation from the mean of the Sun [Elongatio a medio Solis]	44 32⅙

16 October, in the evening [DIE 16 OCTOBRIS, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Between Venus and Mars [Inter ♀ & ♂]	Declination of Venus [Decl. ♀]	Altitude of Venus [Altit. ♀]
$5^h\ 31^m$		27° 1⅔′	1° 45′
$5^h\ 36^m\ 15^s$		26° 59½′	1° 38′
$5^h\ 39^m\ 20^s$	43° 4′		1° 10′
$5^h\ 34^m$, corrected [5 34 corr.]			
$5^h\ 42^m\ 15^s$	43° 3⅙′		1° 4′
$5^h\ 44^m\ 50^s$	43° 3′		0° 58′
$5^h\ 46^m\ 50^s$	43° 2⅓′		0° 52′

Hours, minutes, seconds [H. M. S.]	Between Venus and Mars [Inter ♀ & ♂]	Declination of Venus [Decl. ♀]	Altitude of Venus [Altit. ♀]
$5^h\ 58^m\ 35^s$	43° 0¼′	Venus lay on the horizon. [Incumbebat Horizonti ♀.]	

4 November [DIE 4 NOUEMBRIS.]

The clock was corrected at noon. [Horologium in Meridie corrigebatur.]

Venus was observed in the evening. [Veſperi obſeruabatur ♀.]

In what follows, the clock ran about 10 minutes more than was right. [Horologium 10 Minutis circiter plus iuſto in ſequentibus mouebatur.]

5 3′	Southern declination of Venus [Declinatio ♀ M.]	27° 20¾′
	Shortly after, with the other pinnule [Paulo poſt, alt. pinn.]	27° 20⅙′
	Altitude of Venus, about [Altitudo ♀ circiter]	3° 0′
5 9½	Between Venus and Mars [Inter ♀ & ♂]	43° 6′
	Altitude of Venus [Altitudo ♀]	2⅔°

Afterwards the sky was covered with clouds and no longer open to observation. [Poſtea cœlum nubibus obductum obſeruationibus amplius non patebat.]

10 November, in the evening [DIE 10 NOUEMBRIS, VESPERI.]

4 49⅓′	Declination of Venus [Declin. ♀]	26° 48½′
4 38, corrected [4 38 corr.]	with the largest armillae [per max. armill.]	26° 49′
	Altitude, about 3° [Altit. 3 fere grad.]	
5 30	Distance between Venus and Mars [Diſt. inter ♀ & ♂]	44° 47′
5 19, corrected [5 19 corr.]	Altitude of Venus 2° [Altit. ♀ 2 grad.]	about [fere]
	Declination of Venus [Declinatio ♀]	26° 45′
…	Distance [Diſtantia]	44° 46½′
	Altitude, about [Altitudo fere]	1⅓
5 23⅚	The Vulture, west [Vultur occid.]	21 29

The clock was corrected against this one. [Ad hanc horologium corrigebatur.]

On the same day, 10 November, at $5^h\ 20^m$. [Eodem die 10 Nouembris H. 5 M. 20.]

Distance of Mars from Venus [Diſtantia ♂ a ♀]	44° 47′
Add for refraction at 2° altitude [Adde pro refract. in 2° alt.]	9
Corrected distance [Diſt. emendata]	44° 56′

Observed declination of Venus [Declin. ♀ obſeruata]	26° 48′ 45″
Add for refraction at an altitude of 3° [Adde pro refract. in alt. 3°]	12 15
Corrected declination [Decl. emendata]	27° 1′ 0″
Therefore the right ascension of Venus [Ergo Aſc. Recta ♀]	274° 12½′
Resp. longitude [Reſp. Longitudo]	3° 45⅓′ ♍
Latitude [Latitudo]	3° 32¾′ south [M.]

II November, in the evening [DIE II NOUEMBRIS, VESPERI.]

Hours, minutes [H. M.]	Distance of Venus from Mars [Diſt. ♀ a ♂]	Declination of Venus [Declin. ♀]	Altitude of Venus by the lesser quadrant [Alt. ♀ per minor. Q.]
4^h 42⅓^m		26° 43¼′ 26° 43⅙′	5
4^h 51½^m	45° 11⅚′	less reliable [minus tuta]	2½
5^h 0^m	45° 12½′	26° 39′ 26° 38⅙′	2
5^h 25^m	45° 12′		1⅓

This evening the sky was quite clear and the air calm. [Erat hac veſpera ſatis ſerenum & aër tranquillus.]

From the preceding observations. [Ex antecedentibus obſeruationibus.]

At 4^h 48^m [H. 4 M. 48]	Distance of Venus from Mars [Diſt. ♀ a ♂]	45° 12′
	Add for refraction at 3° altitude [Adde pro refr. in 3° alt.]	8
	True distance [Vera diſtantia]	45° 20′
4 40′	Observed declination of Venus [Decl. ♀ obſeruata]	26° 43′
	Add for refraction at an altitude of 5° [Adde pro refr. in alt. 5°]	8
	Corrected declination [Declin. emendata]	26° 51′
	Right ascension of Venus [Aſcenſio R. ♀]	274° 27′ 0″
	Resp. longitude [Reſp. Longitudo]	3° 58¾′ ♍
	Latitude [Latitudo]	3° 23⅙′ south [M.]

A collection of the appearances of the star of Venus from the observations made of it this year around its greatest wandering from the Sun, while it was Hesperus, and worked out by calculation, a comparison with the calculation of Coper. and Alphons. being made at the same time. [Collectio apparentiarum ſtellæ ♀$^{ri^s}$ ex obſeruationibus in eadem hoc anno habitis circa maximam vagationem a ☉$^{l^e}$ dum Heſperus fuit & calculo ſubductis facta vna collatione calculi Coper: & Alphons.]

	Day [Dies]	Hours, minutes [H. M.]	Calculation from the observations [Calculus ex obſ.]: longitude [Long.]	lati-tude [Lat.]	Calculation, Copern. [Calculus Copern.]: longitude [Long.]	lati-tude [Lat.]	Calculation, Alph. [Calculus Alph.]: longitude [Long.]	lati-tude [Lat.]
Septem-ber [Sept.]	27	6^h 11^m	3° 31′ 43″ ♐	3° 30′ 53″ south [M.]	0° 0½′ ♐	2° 43′ south [M.]	0° 0′ ♐	2° 17′ south [M.]
	30	6^h 12^m	3° 31⅙′	3° 32⅙′	3° 3′	2° 50′	2° 58′	2° 30′
Oc-to-ber [Oct.]	2	5^h 56^m	5° 31′	3° 42⅔′	5° 2′	2° 54′	4° 53′	2° 40′
	9	5^h 40^m	12° 4′ 19″	3° 57′	11° 45′	3° 10′	11° 28′	3° 6′
	10	5^h 36^m	13° 0′ 24″	4° 2½′	12° 41′	3° 13′	12° 22′	3° 10′
	16	5^h 34^m	18° 12½′	4° 14′ 12″	18° 0′	3° 31′	17° 30′	3° 39′
Novem-ber [Nov.]	10	5^h 20^m	3° 45⅓′ ♑	3° 32¾′	4° 17′ ♑	2° 33′	2° 19′ ♑	3° 59′
	11	4^h 48^m	3° 58¾′	3° 23⅙′	4° 38′	2° 33′	2° 36′	3° 57′

Observations of Mercury [OBSERUATIONES MERCURIJ.]

16 February [DIE 16 FEBRUARIJ.]

Mercury was observed in the evening. [Veſperi obſeruabatur ☿.]

Hours, minutes [H. M.]	Distance between Mercury and the bright star of ♈ [Diſt. inter ☿ & luc. ♈]	Declination of Mercury, Mer. [Decl. ☿ Mer.]	Altitude of Mercury by the revolving quadrant [Alt. ☿ per Vol.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
6^h 27¼^m	38° 6′	1° 21½′	3° 41′	6 59½
6^h 34⅔^m	38° 4½′	1° 17½′	by the lesser quadrant [per Q. min.]	5 9
		1° 19⅙′	2°, about [2 fere]	
6^h 39^m	38° 2½′	1° 17′	1½°, almost [1½ ferme]	4 2½
6^h 42^m	37° 59½′	1° 14′	1⅓°	3 20
6^h 45⅖^m	37° 56′	1° 13½′	1°, as it were [1 quaſi]	2 28
6^h 48^m	37° 55′	1° 13′		1 48

This evening Mercury appeared very large, like the stars of the first magnitude, so much so that it equalled Aldebaran [Aldeboram] in its visible size. [☿ hoc veſpere admodum magnus apparuit inſtar ſtellarum primæ magnitudinis, adeo vt Aldeboram ſua viſibili quantitate æquauerit.]

17 February [DIE 17 FEBRUARIJ.]

Mercury was observed in the evening, as follows. [Veſperi obſeruabatur ☿ vt ſequitur.]

At 5^h 39^m the clock, previously corrected against the Greater Dog, was examined, and it was in good order, except for 5^s [5″] by which it was running

faster than was right. [H. 5 M. 39 examinabatur horologium antea correctum ad Canem maiorem, beneque ſe habebat, exceptis 5″ quibus iuſto celerius mouebatur.]

Hours, minutes [H. M.]	Distance of Mercury from the bright star of ♈ [Diſt. ☿ a luc. ♈]	Southern declination of Mercury [Declin. ☿ M.]	Altitude by the revolving quadrant [Altit. per Vol.]	The Greater Dog, east [Canis maior or.]
5^h $56\frac{5}{6}^m$		0° 39′	8° 34′	27 9½
6^h 1^m		0° 38½′	7° 58′	26 11

Hours, minutes [H. M.]	Distance of Mercury from the bright star of ♈ [Diſt. ☿ a luc. ♈]	Southern declination of Mercury [Declin. ☿ M.]	Altitude by the revolving quadrant [Altit. per Vol.]	The Greater Dog, east [Canis maior or.]
6^h $9\frac{2}{3}^m$	36° 45′	0° 38′	6° 46′	23 48
6^h 10^m, corrected [6 10 corr.]				The bright foot of Orion, west [Luc. pes Orion. occ.]
6^h $14\frac{1}{6}^m$	36° 44′	0° 36⅚′	6° 10′	0 14½
6^h $17\frac{1}{3}^m$	36° 43′	0° 35½′	5° 45½′	1 4
6^h $20\frac{5}{6}^m$	36° 42¼′	0° 35⅙′	5° 16′	2 0
6^h 24^m 25^s	36° 41⅔′	0° 34½′	4° 45½′	2 50
6^h $27\frac{1}{2}^m$	36° 40′	0° 33⅚′	4° 21′	3 39
6^h $30\frac{2}{3}^m$	36° 39½′	0° 33⅚′	3° 55′	4 22
6^h 31^m 0^s, corrected [6 31 0 corr.]		0° 34⅙′	by the lesser quadrant [Per Q. min.]	
6^h 35^m	36° 37¼′	0° 32⅔′	3° 15′	5 33
6^h $38\frac{2}{3}^m$	36° 36⅔′	0° 31⅚′	2° 40⅔′	6 27
		0° 32′		
6^h $42\frac{2}{3}^m$	36° 33⅓′	0° 29½′	2° 10′	7 22
6^h $46\frac{1}{6}^m$	36° 32½′	0° 26⅙′	1° 45′	8 17
6^h $49\frac{1}{2}^m$	36° 30′	0° 24½′	1° 20′	9 5
6^h $54\frac{1}{2}^m$	36° 25′			10 23

The declination was not taken because of the low position. Altitude about one degree to the eye, or at least 50′ with the Radius. [Non capiebatur Declinatio propter decliuitatem. Altit. quaſi vnius gradus quoad oculum vel ad minimum 50′ per Radium.]

The same day, 17 February [EODEM DIE 17 FEBRUARIJ.]

In the evening the bright star of ♈ was observed at an altitude almost everywhere very like that of Mercury earlier, for limiting the refractions of Mercury, as follows. [Veſperi obſeruabatur lucida ♈ in conſimili vbique fere altitudine, qua antea ☿ pro refractionibus ☿ limitandis vt ſequitur.]

Declination of the bright star of ♈ [Declinatio lucidæ ♈]		Altitude of the same by the revolving quadrant [Altit. eiusdem per Volub.]
21° 31¼′	21° 31′	14° 55′
21° 31½′	21° 31¼′	13° 45′
21° 33′	with both pinnules [vtroque pinn.]	9° 5′
21° 34′	21° 34⅓′	8° 11′
21° 34⅚′	21° 34⅓′	6° 46′
21° 37′	21° 36⅓′	5° 45′
21° 38¾′	21° 38′	4° 45′
21° 41½′	with one pinnule [vno pinn.]	3° 55′

18 February [*DIE 18 FEBRUARIJ.*]

Mercury was observed again in the evening. [*Veſperi rurſus obſeruabatur* ☿.]

The clock was corrected against the Greater Dog at 5^h 45½^m. [Horologium corrigebatur ad Canem maiorem H. 5 M. 45½.]

The bright star in the jaw of the Whale, which we used in the following observation of Mercury, had by the armillae the *declination* [Lucida in mandibula Cete qua in ſequenti obſeruatione ☿ vſi ſumus, habuit per Armillas *Declinationem*]

with one pinnule [*vno pin.*]	*2° 26′*
with the other [*altero*]	*2° 25½′*

N. B. The refraction of the distance with respect to the bright star of ♈ *was such as the refraction of the declination is at such an altitude, or a little greater, because the bright star of* ♈ *stood more directly over Mercury than the pole star did, but by a modest difference. The refraction from the bright star of the Whale in the distance, however, was smaller, because it tended more obliquely; and it could stand roughly in a middle way, thus:* [*N. B. Refractio diſtantiæ reſpectu lucidæ* ♈ *fuit qualis eſt refractio declinationis in tali altitudine vel paulo maior, eo quod directius imminebat lucida* ♈ *Mercurio quam ſtella polaris ſed diſcrimine modico. Refractio autem erat a lucida cete in diſtantia minor eo quod plus in obliquum tendebat, & poterat quaſi medio modo ſe habere ſic.*]

Diagram. A small line figure in the left column under the N.B., with handwritten labels. A horizontal straight line runs across the figure; from a single point on it, three straight lines rise to arrowheads: one to the upper left, one steeply upward slightly left of vertical, and one to the upper right. The point of origin carries a planet symbol below the line.

- Below the horizontal line, at the common point: ☿ (Mercury)
- Upper left, at the end of the left line: ”luc. Cete” (the bright star of the Whale)
- Top, at the end of the near-vertical line: ”luc. ♈” (the bright star of ♈)

• Upper right, at the end of the right line: ”polaris” (the pole star)

Hours, minutes [H. M.]	Distance of Mercury from the bright star of ♈ [Diſt ☿ a luc. ♈]	Northern declination of Mercury [Decl. ☿ Bor.]	Altitude by the revolving quadrant [Altit. per Vol.]	For the clock: the bright foot of Orion, east [Pro horol. Luc. pes Or. or.]
6^h $3\frac{1}{2}^m$	35° 24′	0° 6′	8° *36′*	1 56
6^h 7^m	35° 24′ *better* [*melior*]	0° 6⅙′	8° *5′*	1 1
6^h 11^m	35° 24′ doubtful [dubia]	0° 6½′	7° *35′*	0 10 *afterwards west* [*poſtea occid.*]
6^h $14\frac{5}{6}^m$	35° 23⅙′ *good* [*bona*]	0° 8′	7° *5′*	0 45
6^h 18^m	35° 22′	0° 7½′	6° 41′	1 36
6^h $22\frac{1}{3}^m$	35° 21¾′	0° 8′	6° 10′	2 35
6^h 26^m	35° 21¼′	0° 9′	5° 40′	3 29
6^h $30\frac{1}{6}^m$	35° 20′	0° 10′	5° 10′	4 24
		0° 9½′		

Hours, min-utes [H. M.]	Distance of Mercury from the bright star of ♈ [Diſt ☿ a luc. ♈]	Northern declination of Mercury [Decl. ☿ Bor.]	Altitude by the revolving quadrant [Altit. per Vol.]	For the clock: the bright foot of Orion, east [Pro horol. Luc. pes Or. or.]
	from the bright star of the Whale [a lucida Cete]			
6^h $34\frac{5}{6}^m$	43° 3′	0° 10½′	4° 36′	5 27
		0° 10′		
6^h $38\frac{1}{3}^m$	43° 2½′	0° 11′	4° 12′	6 10
6^h 42^m	43° 2½′	0° 12′	by the lesser quadrant [per min. Quad.]	
		0° 11½′	3° 40′	7 8
	again from the bright star of ♈ [iterum a luc. ♈]			
6^h $45\frac{1}{6}^m$	35° 17′	0° 13′	3° 15′	7 55
6^h 49^m	35° 16′	0° 13½′	2° 50′	8 47
6^h 53^m	35° 15′	0° 15½′	2° 10′	9 47
		0° 14⅚′		
6^h 56^m	35° 14⅚′	0° 18½′	1° 50′	10 30
	from the bright star of the Whale [a lucida Cete]			
6^h $58\frac{2}{3}^m$	42° 59½′	0° 18½′	1° 30′	11 11
7^h $2\frac{1}{3}^m$	43° 0′	0° 20′	1° 10′	12 15
7^h $11\frac{2}{3}^m$	Mercury was setting on the visible horizon [occidebat ☿ in horizonti viſibili]			14 21

N.B. To test the sextant, the distance of the bright star of ♈ and Aldebaran [Aldeboræ] was observed shortly afterwards, and it was found by the same

sextant to be [N.B. Pro examinando Sextante obſeruabatur mox diſtantia lucidæ ♈ & Aldeboræ, quæ inveniebatur per eundem ſextantem]

I	35° 32½′
II	35° 32′
III	35° 32½′

So the instrument is in good order. [Igitur inſtrumentum bene ſe habet.]

To investigate the refraction of Mercury, Arcturus was observed. [Pro inveſtiganda refractione ☿ obſeruabatur Arcturus.]

Hours, minutes [H. M.]	Altitude of Arcturus [Altit. Arcturi]	Declination of the same [Declinatio eiusdem]	The bright foot of Orion, west [Luc. pes Orion. occ.]
7^h 22⅓^m	3° 20′	21° 31½′	21° 32′
7^h 25^m		21° 32′	21° 30′ 17 48
7^h 27^m	3° 50′	21° 31′	21° 29⅝ 8 29
7^h 29^m	4° 4′	21° 30⅚′	21° 30′
…	*5° 54′*	*21° 28½′*	*21° 30′*
Minimum meridian altitude of Lyra [Altit. merid. min. Lyræ]			4° 32½′
…	6° 46′	21° 28⅙′	21° 28′
…	7° 12′	21° 28′	21° 27½′

To test the instrument, cor ♌ was observed, a star which stood at such an altitude that refraction contributed nothing. [Pro experimentando inſtrumento obſeruabatur cor ♌, quæ ſtella erat in tanta altitudine vt refractio nihil ingeßerit.]

Declination of cor ♌ [Declinatio cordis ♌]	13° 57′
	13° 57½′
	13° 56½′
Distance between the Greater Dog [Diſtantia inter Canem]	5° 35⅙′
and its forefoot [maiorem & pedem]	5° 35′
[anteriorem eiusdem]	5° 34⅚′
Declination of the bright star of the Whale [Declinatio lucidæ Ceti]	2° 26⅔′
	2° 26½′
Meridian altitude of Lyra, *minimum, good* [Alt. mer. Lyræ *minima, bona*]	4° 32½′

At that time the Greater Dog, east, was at 1 5. [Fuit tunc Canis maior orient. 1 5]

It was quite clear. [*Erat bene ſerenum*]

Declination of Arcturus [Arcturi Declin.]	21° 29¼′ 21° 29⅓′	Altitude [Altit.]	6° 25′

On the same day, 18 February, for the refraction. [Eodem 18 Feb. pro refractione.]

Hours, minutes [H. M.]	Altitude [Altit.]	Declination [Declinatio]	
	of the bright star of the jaw of the Whale [Lucidæ mandibulæ Ceti]		
	8° 50′	2° 34⅚′	2° 35′
9^h 13^m	8° 37′	2° 30′	
9^h $17⅙^m$	8° 3′	2° 30½′	2° 30′
9^h $23⅓^m$	7° 15′	2° 31′	2° 30⅔′
	6° 27′	2° 31¼′	2° 21⅔′
	of the bright star of ♈ [Lucidæ ♈]		
9^h $33½^m$	13° 20′	21° 32′	21° 31¼′
	12° 40′	21° 32′	21° 32⅓′

Minimum meridian altitude of the tail of the Swan [Altit. merid. min. Caudæ Cygni]		
by the steel instrument [per Chal.]		9° 50⅔′
by the revolving quadrant [per Volub.]		9° 50⅚′
Declination of the bright star of ♈ [Declin. luc. ♈]	21° 33¼′	21° 33′

	Altitude [Altit.]	Declination [Declinatio]	
Spica ♍ [Spicæ ♍]	5° 40′	8° 52′	
	6° 35′	8° 54′	8° 54⅚′
	7° 45′	8° 56′	8° 55′
	8° 30′	8° 55′	8° 56¼′
	9° 20′	8° 55½′	
The bright star of ♈ [Luc. ♈]	9° 40′	21° 33⅔′	21° 33⅓′
	7° 20′	21° 34¼′	21° 34⅓′
	4° 55′	21° 36⅔′	21° 36½′

19 February [DIE 19 FEBRUARIJ.]

Mercury was observed in the evening, as follows. [Veſperi obſeruabatur ☿ vt ſequitur.]

At 5^h 48^m the clock was corrected against the Greater Dog. [H. 5 M. 48 corrigebatur Horologium ad Canem maiorem.]

Hours, minutes [H. M.]	Distance of Mercury from the bright star of ♈ [Dist. ☿ a luc. ♈]	Northern declination of Mercury [Declin. ☿ Bor.]	Altitude of Mercury [Altit. ☿]	The bright foot of Orion, west [Luc. pes Orion. occ.]
5^h $59\frac{1}{2}^m$		0° 46½′	9° 27′	
6^h 1^m		0° 47⅚′	9° 15′	
6^h $4\frac{1}{3}^m$		0° 48′	8° 47′	
6^h 9^m	34° 4′* [34 4*]	0° 48¼′	8° 7′	1 2
6^h $12\frac{1}{6}^m$	34° 4′* [34 4*]	0° 49½′	7° 41′	1 50
6^h $19\frac{1}{6}^m$	34° 4′* [34 4*]	0° 50½′	6° 44′	3 39
	* *doubtful* [**dubiæ*]	0° 50⅚′		
6^h $22\frac{1}{2}^m$	34° 6¼′	0° 50⅔′	6° 17′	4 28
		0° 50½′		
6^h $25\frac{1}{6}^m$	34° 6′	0° 51½′ with both [vtroque]	5° 56′	5 7
6^h $27\frac{5}{6}^m$	34° 4′	0° 52½′	5° 36′	5 38
		0° 51⅚′	the lesser quadrant [Q. min.]	
6^h $31\frac{1}{6}^m$	34° 3¼′	0° 51½′	5° 15′	6 32
		0° 53½′		

Hours, minutes [H. M.]	Distance of Mercury from the bright star of ♈ [Dist. ☿ a luc. ♈]	Northern declination of Mercury [Declin. ☿ Bor.]	Altitude of Mercury [Altit. ☿]	The bright foot of Orion, west [Luc. pes Orion. occ.]
6^h $35\frac{5}{6}^m$	34° 2¾′	0° 53′	4° 40′	7 36
		0° 53½′		
6^h $43\frac{1}{2}^m$	34° 2′	0° 55′	3° 34′	9 21
	Mercury from the bright star of the jaw of the Whale [☿ a luc. mandib. Cete]	0° 56′		
6^h $47\frac{1}{3}^m$	41° 56¼′	0° 56′	3° 10′	10 14
		0° 56½′		
9^h $50\frac{1}{2}^m$	41° 55½′	0° 58′	2° 45′	11 5
		0° 59′		
6^h $53\frac{1}{2}^m$	41° 54½′	0° 59½′	2° 20′	12 3
	again from the bright star of ♈ [rursus a luc. ♈]	1° 0½′		
6^h 57^m	33° 52′	1° 0′	1° 40′	12 56
7^h 2^m	33° 49′	1° 2′	1° 25′	13 59
7^h $4\frac{1}{6}^m$	33° 47′	1° 3′	0° 50′	14 37
7^h $6\frac{1}{6}^m$	33° 45′		0° 45′	15 6

The declination was not taken because of the low position. [Decl. non accipiebatur propter decliuitatem.]

From the preceding observations made on the 18th and 19th I selected two, which I corrected for refraction in this way. [*Exantecedentibusobſeruationibus die 18 & 19 habitis ſelegi duas, quas in refractione correxi hoc modo.*]

Day [*Die*]	*Hours, minutes* [*H. M.*]	*Distance from the bright star of* ♈ [*Diſt. a luc.* ♈]	*Declination* [*Decl.*]	*Hours, minutes* [*H. M.*]	*Distance from the bright star of the Whale* [*Diſt. a luc. Cete*]
18	$6^h\ 30^m$	*35° 27½′*	*0° 2′*	$6^h\ 35^m$	*43° 8′*
19	$6^h\ 31^m$	*34° 11′*	*0° 45′*	$6^h\ 47^m$	*42° 2⅙′*

From this the place of Mercury comes out in the manner that follows. For the refraction in the distance from the star of ♈ *I took the same that the declination required, because the declination and the distance stood at almost the same angle with respect to the vertex; but for the* bright star of the Whale, *as regards the distance, I took only half of that refraction, because its position was more oblique by half again.* [*Hinc prouenit locus Mercurij in hunc modum qui ſequitur. Pro refractione ſumſi eandem in diſtantia ab* ♈ *ſtella, quam declinatio exigebat, eo quod declinatio & diſtantia in eodem quaſi erant quoad verticem angulo, ſed in* lucida Cete *quoad diſtantiam accepi ſaltem dimidium eiusdem refractionis, eo quod obliquior eßet ſitus, dimidio plus.*]

The same evening Arcturus was observed for the refraction of Mercury, as follows. [Eodem Veſperi obſeruabatur Arcturus propter refractionem ☿ vt ſequitur.]

Hours, minutes [H. M.]	Declination of Arcturus [Declinatio Arcturi]	Altitude of the same by the revolving quadrant [Alt. eiusdem per Volub.]
$7^h\ 16⅓^m$	21° 32⅓′	21° 33⅙° 35′
$7^h\ 18½^m$	21° 33′	21° 32⅔° 48′
$7^h\ 23½^m$	21° 33′	21° 33½′4° 20′
$7^h\ 26⅚^m$	21° 31½′	21° 32′ 4° 41′
$7^h\ 31⅓^m$	21° 29½′	21° 28⅓° 12′
$7^h\ 34^m$	21° 28¾′	21° 29⅚° 28′
$7^h\ 34⅓^m$	Lyra was then at its minimum meridian altitude, by the revolving quadrant [Tunc erat lyra in minima altitudine merid. per Volub.]	4° 32½′
$7^h\ 38½^m$	21° 29⅔′	21° 27′ 5° 56′
$7^h\ 44⅓^m$	21° 29½′	21° 27′ 6° 45′
$7^h\ 49^m$	21° 27⅔′	21° 27⅓° 18′
$7^h\ 58½^m$	21° 26¼′	8° 25′

Hours, minutes [H. M.]	Declination of Arcturus [Declinatio Arcturi]	Altitude of the same by the revolving quadrant [Alt. eiusdem per Volub.]
$8^h\ 12⅔^m$	21° 25½′	10° 19′
$8^h\ 23½^m$	21° 24¾′	21° 25′ 11° 32′
$8^h\ 49⅙^m$	21° 23½′	21° 23′ 14° 51′
$8^h\ 55⅚^m$	21° 23⅓′	21° 22¾15° 50′
$9^h\ 17^m$	21° 23′	21° 22¾18° 45′
$9^h\ 43⅓^m$	for correcting the clock, the Greater Dog, west, 31 11. [pro corrigendo horologio Canis maior occid. 31 11.]	

20 February [DIE 20 FEBRUARIJ.]

Mercury was observed in the evening, as follows. [Veſperi obſeruabatur ☿ vt ſequitur.]

The clock was corrected at about 6^h from the Lesser Dog. [*Horologium corrigebatur circa horam 6 a Cane minore.*]

Hours, minutes [H. M.]	Distance between Mercury and the bright star of ♈ [Diſt. inter ☿ & luc. ♈]	Northern declination [Declin. B.]	Altitude of Mercury [Altit. ☿]	The bright foot of Orion, west [Luc. pes Orion. occ.]
6^h 6⅓^m		1° 26½′ 1° 28′	9° 12′	1 2
6^h 10⅓^m	32° 56½′	1° 28⅚′ 1° 29⅙′	8° 38′	2 2
6^h 13⅓^m	32° 56¼′	1° 29½′ 1° 29⅓′	8° 15′	2 45
6^h 16⅚^m	32° 55½′ good [bona]	1° 29⅓′ 1° 29⅔′	7° 44′	3 39
6^h 19⅓^m	22° 55¼′	1° 30′ with both [vtr.]	7° 25′	4 16
6^h 22⅔^m	32° 54¾′ from the bright star of the jaw of the Whale [a luc. mand. Ceti]	1° 30′ 1° 30½′	6° 59′	5 8
6^h 26½^m	41° 1′	1° 30⅔′ 1° 30⅚′	6° 28′	6 2
6^h 29^m	41° 1¼′	1° 31½′ 1° 31′	6° 4′	6 50
6^h 34^m		1° 31′ 1° 31½′	5° 31′	7 54
6^h 35⅚^m	40° 59½′	1° 32½′ 1° 32⅓′	5° 15′	8 20
6^h 38^m	40° 58¾′	1° 33½′ 1° 33′	4° 58′	8 50
6^h 40^m	40° 58½′ again from the bright star of ♈ [Iterum a luc. ♈]	1° 34½′ 1° 33⅚′	4° 40′ altitude by the brass azimuthal quadrant [Alt. per Q. orich. azim.]	9 28
6^h 45½^m	32° 52′	1° 35⅙′ 1° 36′	4° 0′	10 42
6^h 49⅓^m	32° 50¾′	1° 35½′ 1° 36¼′	3° 38′	11 38
6^h 53½^m	32° 48¼′ from the bright star of the Whale [a luc. Cete]	1° 38′	2° 57′	12 45
6^h 57^m	*40° 57¾′*	1° 39′	2° 22′ with the Radius [Per Radium]	13 33
7^h 0½^m	40° 55′	1° 39⅓′	2° 6′	14 26
7^h 3½^m		1° 40½′	1° 55′	15 6
7^h 5⅓^m	40° 54½′	1° 41½′	1° 35′	15 33

Hours, minutes [H. M.]	Distance between Mercury and the bright star of ♈ [Dist. inter ☿ & luc. ♈]	Northern declination [Declin. B.]	Altitude of Mercury [Altit. ☿]	The bright foot of Orion, west [Luc. pes Orion. occ.]
	from the bright star of ♈ [a lucida ♈]			
$7^h\ 8^m$	32° 36½′	1° 42½′	1° 0′	16 15

Afterwards the bright star of the Whale was observed, to examine its place, on account of the observation of Mercury, which was taken from this star several times.[1] [Postea obseruabatur lucida Cete pro examinando eius loco propter obseruationem ☿, qui ab hac aliquoties capiebatur[1].]

Distance of the bright star of the Whale [Distantia lucidæ Cete]	23° 32½′
from the bright star of ♈ [a lucida ♈]	23° 32¾′
Declination of the same [Declinatio eiusdem]	2° 26⅚′
	2° 27⅚′
Declination of the bright star of ♈ [Declinatio lucidæ ♈]	21° 29′
	21° 29⅙′

Between the head of Andromeda and the bright star of the jaw of the Whale, 48° 5′ twice, doubtful, among the chasmata. [Inter cap. Androm. & luc. mandib. Cete 48 5 bis, dubia inter Chasmata.]

22 February, evening [DIE 22 FEBRUARIJ, VESPERI.]

The clock was corrected at about 6^h against the bright foot of Orion, which crossed the meridian at $5^h\ 54⅚^m$. [Horologium corrigebatur circa horam 6 ad lucidum pedem Orionis, qui meridianum transibat H. 5 M. 54⅚.]

N.B. This evening Mercury was at its greatest digression from the Sun, but in such a way that, according to the Prutenic calculation, this elongation passed about one day earlier. According to the Alphonsine, however, it should still be impending; but observation will reveal the truth. [N.B. ☿ erat hac Vespera in maxima digreßione a ☉, ita tamen, vt iuxta Prutenicum calculum hæc elongatio ante diem vnum circiter præterierit. Iuxta Alphonsinum autem adhuc instare deberet, sed obseruatio veritatem pandet.]

Hours, minutes [H. M.]	Distance between Mercury and the bright star of ♈ [Dist. inter ☿ & luc. ♈]	Northern declination [Declin. B.]	Alti-tude [Altit.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
$6^h\ 14½^m$		2° 40½′	8° 35′	5 2
		2° 40⅔′		
$6^h\ 16⅚^m$	30° 59′	2° 41½′	8° 27′	5 25
		2° 41⅚′		
$6^h\ 19⅙^m$	30° 57⅚′	2° 42′	8° 15′	6 5
		2° 41⅔′		

Hours, minutes [H. M.]	Distance between Mercury and the bright star of ♈ [Diſt. inter ☿ & luc. ♈]	Northern declination [Declin. B.]	Alti-tude [Altit.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
6^h $25\frac{1}{2}^m$	30° 55′	2° 43′ 2° 42⅔′	7° 20′	7 46
6^h $32\frac{1}{6}^m$	30° 54½′	2° 43½′ 2° 43¾′	6° 24′	9 23
6^h $38\frac{1}{2}^m$	30° 53′ Mercury from the bright star of the jaw of the Whale [☿ a lucida mandib. Cete]	2° 43½′ 2° 44⅙′	5° 40′	10 55
6^h $44\frac{1}{6}^m$	39° 21½′	2° 45′ 2° 46′	5° 0′	12 19
6^h $49\frac{1}{3}^m$	39° 20¾′	2° 47′ 2° 46½′	4° 14′	13 16
6^h $53\frac{1}{3}^m$	39° 20¼′	2° 47½′ 2° 47′	3° 40′	14 22
6^h $58\frac{1}{2}^m$	39° 18¾′	2° 49′ 2° 49⅙′	3° 8′	15 35

[1] Compare below, among the southern stars. [Cfr. infra inter Stellas Auſtrinas.]

Hours, minutes [H. M.]	Distance between Mercury and the bright star of ♈ [Diſt. inter ☿ & luc. ♈]	Northern declination [Declin. B.]	Altitude [Altit.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
	again from the bright star of ♈ [Iterum a luc. ♈]			
7^h $4\frac{1}{3}^m$	30° 44½′	2° 48′ with one [vno]	2° 10′	17 2
7^h 10^m		2° 52½′	1° 50′	18 22
7^h 12^m		2° 53½′		

25 February [DIE 25 FEBRUARIJ.]

Because of the clouds with which the sky was covered toward the setting point, Mercury was not observed; nor was the sky clear on the 23rd and 24th of this month either. [Propter nubes quibus cœlum ad occaſum obductum erat, non obſeruabatur ☿, nec etiam die 23 & 24 huius menſis cœlum fuit ſerenum.]

26 February, evening [DIE 26 FEBRUARIJ, VESPERI.]

N.B. On this day, according to the Alphonsine calculation derived from the Ptolemaic hypotheses, Mercury should have been at its greatest evening elongation from the Sun. Experience and observation, however, will not bear this out, but rather that it happened five days earlier, which agrees better with the Copernican reckonings. [N.B. Hoc die debuit ☿ iuxta calculum Alphonſinum ex Hypotheſibus Ptolemaicis derivatum eße in maxima ſua elongatione veſpertina a ☉, quod tamen experientia & obſeruatio non teſtabitur: ſed potius ante quinque dies id eveniße, quod Copernicæis rationibus magis eſt conſentaneum.]

Hours, minutes [H. M.]	Distance of Mercury and the bright star of ♈ [Diſt. ☿ & luc. ♈]	Northern declination of Mercury [Decl. ☿ Bor.]	Altitude by the lesser brass azimuthal quadrant [Alt. per Q. min. orich. azim.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
$6^h\ 29\frac{2}{3}^m$	28° 23½′	4° 21′ with both [vtr.]	7° 4′	12 35
$6^h\ 32\frac{1}{2}^m$	28° 24½′	4° 21½′	6° 42′	13 22
		4° 20′		
$6^h\ 35^m$	28° 24½′	4° 20⅚′	6° 14′	13 58
	good [bona]	4° 21½′		
$6^h\ 38\frac{1}{3}^m$		4° 23½′ * [4 23½ *]		14 53
		4° 22½′ * [4 22½ *]		
$6^h\ 39\frac{2}{3}^m$	28° 23′	4° 23⅔′ * [4 23⅔ *]	5° 40′	15 15
		4° 23′ * [4 23 *]		
$6^h\ 42\frac{2}{3}^m$	28° 23′	4° 23⅔′ * [4 23⅔ *]	4° 13′	16 2
		4° 24′ * [4 24 *]	* good [*bonæ]	
$6^h\ 46\frac{1}{2}^m$	28° 22′	4° 25⅔′	by the revolving quadrant [per Vol.]	16 56
		4° 26½′	4° 45′	
$6^h\ 49\frac{5}{6}^m$	28° 21½′	4° 25½′	by the brass quadrant [per Q. orich.]	17 47
		4° 26⅔′	4° 11′	
$6^h\ 52\frac{2}{3}^m$	28° 20⅓′	4° 26′	3° 54′	18 36
		4° 25⅚′		

Hours, minutes [H. M.]	Distance of Mercury and the bright star of ♈ [Diſt. ☿ & luc. ♈]	Northern declination of Mercury [Decl. ☿ Bor.]	Altitude by the lesser brass azimuthal quadrant [Alt. per Q. min. orich. azim.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
	from the bright star of the jaw of the Whale [a luc. mandib. Cete]			
$6^h\ 57^m$	37° 29½′	4° 26⅚′	3° 14′	19 40
		4° 27⅔′		
$7^h\ 0\frac{1}{6}^m$	37° 29′	4° 29′	2° 48′	20 33
		4° 30⅔′		
$7^h\ 3\frac{1}{6}^m$	37° 28½′	4° 30⅔′	2° 25′	21 15
$7^h\ 6\frac{1}{6}^m$	37° 27½′	4° 32½′	2° 5′	22 0
	from the bright star of ♈ [a lucida ♈]			
$7^h\ 9\frac{5}{6}^m$	28° 9′	4° 34′ with one pinnule [vno pinn.]	1° 33′	22 53

Mercury could not be observed any longer this evening, because it was approaching the horizon; nor is this last one safe enough, because of the nearness

of the horizon. You can therefore trust the preceding ones more, especially those that were taken from 6^h 35^m up to about 7^h, both from the bright star of ♈ and from the bright star of the jaw of the Whale. And this evening the sky was quite clear, as it was also on all the preceding ones, when Mercury was observed. On those days, however, on which no observation of Mercury was made, it was not clear near the setting point, where it was seen. [Non poterat amplius hac veſpera obſeruari ☿, eo quod Horizonti appropinquarit, nec etiam vltima hæc ſatis tuta eſt ob Horizontis vicinitatem. Potes igitur potius fidere antecedentibus, præſertim ijs quæ H. 6 M. 35 vsque in horam 7 proxime, tam a lucida ♈ quam lucida mandibulæ Cete acceptæ ſunt. Eratque hac veſpera ſatis bene ſerenum, quemadmodum etiam omnibus præcedentibus, quando ☿ obſeruabatur. Iis vero diebus quibus nulla eſt facta obſeruatio in ☿, non fuit ſerenum iuxta occaſum vbi videbatur.]

The clock was corrected again at about $7\frac{1}{3}^h$, when it was noticed that it was again running $1\frac{1}{2}^m$ slow. [Horologium iterum corrigebatur circiter horam 7⅓, vbi animadverſum eſt rurſus 1½ Minut. tardius moueri.]

After these observations of Mercury no more remained around this time of the year. For on 2 March, in the evening, when for the first time in these three days the sky around our western horizon was quite clear, we looked carefully at the part of the sky where Mercury had its place, and so it then barely appeared to the eyes. [Poſt has in ☿ obſeruationes circa hoc anni tempus nullæ amplius reſtabant, nam die 2 Martij, veſperi, cum primum hoc triduo cœlum circa Horizontem noſtrum occidentalem ſatis bene ſerenum exiſteret, diligenter in parte cœli vbi ☿ locum haberet intuebamur, itaque tunc oculis vix apparuit.]

Investigation of the right ascensions of Mercury from observations selected, nearly everywhere in pairs — of the distance, indeed, from various fixed stars, and of the declination — but each of them limited for the refractions and arranged for the triangular operations. From these, afterwards, the longitudes and latitudes are drawn from the Table and compared with the places of the Copernican and Alphonsine calculation for the days on which Mercury appeared. [Inquiſitio Aſcenſionum rectarum ☿ ex binis fere vbique ſelectis obſeruationibus diſtantiæ quidem ex diuerſis ſtellis fixis & declinationis, pro refractionibus autem ſingulæ limitatæ & ad triangulares operationes diſpoſitæ. Vnde poſtea longitudines & latitudines e Tabula depromuntur & cum locis calculi Copernicæj Alphonſinique ad dies quibus ☿ apparuit conferuntur.]

Day [Dies]	Hours, minutes [H. M.]	Distance from the bright star of ♈, free of refraction [Diſt. a lucida ♈ a refractione libera]	Corrected declination [Declinatio emendata]	Right ascension [Aſcenſio Recta]
Feb. 16	6^h $27\frac{1}{4}^m$	38° 18′ 0″	1° 32′ south [A.]	354° 45¾′
17	6^h 10^m	36° 50½′	0° 43′ 30″	355° 59′ 5″
17	6^h 31^m	36° 50′	0° 43′ 15″	355° 59′ 33″
18	6^h 30^m	35° 27′	0° 2′ north [B.]	357° 9′ 5″

Day [Dies]	Hours, minutes [H. M.]	Distance from the bright star of ♈, free of refraction [Diſt. a lucida ♈ a refractione libera]	Corrected declination [Declinatio emendata]	Right ascension [Aſcenſio Recta]
		Distance from the Whale [Diſt. a Cete]		
18	$6^h\ 35^m$	43° 8′	0° 2′ north [B.]	357° 12′ 35″
		Distance from ♈ [Diſt. ab ♈]		
19	$6^h\ 30^m$	34° 11′	0° 45′	358° 12′ 42″
		Distance from the Whale [Diſt. a Cete]		
19	$6^h\ 47^m$	42° 2′ 10″	0° 45′	358° 16¼′
		Distance from the bright star of ♈ [Diſt. a luc. ♈]		
20	$6^h\ 10^m$	33° 0′	1° 25′	359° 11′ 53″
		Distance from the bright star of the jaw of the Whale [Diſt. a luc. Ceti mand.]		
20	$6^h\ 26^m$	41° 3′ 40″	1° 25¼′	359° 13′ 0″
		from ♈ [ab ♈]		
22	$6^h\ 17^m$	31° 1′ 40″	2° 38′	0° 45′ 0″
		from the Whale [a Cete]		
22	$6^h\ 45^m$	39° 26′ 30″	2° 38′ 30″	0° 48′ 35″
		from ♈ [ab ♈]		
26	$6^h\ 35^m$	28° 30′ 30″	4° 16′	2° 40′ 15″
		from the Whale [a Cete]		
26	$6^h\ 53^m$	37° 35′ 30″	4° 16′ 15″	2° 40′ 30″

The places of Mercury from the observations, for the individual days of the month of February, at the hours and moments at which it was observed by us in the sky, with a comparison made together of the Copernican and Alphonsine calculation for the same times, and with the daily motion of each. Finally, the mean motion of the Sun, and the elongation of Mercury from it according to the calculation of the observations. [Loca ☿ ex obſeruationibus ad ſingulos dies menſis Februarij horas ac momenta quibus cœlitus a nobis obſeruatus eſt, facta vna collatione calculi Copernicæj & Alphonſini ad eadem tempora, cum motu diurno ſingulorum. Denique ☉lis motus medius & ☿rij ab hoc iuxta obſeruationum calculum elongatio.]

Day [Dies]	Hours, minutes [H. M.]	Mean motion of the Sun [Medius motus ☉lis]	Elongation of Mercury from the mean motion of the Sun [Elongatio ☿ a medio motu ☉]	Calculation [Calculus]	Longitude of Mercury [Longitudo ☿]	Latitude of Mercury [Latitudo ☿]	Daily motion [Motus diurnus]: longitude [Longitud.]	latitude [Latitud.]
16	$6^h\ 27^m$	5° 57⅓′ ♓	18° 38′	Ours [Noſter]	24° 35′ 13″ ♑	40′ 46″ north [B.]	1° 31′ 0″	0° 16′ 0″
				Coper-nican [Copern.]	25° 27′ 50″ ♑	0° 55′ 0″	1° 20′ 50″	0° 6′ 0″

Day [Dies]	Hours, minutes [H. M.]	Mean motion of the Sun [Medius motus ☉lis]	Elongation of Mercury from the mean motion of the Sun [Elongatio ☿ a medio motu ☉]	Calculation [Calculus]	Longitude of Mercury [Longitudo ☿]	Latitude of Mercury [Latitudo ☿]	Daily motion [Motus diurnus]: longitude [Longitud.]	latitude [Latitud.]
				Alphonsine [Alphon.]	24° 23′ 0″	0° 40′ 0″	1° 32′ 0″	0° 7′ 40″
17	6h 31m	6° 56½′	19° 5¾′	Ours [Noſter]	26° 2′ 15″	0° 56′ 15″	1° 27′ 0″	0° 15′ 30″
				Copernican [Copern.]	26° 44′	1° 1′ 30″	1° 16′ 10″	0° 6′ 30″
				Alphonsine [Alphon.]	25° 54′	0° 48′ 0″	1° 31′ 0″	0° 8′ 0″
18	6h 30m	7° 55⅔′	19° 29⅓′	Ours [Noſter]	27° 25′	1° 9′ 37″	1° 22′ 40″	0° 13′ 22″
				Copernican [Copern.]	27° 56′ 30″	1° 8′ 20″	1° 11′ 30″	0° 6′ 50″
				Alphonsine [Alphon.]	27° 24′	0° 56′ 30″	1° 30′ 0″	0° 8′ 30″
19	6h 30m	8° 54⅚′	19° 45⅙′	Ours [Noſter]	28° 40′ 0″	1° 24′ 0″	1° 15′ 0″	0° 14′ 20″
				Copernican [Copern.]	29° 4′ 20″	1° 16′ 0″	1° 7′ 50″	0° 7′ 40″
				Alphonsine [Alphon.]	28° 51′	1° 6′ 0″	1° 27′ 0″	0° 9′ 30″
20	6h 10m	9° 53⅓′	19° 56⅔′	Ours [Noſter]	29° 50′ 8″	1° 37′ 0″	1° 10′ 0″	0° 13′ 0″
				Copernican [Copern.]	0° 7′ ♈	1° 22′ 30″	1° 2′ 40″	0° 6′ 30″
				Alphonsine [Alphon.]	0° 14′ ♈	1° 14′ 30″	1° 23′ 0″	0° 8′ 30″
21	6h 10m	10° 52⅓′	19° 59⅔′	Ours [Noſter]	0° 52′ 0″	1° 51′ 45″	1° 2′	0° 14′ 45″
	On this day Mercury was not observed in the sky [Hoc die cœlitus non eſt obſeruatus ☿]			Copernican [Copern.]	1° 6′ 0″	1° 37′ 0″	0° 59′ 0″	0° 14½′

Day [Dies]	Hours, minutes [H. M.]	Mean motion of the Sun [Medius motus ☉lis]	Elongation of Mercury from the mean motion of the Sun [Elongatio ☿ a medio motu ☉]	Calculation [Calculus]	Longitude of Mercury [Longitudo ☿]	Latitude of Mercury [Latitudo ☿]	Daily motion [Motus diurnus]: longitude [Longitud.]	latitude [Latitud.]
				Alphonsine [Alphon.]	1° 34′	1° 25′	1° 20′ 0″	0° 10½′
22	6h 17m	11° 52′	19° 53⅙′	Ours [Noſter]	1° 45′ 10″ ♌	6° 30″	0° 53⅙′	0° 14′ 45″
				Copernican [Copern.]	2° 2′	1° 50′ 0″	0° 56′ 0″	0° 13′
				Alphonsine [Alphon.]	2° 53′ 0″	1° 33′ 0″	1° 19′	0° 8′
							4 days [dies 4]	4 days [dies 4]
26	6h 35m	15° 48′	18° 21′	Ours [Noſter]	4° 9′ 6″ ♈	2° 50′ 48″ north [B.]	2° 24′ 0″	0° 44⅓′
				Copernican [Copern.]	4° 49′	2° 30′ 0″	2° 47′ 0″	0° 40′
				Alphonsine [Alphon.]	7° 32′ 0″	2° 8′ 40″	4° 39′	0° 35′ 40″

The refraction of Mercury has been corrected throughout, but the parallax has not yet been applied; it can be applied in the same way as is done for the Sun. The refraction subtracted from the distance from the bright star of ♈, moreover, is equal to the refraction of the declination, because the star stood over Mercury in the same way; in the other distance, however, from the bright star of the Whale, about half of it was taken for the refraction, because that star was inclined toward Mercury by about half an angle more, in the manner that follows. [*Refractio ☿ vbique emendata eſt, ſed parallaxis nondum applicata, quæ poteſt eodem modo adhiberi, vt in ſole fit, eſt autem refractio ablata a diſtantia Lucidæ ♈ æqualis cum refractione declinationis, eo quod ſtella immineret eodem modo ☿, in altera autem diſtantia a lucida Ceti eius quaſi dimidium pro refractione acceptum eſt, eo quod dimidio circiter angulo inclinatior eſſet ad ☿ in hunc qui ſequitur modum.*]

Diagram. A reproduced handwritten sketch standing at the right of the narrow italic text. A horizontal line (the horizon) runs across its foot; from a point on it, marked with a handwritten "a" below, a vertical line rises to a handwritten word at the top, and lines fan out from the same point to a star

at the upper left, a star at the left, and a point at the upper right marked by a handwritten word. A star marked with a handwritten "b" above it stands on the vertical line a little above the horizon, with the Mercury sign ☿ beside it to the right; from this star lines run to the two stars at the left and to the point at the upper right. At the right, two handwritten lines, each beginning "locus", end in the printed letters "a" and "b"; the second line is joined by a looped stroke to the horizon line below it.

- top, at the head of the vertical line: [?]
- upper right, at the end of the lines from a and b: "pol", followed by a looped stroke with a descender [polus?]
- upper left, beside the star: [?]
- left, beside the star: [?]
- on the vertical line, above the star near ☿: b
- beside that star, right: ☿
- foot of the vertical line, below the horizon: a
- right, first line: locus [?] a — the place [?] a
- right, second line: locus [?] b — the place [?] b

And from all these observations compared with one another it is clear that the motion of Mercury agrees more readily with the Copernican calculation than with the Alphonsine. For although the latter agrees more closely at the beginning, afterwards, toward the end, it wanders off farther; and just as the Copernican reckoning commits an excess in its longitude at the beginning, so it does almost always, though not by an equal interval. [*Atque ex omnibus his obſeruationibus inuicem collatis patet ☿ motum promtius congruere Coperniceo calculo quam Alphonſino. Nam licet hic propius ab initio conſentiat, tamen poſtea iuxta finem longius diuagatur, & quemadmodum Copernicea ratio ab initio exceßum in eius longitudine committit, ſic etiam fere ſemper, licet non æquali interſtitio.*]

N.B. Its greatest digression from the mean place of the Sun, however, was on the 21st, which fits quite well with Copernicus's hypothesis, although the Alphonsine calculation determines that it will have its greatest elongation from the Sun only on the 26th, when in fact it had come 1⅔° closer to it. The Copernican calculation makes it have approached in the meantime by only about 1¼°. And so the Alphonsine computation committed on the 26th an error in the place of Mercury, as to longitude, of 3⅓°, the Copernican one of only 0⅔°, by which both are in excess. [*N.B. Digreßio autem eius maxima a Solis medio loco fuit die 21, quod ſatis bene quadrat cum Copernici hypotheſi, licet Alphonſinus calculus ſtatuat eum die primum 26 a Sole maximam habiturum elongationem, quando revera p. 1⅔ illi propius acceßerit. Copernicus calculus facit ſaltem interea acceßiße p. 1¼ fere. Commiſit itaque Alphonſina ſupputatio die 26 errorem in loco ☿ quoad longitudinem p. 3⅓, Copernicea ſaltem p. 0⅔, quibus ambo abundant.*]

The greatest digression, however, which was on the 21st, could have been only 20° 2′, with the parallax applied, whereas Copernicus makes it 20° 14′; the simple Sun, assumed otherwise by him, could have caused this difference. [*Maxima vero digreßio,*

quæ fuit die 21 eße poterat ſaltem p. 20 M. 2, adhibita parallaxi, quam Copernicus facit p. 20 M. 14, quod ſimplex Solis ab illo aliter aßumtus cauſari poterat diſcriminis.]

According to the Alphonsines the digression should have been, as I said, on the 26th, so that Mercury would then have stood 21° 44′ from the simple Sun, which does not fit at all. [*Iuxta Alphonſinos debuißet digreßio eße die vt dixi 26, ita vt ☿ tunc diſtaret a ſimplici Solis p. 21 M. 44, quod omnino non conuenit.*]

You can therefore rely quite safely on these observations in restoring the motion of Mercury, provided, however, that the calculation is revised more exactly, that an accurate correction of the refractions is made, and that the parallaxes are applied as well. From them you will measure the proportion of the orbs, you will examine its apogee, and you will assume the commutation more correctly, especially by comparison with morning observations obtained with equal certainty. [*Potes itaque his obſeruationibus te ſatis tuto fundare in reſtituendo ☿rij motu, ita tamen vt reuideatur calculus exactius, fiatque accurata refractionum emendatio, & inſuper adhibeantur parallaxes. Hinc orbium proportionem menſurabis, Apogæum eius examinabis, atque commutationem rectius præſumes, collatione præſertim cum matutinis obſeruationibus pari certitudine adeptis.*]

For all these observations were carefully made, and the instruments well corrected, and the sky was exceptionally clear. [*Fuerunt ſiquidem omnes hæ obſeruationes diligenter factæ, & inſtrumenta bene correcta, eratque cœlum apprime ſerenum.*]

Moreover, the daily motion of Mercury will weigh everything more precisely, and will test whether they have been properly restored. [*Motus inſuper Mercurij diurnus omnia collimatius expendet, atque an rite reſtituta fuerint, probabit.*]

Observations of the Stars in the Northern Constellations outside the Zodiac [OBSERUATIONES STELLARUM IN ASTERISMIS BOREALIBUS EXTRA ZODIACUM.]

7 January, evening [DIE 7 JANUARIJ, VESPERI.]

Least meridian altitude of the last in the tail of the Greater Bear [Altitudo meridiana minima vltimæ in cauda vrſæ maioris]	
by the steel instrument [per Chalyb.]	17° 19⅙′
by the revolving quadrant [per Volub.]	17° 20′

Greatest meridian altitude of 10 in the side of Perseus [Maxima altitudo meridiana 10 in latere Perſei]	
by the revolving quadrant [per Volub.]	80° 29′
Greatest altitude of the unformed star preceding, very close, the right knee of Perseus [Alt. maxima informis præcedentis genu dextrum proxime Perſei]	
by the revolving quadrant [per Volub.]	83° 30⅚′

It is in a straight line with 10 and 17. [Eſt in recta linea cum 10 & 17.]

Greatest altitude of 17 in the knee of Perseus [Altit. max. 17 in genu Perſei]	
by the revolving quadrant [per Volub.]	83° 14⅙′
Altitude of 18 in the bend of the knee of Perseus [Altit. 18 in flexura genu Perſei]	
by the revolving quadrant [per Volub.]	80° 37¼′
Greatest meridian altitude of the unformed star above the knee of Perseus [Altit. max. meridiana informis ſupra genu Perſei]	86° 33½′

13 January [DIE 13 JANUARIJ.]

Greatest altitude of the bright star in the □ of the Lesser Bear [Altit. max. lucidæ in □ Vrſæ minoris]	
by the revolving quadrant [per Volub.]	70° 4½′
Declination of 22 of Andromeda, the lowest in the right calf, with both [Declin. 22 Androm. infimæ in dextra ſura, vtroque]	42° 15′
Declination of 21 of the same [Declin. 21 eiusdem]	43° 16′
better [melior]	43° 17½′

21 January, evening [DIE 21 JANUARIJ, VESPERI.]

Least meridian altitude of the sixth of the Lesser Bear [Altit. merid. minima ſextæ Vrſæ minoris]	
by the revolving quadrant [per Volub.]	41° 43′
by the steel instrument [per Chalyb.]	41° 42½′
Meridian altitude of the following bright star of the □ of the Lesser Bear [Altit. merid. ſequentis lucidæ □ vrſæ minoris]	
by the revolving quadrant [per Volub.]	39° 11⅓′
by the steel instrument [per Chalyb.]	39° 11′
Meridian altitude of the more northern bright star in the side of Perseus, no. 3 [Altit. merid. lucidæ borealioris in latere Perſei Num. 3]	
by the steel instrument [per Chal.]	17° 46⅓′
Least altitude of the bright star of the side of Perseus [Lucidæ lateris Perſei altitudo minima]	
by the revolving quadrant [per Volub.]	14° 17′
by the steel instrument [per Chalyb.]	14° 17⅓′

22 January, morning [DIE 22 JANUARIJ, MANE.]

Between Arcturus and 4 [Inter Arcturum & 4]	39° 10⅓′
in the left shoulder of Ophiuchus [in ſiniſtro humero Oph.]	39° 11¼′
Between Arcturus and 5 [Inter Arcturum & 5]	40° 18½′
in the left shoulder of Ophiuchus [in ſin. humero Ophiuchi]	40° 19½′

Between Spica and the following one in the left hand of Ophiuchus [Inter Spicam & ſequentem in ſiniſtra manu Oph.]	43° 17½′twice [bis]
Between the Vulture and 4 [Inter Vulturem & 4]	43° 32½′
in the shoulder of Ophiuchus [in hum. Ophiuchi]	43° 32⅓′
Between the Vulture and 5 in the shoulder of Ophiuchus [Inter Vult. & 5 in hum. Oph.]	42° 37¾′
Declination of 4 of Ophiuchus [Declin. 4 Ophiuchi]	10° 57′
	10° 55′
Declination of 5 of Ophiuchus [Declin. 5 Ophiuchi]	10° 6½′
	10° 6′
The declination of the following one in the left hand was southern [Declinatio ſequentis in ſiniſtra manu auſtral. erat]	3° 36′
about Merid. [circa Merid.]	3° 36⅔′

22 January, evening [DIE 22 JANUARIJ, VESPERI.]

Least meridian altitude of the preceding, brighter star in the □ of the Lesser Bear [Altit. merid. minima præcedentis lucidioris in □ vrſæ minoris]	
by the steel instrument [per Chal.]	41° 42½′
by the revolving quadrant [per Vol.]	41° 43½′
Least meridian altitude of the following one [Alt. min. merid. ſequentis]	
by the steel instrument [per Chal.]	39° 11½′
by the revolving quadrant [per Vol.]	39° 11¼′

23 January, morning [DIE 23 JANUARIJ, MANE.]

Meridian altitude of the northern bright star in the side of Perseus [Alt. merid. lucidæ borealis in latere Peſei] [recte: Perſei]	17° 46⅓′
Meridian altitude of the bright star of the side of Perseus [Alt. merid. lucidæ lateris Perſei]	
by the steel instrument [per Chal.]	14° 18′
by the revolving quadrant [per Vol.]	14° 16½′
Between the preceding one of the left shoulder of Ophiuchus, no. 4, and Vindemiatrix of ♍ [Inter præcedentem ſiniſtri humeri Ophiuchi 4to num. & Vindemiatricem ♍]	56° 53′
Between the first of the Serpent and Arctophylax, or Boötes [Inter 1^{am} Serpentis & Arctophilacem ſiue Booten]	20° 7⅓′twice [bis]
Between the first of the Serpent and the head [Inter 1^{am} Serpentis & Caput]	28° 6¼′
of Ophiuchus; doubtful [Ophiuchi dubia]	28° 7′

10 February [DIE 10 FEBRUARIJ.]

Evening. In Perseus. [Veſperi. In Perſeo.]

Between 20 below the knee [Inter 20 infra genu]	39° 29⅚′	
and the upper head of Ⅱ [& ſuper. cap. Ⅱ]	39° 28½′	
Between the upper head of Ⅱ and 18 in the knee of Perseus, the preceding one, twice [Inter ſuperius caput Ⅱ & 18 in genu Perſei præcedentem bis]	41° 42¾′	
Between the upper head of Ⅱ and 19 [Inter ſuperius caput Ⅱ & 19]	40° 43′	
the middle one in the bend of the knee [mediam in genu flexur.]	40° 43½′	
Between the upper head of Ⅱ and [Inter ſuperius caput Ⅱ &]	40° 24¾′	
16 of Perseus in the knee [16 Perſei in genu]	40° 24′	
Between the upper head of Ⅱ [Inter ſuperius caput Ⅱ]	42° 15′	
and 17 of Perseus [& 17 Perſei]	42° 15½′	
Between the upper head of Ⅱ and [Inter ſuperius caput Ⅱ &]	36° 32′	
21 in the right foot of Perseus [21 in dextro pede Perſei]	36° 33′	
Vice versa, from the bright foot of Andromeda. [Viceverſa a lucido pede Andromedæ.]		
Between 21 of Perseus and the bright foot of Andromeda [Inter 21 Perſei & lucidum pedem Andromedæ]	28° 15′	twice [bis]
Between the upper head of Ⅱ and 15 in [Inter ſup. caput Ⅱ & 15 in]	55° 8′	
the head of Medusa [Capite Meduſæ]	55° 8⅙′	twice [bis]
Between the upper head of Ⅱ and 13 in the head of Medusa [Inter ſup. caput Ⅱ & 13 in capite Meduſæ]	52° 48⅙′	
Between Capella and 1 of Perseus [Inter Capellam & 1 Perſei]	25° 25′	
in the sword above the head [in enſe ſupra caput]	25° 26′	

(We suspect that it is another one, in the Milky Way, not 1 but an unformed star)[1]. [(Suſpicamur aliam eße in via lactea, non 1 ſed informem)[1].]

[1] Written in the margin afterwards. [In margine poſtea adſcripta.]

Between the upper head of Ⅱ and the said 1 of Perseus, of magnitude 6, smaller [Inter ſuperius cap. Ⅱ & dictam 1 Perſei 6 magnit. minor.]	52° 48′	twice [bis]
Declination of the same 1 just assigned [Declin. eiusdem 1 proxime aßignatæ]	north [B.] 59° 50½′	
Between the unformed star which is in a straight line with 17 in the right knee [Inter informem, quæ eſt in recta linea cum 17 in dextro genu]	43° 50⅙′	
of Perseus, and 10 in the side of Perseus [Perſei & 10 in latere Perſei]	43° 51½′	
Vice versa [Viceverſa]		
Between the same unformed star and [Inter eandem informem &]	20° 22½′	
the bright foot of Andromeda [lucid. pedem Androm.]	20° 23¾′	
Between the true first of Perseus [Inter veram primam Perſei]	28° 35½′	
and Capella [& Capellam]	28° 35′	
Between the right shoulder of Erichthonius and 1 of Perseus, of magnitude 6 [Inter dextrum hum. Erichtonij & 1 Perſei 6 mag.]	33° 17⅓′	
Between Capella and 2 in the right [Inter Capellam & 2 in dextro]	24° 39′	
elbow of Perseus, of magnitude 4 [cubito Perſei magnit. 4]	24° 39¼′	
Between Capella and the unformed star following 5 of the head of Perseus [Inter Capellam & informem ſequentem 5 capitis Perſ.,]	22° 46⅔′	
of magnitude 5 [magn. 5]	22° 47′	

Declination of the true 1 of Perseus [Declinatio veræ 1 Perſei]	53° 59½′
	53° 59′
Between Capella and 5 in [Inter Capellam & 5 in]	23° 56′
the head of Perseus [capite Perſei]	23° 56½′
Declination of the one which is with that one in the small triangle in the right shoulder, and 5 of Perseus [Declinatio eius quæ eſt cum illa in paruo triangulo in dextro humero & 5 Perſei]	50° 38′
to the south [ad auſtrum]	50° 38½′
Between Capella and 6 of Perseus [Inter Capellam & 6 Perſei]	21° 41′
	21° 41¼′
Between Capella and the said one [Inter Capellam & dictam]	22° 50′
in the small △ [in paruo △]	22° 49⅓′
Between the same one in the small triangle [Inter eandem in paruo tri-]	56° 55′
and the lower head of Ⅱ [angulo & infer. caput Ⅱ]	56° 55½′

16 February [DIE 16 FEBRUARIJ.]

Least meridian altitude of the less bright star in the □ of the Dragon; it is the upper of the two following ones [Minima altitudo meridiana minus lucidæ in □ Draconis, eſt ſuperior duarum ſequentium]	
by the revolving quadrant [per Vol.]	22° 55⅓′
by the steel instrument [per Chal.]	22° 55′
Least meridian altitude of the bright star of the following ones in the □ of the Dragon (it is the lower and brighter one) [Altit. minima merid. lucidæ ſequentium in □ Draconis (eſt infer. & magis lucida)]	
by the revolving quadrant and the steel instrument [per Volub. & Chalyb.]	17° 31′
Least altitude of Lyra by the revolving quadrant [Altit. min. Lyræ per Volub.]	4° 31¼′
Between 4 of Erichthonius in the shoulder, of magnitude 3, smaller, and the bright star [Inter 4 Erichtonij in humero, magnit.3 min., & lucidam]	26° 24′
of the side of Perseus [lateris Perſei]	26° 25¼′

Between the upper one in the shoulder of Erichthonius, of the sixth magnitude, and [Inter ſuperiorem in humero Erichthonij ſextæ magn. &]	26° 12¾′
the bright star of the side of Perseus [lucidam lateris Perſei]	26° 12⅚′
Declination of 4 in the right shoulder [Declin. 4 in dextro humero]	44° 47⅓′
of Erichthonius [Erichthonij]	44° 48′
Least meridian altitude of the bright star of the tail of the Swan by the revolving quadrant [Altit. merid. minima lucidæ caudæ Cygni per Volub.]	9° 51⅙′
Declination of the upper one of the right shoulder [Declin. ſuper. dextri humeri]	45° 50′
of Erichthonius [Erichtonij]	45° 50⅓′
Between the bright side of Perseus and 2 in the head of Erichthonius, of magnitude [Inter lucidum latus Perſei & 2 in capite Erichtonij magn.]	23° 56⅔′
4, smaller [4 minor.]	23° 56½′
Between 1 in the head of Erichthonius, of magnitude 6, and [Inter 1 in capite Ericht. 6 magn. &]	23° 10′

the bright side of Perseus [lucidum latus Perſei]	23° 11½′
Declination of 2 of Erichthonius in the head [Declin. 2 Erichth. in capite]	54° 9′
better [melior]	54° 9¾′
Between the upper head of Ⅱ and 1 [Inter ſuperius caput Ⅱ & 1]	29° 29¼′
of Erichthonius in the head [Erichth. in capite]	29° 29½′
Between the upper head of Ⅱ and 2 [Inter ſuperius caput Ⅱ & 2]	28° 6′
of Erichthonius in the head [Erichth. in capite]	28° 7′
Declination of 1 of Erichthonius [Declin. 1 Erichthonij]	55° 31′
in the head [in capite]	55° 30′
Between the upper head of Ⅱ and the upper one in the right shoulder of Erichthonius, unknown to Aratus [Inter ſuperius caput Ⅱ & ſuper. in dextro humero Erichtonij Arato ignotam]	23° 2′ twice [bis]

N. About the 11th, chasmata were seen, exceptionally radiant, purple and blood-red, or, if you prefer to say so, very ruddy; this reddish colour was seen in a single ray stretching through the Gnosian Crown toward the zenith, and it spread out toward the west. [N. Circa 11^{am} conſpiciebantur Chasmata apprime irradiantia, purpurea & ſanguinolentia, vel ſi mauis dicere valde rubicunda, qui rubens color vno radio cernebatur tendens per Coronam gnoſiam verſus Zenit, diffundebaturque verſus occaſum.]

17 February, evening [DIE 17 FEBRUARIJ, VESPERI.]

Least meridian altitude of the lower and brighter of the following ones in the □ of the Dragon [Altit. merid. minima inferior. & magis lucidæ ſequentium in □ Draconis]	
by the steel instrument [per Chalyb.]	17° 31¼′
by the revolving quadrant [per Volub.]	17° 31′
Least meridian altitude of Lyra [Alt. merid. min. Lyræ]	
by the revolving quadrant [per Vol.]	4° 31½′
Least altitude of the breast of the Swan [Alt. min. pectoris Cygni]	
by the revolving quadrant [per Vol.]	5° 5′
Declination of the bright star of ♈ [Declinatio lucidæ ♈]	21° 31′
Its altitude 14° 55′ [Altit. eius 14 55]	21 31¼
Repeated declination of the bright star of ♈ [Repetita decl. lucidæ ♈]	21° 31½′
Altitude 13° 45′ [Altitudo 13 45]	21 31¼
Least meridian altitude of the bright star of the tail of the Swan by the revolving quadrant [Altitudo meridiana minima lucidæ caudæ Cygni per Volub.]	9° 51⅙′

Declination of the bright star of ♈ by the armillae [Declin. lucidæ ♈ per Armillas]		Its altitude by the revolving quadrant [Altit. eius per Volub.]
21° 33′	with both pinnules [vtroque pinn.]	9° 5′

Declination of the bright star of ♈ by the armillae [Declin. lucidæ ♈ per Armillas]		Its altitude by the revolving quadrant [Altit. eius per Volub.]
21° 34′	21° 34⅓′	8° 11′
21° 34⅚′	21° 34⅓′	6° 46′
21° 37′	21° 36⅓′	5° 45′
21° 38¾′	21° 38′	4° 45′
21° 41½′	with one pinnule [vno pinn.]	3° 55′

18 February, morning [DIE 18 FEBRUARIJ, MANE.]

Declination of the bright star of Lyra, with both [Declin. luc. Lyræ, vtroque]	38° 29′	
Between Lyra and the Crown [Inter Lyram & Coronam]	39° 43′	twice [bis]
For the place of Lyra: between the tail [Pro loco Lyræ: Inter cau-]	23° 53⅓′	
of the Swan and Lyra [dam Cygni & Lyram]	23° 53⅔′	
Least meridian altitude of Capella [Alt. merid. Capellæ min.]	12° 17⅔′	

18 February, evening[1] [DIE 18 FEBRUARIJ, VESPERI[1].]

It was very clear. [Erat bene ſerenum.]

	Least meridian altitude by the steel instrument [Alt. merid. min. per Chalyb.]	by the revolving quadrant [perVolub.]
Of Lyra (good) [Lyræ (bona)]		4° 32½′
Of the tail of the Swan [Caudæ Cygni]	9° 50⅔′	9° 50⅚′
Of the left shoulder of Cepheus [Sin. hum. Cephei]	26° 47¾′	26° 48′
Of the third in the girdle of Cepheus [Tertiæ in cingulo Cephei]	34° 41⅙′	34° 41′

19 February, morning [DIE 19 FEBRUARIJ, MANE.]

Meridian altitude of the bright star of the Crown [Altit. merid. lucidæ Coronæ]	
by the revolving quadrant [per Volub.]	62° 14⅚′
by the steel instrument [per Chalyb.]	62° 14⅙′

In the evening of the same day [*Veſperi eodem die*]
For the refractions of the stars. [*Pro refractionibus ſtellarum.*]

	Of the preceding one of the two bright stars in the □ of the head of the Dragon, below the pole, the least altitude by the revolving quadrant [*Præcedentis duarum lucidarum in □ capitis Draconis infra polum, alt. min. per Volub.*]	*18° 33⅓′*
At 6h 57½m [*H. 6 57½′*]	*Of the following bright star in the head of the Dragon, the least* [*Sequentis lucidæ in capite Draconis minima*]	*17 31*
	Least meridian altitude of Lyra [Alt. merid. min. Lyræ]	
	by the revolving quadrant [per Vol.]	4° 32½′
	Least meridian altitude of the breast of the Swan [Alt. merid. min. pectoris Cygni]	
	by the revolving quadrant [per Volub.]	5° 4½′
	Least meridian altitude of the tail of the Swan [Alt. merid. min. caudæ Cygni]	
	by the revolving quadrant [per Volub.]	9° 51′
	by the steel instrument [per Chalyb.]	9° 50⅔′

20 February, morning [DIE 20 FEBRUARIJ, MANE.]

The following circumpolar stars were observed in order to find their declinations, when they were free from refractions. [Obſeruabantur hæ ſequentes ſtellæ circumpolares pro indagandis declinationibus, quando liberæ erant a refractionibus.]

Between the pole star [Inter ſtellam polarem]	51° 37′	twice [bis]
and Lyra [& Lyram]	51° 37⅓′	
Between the pole star [Inter ſtellam polarem]	49° 46⅚′	twice [bis]
and the breast of the Swan [& pectus Cygni]	49° 47¼′	
Between the pole star [Inter ſtellam polarem]	44° 42′	
and the tail of the Swan [& caudam Cygni]	44° 41¼′	
	44° 41⅔′	
Between the pole star [Inter ſtellam polarem]	27° 18⅙′	
and the bright shoulder [& lucidum humerum]	27° 18′	twice [bis]
of Cepheus [Cephei]	27° 17⅓′	
better [melior]	27° 17′	

Because of the dawn this could not be observed any better. [Propter auroram hæc non melius obſeruari potuit.]

20 February, evening [DIE 20 FEBRUARIJ, VESPERI.]

At 6h 54⅓m [H. 6 54⅓′]	Least meridian altitude of the following one in the □ of the Dragon [Alt. merid. min. ſequentis in □ Draconis]	17° 31′
	The bright foot of Orion, west [Luc. pes Orionis occ.]	12 53
7 31	Least meridian altitude of Lyra [Alt. Lyræ merid. min.]	
	by the revolving quadrant [per Volub.]	4° 33′

22 February [DIE 22 FEBRUARIJ.]

Least meridian altitude of the preceding bright star in the □ of the Dragon [Alt. merid. min. præcedentis lucidæ in □ Draconis] by the revolving quadrant [per Volub.]	18° 35′

It had passed the meridian by about half a degree. [Erat circiter dimidium gradum meridianum transgreßa.]

At 6^h 48^m [H. 6 48′]	The following bright star in the □ of the Dragon was passing through the meridian, having an altitude [Tranſibat per Merid. ſequens lucida in □ Draconis habens altit.] by the revolving quadrant [per Volub.]	17° 32′

The clock was corrected at about 6^h against the bright foot of Orion. [Horolcgium corrigebatur circa horam 6 ad lucidum pedem Orionis.] [recte: Horologium]

At 7^h 25^m [H. 7 25′]	Lyra was passing through the meridian, having an altitude [Tranſibat Lyra per Merid. habens altit.]	
	by the revolving quadrant [per Volub.]	4° 33′
	Least altitude of the tail of the Swan [Alt. min. caudæ Cygni]	
	by the revolving quadrant [per Vol.]	9° 52′
At 9^h $56\frac{5}{6}^m$ [H.9 56⅚′]	Declination of the bright star of ♈ [Declinatio lucidæ ♈]	21° 32½′
		21° 33′
	Its altitude by the revolving quadrant [Altit. eius per Volub.]	9° 36′
10 7⅙	Repeated declination of the bright star of ♈ [Repetita declin. luc. ♈]	21° 34′ twice [bis]
	having an altitude by the revolving quadrant [habens altit. per Volub.]	8° 7′
10 14	Repeated declination [Declinatio repetita]	21° 35¼′
		21° 34⅚′
	having an altitude by the revolving quadrant [habens altit. per Volub.]	7° 15′
10 23	Repeated declination [Repetita declin.]	21° 36′
	of the bright star of ♈ [lucidæ ♈]	21° 36⅓′
	having an altitude [habens altitudinem]	6° 12′

[1] Compare above, among the observations of Mercury, p. 157 and following. [Cf. ſupra inter obſervationes Mercurii p. 157 ſq.]

23 February, morning [DIE 23 FEBRUARIJ, MANE.]

Between the pole star and [Inter ſtellam polarem &]	58° 56⅚′	twice [bis]
the bright head of the Dragon [luc. caput Draconis]	58° 57′	

26 February, evening [DIE 26 FEBRUARIJ, VESPERI.]

At 6^h $30½^m$ [H. 6 30½′]	Meridian altitude of the following bright star in the □ of the Dragon [Altitudo merid. ſequentis lucidæ in □ Draconis]	17° 32¼′
7 5⅔	Meridian altitude of Lyra [Alt. merid. Lyræ] by the revolving quadrant [per Vol.]	4° 33′

2 March, evening [DIE 2 MARTIJ, VESPERI.]

Between the lower head of ♊ and 17, the preceding one, namely [Inter inferius caput ♊ & 17 præced. ſc.]	46° 47′	
in the right knee of Perseus [in genu dextro Perſei]	46° 48′	
Between 19 in the bend of the knee of Perseus [Inter 19 in flexura genu Per-]	45° 3′	
and the lower head of ♊ [ſei & inferius caput ♊]	45° 2¾′	
Declination of 17 in the right knee of Perseus [Declin. 17 in dextro genu Perſei]	49° 9½′	
Between the one which is in a straight line with 10 in the side of Perseus and 17 in the knee, and the lower head of ♊ [Inter illam quæ eſt in recta linea cum 10 in latere Perſei & 17 in genu & infer. caput ♊]	48° 11½′	twice [bis]
Declination of 19 of Perseus [Declinatio 19 Perſei]	47° 17′	
Between the one in the sole of the foot [Inter illam in planta pedis]	40° 28⅔′	
of Perseus and the lower head of ♊ [Perſei & inf. cap. ♊]	40° 28⅚′	

17 March, evening [DIE 17 MARTIJ, VESPERI.]

Between the bright star in the square of the Dragon and the following one of the two bright stars in the square of the Lesser Bear [Inter lucidam in quadrato Draconis & ſequentem duarum lucidarum in quadrato Vrſæ]	14° 12⅓′	
no. 6 [minoris Num. 6]	14° 12⅓′	
Between the same one in the square of the Dragon and the upper of the two following [Inter eandem in quadrato Draconis & ſuperiorem duarum ſe-]	13° 32′	
ones in the □ of the Lesser Bear [quentium in □ Vrſæ min.]	13° 32½′	
Between the bright star of the head of the Dragon and the lower of the two bright stars in [Inter luc. cap. Draconis & inferiorem duarum lucidarum in]	26° 38⅙′	
the □ of the Lesser Bear [□ Vrſæ minoris]	26° 38½′	

Between the same one of the Dragon and the upper of the two bright stars [Inter eandem Draconis & ſuperiorem duarum lucidarum]	29° 26⅙′
of the □ of the Lesser Bear [□ Vrſæ minoris]	29° 36⅝′
Between the same one of the Dragon and the lower of the following ones in the □ [Inter eandem Draconis & inferiorem ſequentium in □]	26° 12½′
of the Lesser Bear [Vrſæ minoris]	26° 12⅔′
Between the same one of the Dragon and the upper of the two less bright ones [Inter eandem Draconis & ſuper. duarum minus lucid.]	29° 57¼′
of the □ of the Lesser Bear [□ Vrſæ minoris]	29° 58′
Between the same one of the Dragon and 3 [Inter eandem Draconis & 3]	30° 58′
of the Lesser Bear in the tail [Vrſæ minoris in cauda]	30° 57⅓′
Between the same one and the one which [Inter eandem & eam quæ]	35° 5′
is nearest the pole star [Polari proxima eſt]	35° 5½′

Declination of 2 in the left hand of Boötes, northern [Declin. 2 in manu ſiniſtra Bootis Borea]	53° 51½′	
Vice versa [Viceverſa]		
Between the bright side of Perseus and 6 of the Lesser Bear [Inter lucid. latus Perſei & 6 Vrſæ min.]	58° 17′	twice [bis]
Between the bright side of Perseus and the lower of the two [Inter lucid. latus Perſei & infer. duarum]	54° 7′	
following ones in the □ of the Lesser Bear [ſequent. in □ Vrſæ min.]	54° 7⅔′	
Between the bright side of Perseus and the third [Inter lucid. latus Perſei & ter-]	47° 42′	
in the tail of the Lesser Bear [tiam in cauda Vrſæ min.]	47° 41½′	
Between the bright side of Perseus and the one which is nearest the pole star [Inter lucid. latus Perſei & eam quæ Polari proxima eſt]	42° 3′	twice [bis]
Declination of the first in the head [Declinatio primæ in ca-]	north [B.] 21° 5′	
of the Serpent of Ophiuchus [pite ſerpentis Ophiuchi]	21° 5½′	

22 March, evening [DIE 22 MARTIJ, VESPERI.]

Between the outermost one of the tail of the Greater Bear and the lowest, preceding one of the two preceding ones in the □ of the Lesser Bear [Inter extremam caudæ Vrſæ mai. & infimam præcedentem duarum præcedentium in □ Vrſæ min.]	24° 52′	twice [bis]
Between the same one in the Greater Bear and the upper of the two preceding ones, number 6 of the □ of the Lesser Bear [Inter eandem in Vrſa maiore & ſuperiorem duarum præcedentium numero 6 □ Vrſæ minor.]	25° 45¼	twice [bis]
Between the same outermost one in the tail of the Greater Bear and the upper of the two following ones in [Inter eandem extremam in cauda Vrſæ maioris & ſuperiorem duarum ſequentium in]	30° 31½′	
the □ of the Lesser Bear [□ Vrſæ min.]	30° 31¾′	
Between the same outermost one of the Greater Bear and the one which is number 3 in the Lesser Bear [Inter eandem extremam Vrſæ maioris & eam quæ eſt num. 3 in Vrſa minore]	35° 22⅝′	

in the lead-out of the tail [in eductione caudæ]	35° 23⅙′
Between the same outermost one of the Greater Bear and the middle one in the tail [Inter eandem extremam Vrſæ mai. & mediam in cauda]	38° 57⅓′
of the Lesser Bear, no. 2 [Vrſæ min. num. 2]	38° 58¼′
Between the outermost one of the tail of the Greater Bear and the following one of the two upper ones in the □ [Inter extremam caudæ Vrſæ mai. & ſequentem duarum ſuperiorum in □]	36° 20⅓′
of the Dragon, no. 4 [Draconis num. 4]	36° 21⅙′
Between the same one of the Greater Bear and the preceding one of the two upper ones [Inter eandem Vrſæ mai & præcedentem duarum ſuperiorum]	33° 49′
in the □ of the Dragon, no. 2 [in □ Draconis num. 2]	33° 49⅚′
Between the same one of the Greater Bear and [Inter eandem Vrſæ mai. &]	24° 47¾′
25 of the Dragon [25 Draconis]	24° 48⅙′
Between the same one of the Greater Bear and 24 of the Dragon, after [Inter eandem Vrſæ mai. & 24 Drac. poſt]	30° 24½′
the third knot [tertium nodum]	30° 25⅓′
Between the same one of the Greater Bear and [Inter eandem Vrſæ mai. &]	37° 13¼′
18 of the Dragon [18 Draconis]	37° 14′

Between the same outermost one and [Inter eandem extremam &]	37° 18⅙′	
19 of the Dragon [19 Draconis]	37° 18⅓′	
Between the same outermost one and 17 of the Dragon [Inter eandem extremam & 17 Draconis]	34° 19′	twice [bis]
Between the same outermost one and [Inter eandem extremam &]	21° 31¼′	
26 of the Dragon [26 Draconis]	21° 32′	
Between the same one and 27 of the Dragon [Inter eandem & 27 Drac.]	17° 2′	twice [bis]

2 April, evening [DIE 2 APRILIS, VESPERI.]

Declination of the bright star of the head [Declinatio luc. capitis]	51° 37′
of the Dragon, no. 6 [Draconis num. 6]	51° 36½′
Between the bright side of Perseus and [Inter luc. latus Perſei &]	49° 1⅓′
the upper head of II [ſuper. caput II]	49° 1¾′
Declination of the other bright star of the head [Declin. alterius luc. cap.]	52° 41½′
of the Dragon, no. 3 [Draconis num. 3]	52° 41⅚′

Saturday 3 April, evening [DIE SABBATI 3 APRILIS, VESPERI.]

The least altitude of the pole star was observed [Obſeruabatur alt. min. ſtellæ polaris] by the revolving quadrant [per Volub.]	53° 1½′

by the steel instrument [per Chalyb.]	53° 0⅙′

The instruments had not been corrected for a long time. [Inſtrumenta longo tempore non fuerunt correcta.]

Between the penultimate one in the tail of the Lesser Bear and [Inter penultimam in cauda Vrſæ minoris &]	30° 39½′	
the bend of Cassiopeia [flexuram Caßiopeæ]	30° 40′	
Between the lower of the two hinder ones in the □ of the Lesser Bear, no. 5 [Inter inferiorem in □ Vrſæ min. duarum poſteriorum num. 5]	39° 50′	
and the bend of Cassiopeia [& flexuram Caßiopeæ]	39° 49′	
Between 2 of the Dragon, magnitude 4 [Inter 2 Draconis magnit. 4]	29° 8′	
lesser, and the right shoulder of Cepheus [min.&dextr.hum.Cephei]	29° 8½′	
Between 4 of the Dragon, magnitude 4, and the same one of Cepheus [Inter 4 Draconis magnitud.4 & eandem Cephei]	25° 43′	twice [bis]
Between 3 of the Dragon [Inter 3 Draconis]	31° 8¾′	
and the same one of Cepheus [& eandem Cephei]	31° 9¼′	
Between 1 (the tongue) of the Dragon [Inter 1 (linguam) Drac.]	32° 35′	
and the same one of Cepheus [& eandem Cephei]	good [bona]	
	32° 34½′	
Vice versa [Viceverſa]		
Between 1 of the Dragon and Lyra [Inter 1 Draconis & Lyram]	22° 1⅝′	
	22° 2′	
Between 3 of the Dragon and Lyra [Inter 3 Draconis & Lyram]	17° 45′	
	17° 44¾′	
Between the right shoulder of Cepheus and the tail of the Swan [Inter dextrum humerum Cephei & caudam Cygni]	18° 2′ 0″	

13 April, evening [DIE 13 APRILIS, VESPERI.]

In Boötes. [In Boote.]

Between the tail of ϑ and 20 of Arcturus [Inter caudam ϑ & 20 Arcturi]	30° 14′
in the left shin, 3 mag. [in tybia finiſtra, 3 mag.]	30° 14½′
Between the tail of ϑ and 22, 4 mag. [Inter caudam ϑ & 22 4 mag.]	29° 2′
somewhat greater, in Boötes [paulo maior. in Boote]	29° 1⅔′
Between the tail of ϑ and 21, 4 mag. [Inter caudam ϑ & 21 4 mag.]	28° 31′
lesser, of Boötes [minor. Bootis]	28° 30½′
Declination of 20 of Boötes [Declinatio 20 Bootis]	20° 30′
	20° 29⅔′
Declination of 22 of Boötes [Declinatio 22 Bootis]	17° 51⅙′
	17° 52⅙′
Declination of 21 of Boötes [Declinatio 21 Bootis]	19° 30⅚′
	19° 29½′

Between the tail of ♌ and the one which is under the right arm, no. 16 [Inter caudam ♌ & eam quæ eſt ſub brachio dextro num. 16]	42° 41′	
of the 3rd magnitude [magn. 3æ]	42° 40⅔′	
Declination of 16 of Boötes, twice with one pinnule [Declinatio 16 Bootis, bis vno pinnac.]	28° 50⅙′	
because of the obstruction of the beam [propter imped. trabis]	28° 50⅚′	
Between the tail of ♌ and 18 of Boötes [Inter caudam ♌ & 18 Bootis]	40° 26½′	
in the back, magnitude 4 [in dorſo 4 magnit.]	40° 25½′	
Declination of 18 of Boötes [Declinatio 18 Bootis]	32° 16⅔′	
	32° 16½′	
Declination of 17 of Boötes [Declinatio 17 Bootis]	31° 34⅔′	
	31° 34¾′	
Between the tail of ♌ and 17 [Inter caudam ♌ & 17]	40° 53⅔′	
of Boötes, magnitude 4 [Bootis 4 magn.]	40° 53¾′	
Declination of 19 in the right [Declinatio 19 in dextro]	15° 32′	
foot of Boötes [pede Bootis]	15° 33′	
Between the tail of ♌ and 5 of Boötes in the left shoulder [Inter caudam ♌ & 5 Bootis in humero ſin.,]	42° 56⅔′	
magnitude 3, greater [magn. 3 maior.]	42° 57′	
Declination of 5 of Boötes, twice with one pinnule [Declin. 5 Bootis bis vno pinn.]	40° 6′	
Between the tail of ♌ and 4 of Boötes in the left elbow [Inter caudam ♌ & 4 Bootis in cubito ſiniſtro]	44° 1½′	twice [bis]
Between the tail of ♌ and 19 of Boötes in the right leg, magnitude 3, lesser [Inter caudam ♌ & 19 Bootis in dextro crure 3 magnit. minor.]	41° 36′	twice [bis]
Between the tail of ♌ and 6 of Boötes [Inter caudam ♌ & 6 Bootis]	49° 5⅓′	
in the head, of the 3rd magnitude, lesser [in capite,3æ magn.minor.]	49° 6′	
Vice versa [Viceverſa]		
Between 11 of Hercules and [Inter 11 Herculis &]	39° 45′	
20 of Arctophylax [20 Arctophylacis]	39° 45½′	
Between 11 of Hercules and the one which is 16 of Boötes, in [Inter 11 Herculis & eam quæ eſt 16 Bootis in]	25° 42⅔′	
the right hip [coxendice dextra]	25° 42⅓′	
Between the head of Ophiuchus [Inter caput Ophiuchi]	42° 11½′	
and 19 of Arctophylax [& 19 Arctophyl.]	42° 12′ doubtful [dubiæ]	

14 April, evening [DIE 14 APRILIS, VESPERI.]

Between 11 of Hercules and 19 of Arctophylax [Inter 11 Herculis & 19 Arctophyl.]	32° 52½′

Between the bright star of the Gnosian Crown and 21 in the left leg [Inter lucidam coronæ Gnoſiæ & 21 in crure ſiniſtro]	26° 23¼′
of Arctophylax [Arctophylacis]	26° 23⅓′

Between the bright star of the Crown and [Inter lucidam coronæ &]	26° 44⅙′
22 of Boötes [22 Bootis]	26° 44½′
Between 11 of Hercules and [Inter 11 Herculis &]	27° 41′
18 (Aratus) of Arctophylax [18 (Arato) Arctophylacis]	27° 41½′
Declination of the uppermost and most northern of the unformed stars next to the right foot [Declin. ſupremæ & maxime Borealis informium iuxta pedem]	20° 53⅚′
of Boötes [dextrum Bootis]	20° 54¼′
Between 11 of Hercules and [Inter 11 Herculis &]	27° 15⅙′
17 (Aratus) of Arcturus [17 (Arato) Arcturi]	27° 15½′
Declination of the middle one of the three unformed stars next to the right foot of Arcturus [Declin. mediæ trium informium iuxta pedem dextrum Arcturi]	18° 47½′
magnitude 4 [4 magnit.]	18° 48′
Between 5 in the left shoulder [Inter 5 in ſin. humero]	27° 10¼′
of Arcturus and 11 of Hercules [Arcturi & 11 Herculis]	27° 11′
Declination of the lowest of the three unformed stars next to the right foot of Boötes [Declin. infimæ trium informium iuxta pedem dextrum Bootis]	18° 16¼′

It will be seen that the unformed stars observed here can best be included in the right knee of Boötes. [Videbuntur informes hic obſeruatæ optime includi poße genu dextro Bootis.]

Between 11 of Hercules and 4 in the left arm of Arctophylax, once [Inter 11 Herculis & 4 in brachio ſiniſtro Arctophylacis, ſemel]	31° 23′	
Between 11 of Hercules and 6 of Arcturus in the head [Inter 11 Herculis & 6 Arcturi in capite]	21° 52′	twice [bis]
Between the lowest of the three unformed stars next to the right leg of Arcturus, of magnitude [Inter infimam trium informium iuxta dextr. crus Arcturi magn.]	41° 15½′	
about the 4th, and the tail of ♌ [4æ circiter & caudam ♌]	41° 16⅓′	
Between the middle one of the unformed stars next to the right leg of Arctophylax, 4 [Inter mediam informium iuxta dextr. crus Arctophylacis 4]	42° 19⅙′	
magnitude, and the tail of ♌ [magn. & caudam ♌]	42° 19⅚′	
Between the uppermost of the unformed stars next to the right leg of Arctophylax, magnitude 5 [Inter ſupremam informium iuxta crus dextrum Arctophylacis 5 magn.]	43° 40′	
greater, and the tail of ♌ [maior. & caudam ♌]	43° 40⅔′	
Between 10 in the leash of Arctophylax and the tail of ♌ [Inter 10 in loro Arctophyl. & caudam ♌]	50° 5⅔′	twice [bis]
Between 7 of Arctophylax in the right shoulder and the tail of ♌ [Inter 7 Arctophylacis in humero dextro & caudam ♌]	52° 39⅔′	twice [bis]
Vice versa [Viceverſa]		
Between Lyra and 7 of Arctophylax [Inter Lyram & 7 Arctophyl.]	37° 25½′	
Between Lyra and 10 of Arctophylax, once [Inter Lyram & 10 Arctoph. ſemel]	40° 32¼′	
Between 11 of Hercules and the uppermost of the unformed stars [Inter 11 Herculis & ſupremam informium]	27° 45′	twice [bis]
Between 11 of Hercules and the middle one of the unformed stars [Inter 11 Herc. & mediam inform.]	30° 6′	
Between 11 of Hercules and the lowest of the unformed stars [Inter 11 Herc. & infimam informium]	31° 19′	

22 April, evening [DIE 22 APRILIS, VESPERE.]

Between the pole star and [Inter ſtellam polarem &]	19° 5′
19 of the Dragon [19 Draconis]	19° 4½′
Between the pole star and [Inter ſtellam polarem &]	17° 39′
18 of the Dragon [18 Draconis]	17° 38⅔′
Between the pole star and [Inter ſtellam polarem &]	18° 19′
17 of the Dragon [17 Draconis]	18° 19⅔′
Between the bright star of the head of the Dragon and 25 of the same [Inter lucidam capitis Draconis & 25 eiusdem]	16° 7¾′
Between the bright star of the head and [Inter lucidam capitis &]	17° 29⅔′
26 of the Dragon [26 Draconis]	17° 29⅚′
Between the bright star of the head and [Inter lucidam capitis &]	22° 28¼′
27 of the Dragon [27 Draconis]	22° 28⅓′

27 April [DIE 27 APRILIS.]

Meridian altitude of Spica ♍, with the Moon shining [Alt. merid. Spicæ ♍, ſplendente Luna]	
by the steel instrument [per Chalyb.]	25° 6⅓′
by the revolving quadrant [per Volub.]	25° 6⅚′

29 April, evening [DIE 29 APRILIS, VESPERE.]

The pole star was observed as follows. [Obſeruabatur ſtella polaris vt ſequitur.]

At 9^h $6⅔^m$ [H. 9 6⅔′]	Least altitude of the pole star [Altit. min. ſtellæ polaris]	
	by the steel instrument [per Chal.]	52° 59′
	by the revolving quadrant [per Vol.]	53° 0⅚′
	Meridian altitude of Spica [Altit. merid. Spicæ]	
	by the revolving quadrant [per Volub.]	25° 6⅚′
	by the steel instrument [per Chalyb.]	25° 7′
	Meridian altitude of Arcturus [Altit. merid. Arcturi]	
	by the steel instrument [per Chalyb.]	55° 27¼′
	by the revolving quadrant [per Volub.]	55° 26¼′

30 April, evening [DIE 30 APRILIS, VESPERI.]

At 8^h 55^m [H. 8 55′]	Spica was then east [Tunc erat Spica orient.]	10 5
	And the least altitude of the pole star was [Eratque Alt. min. ſtellæ polaris]	
	by the steel instrument [per Chal.]	52° $59\frac{11}{12}$′

	by the revolving quadrant [per Vol.]	53° 0$^{11}/_{12}$′
At 9^{h} 33⅔^{m} [H. 9 33⅔′]	The meridian altitude of Spica was then [Tunc. erat altit. merid. Spicæ]	
	by the revolving quadrant [per Volub.]	25° 7$^{1}/_{12}$′
	by the steel instrument [per Chalyb.]	25° 7¾′

4 May [DIE 4 MAIJ.]

Least altitude of the pole star [Altitudo ſtellæ polaris min.]	
by the revolving quadrant [per Volub.]	52° 0⅝′

5 May, evening [DIE 5 MAIJ, VESPERE.]

Between 14 of Hercules, magnitude 3, and [Inter 14 Herculis 3 magn. &]	38° 39½′
Arcturus [Arcturum]	38° 39¼′

Between 2 in the right arm [Inter 2 in dextro brachio]	31° 24⅙′	
of Hercules and Arcturus [Herculis & Arcturum]	31° 24¼′	
Declination of 3 of Hercules in the arm [Declin. 3 Herculis in brachio]	20° 11′	
right, magnitude 3, lesser [dextro 3 magn. min.]	20° 12′	
Between the same 3 and Arcturus [Inter eandem 3 & Arcturum]	29° 36½′	twice [bis]

12 May, evening [DIE 12 MAIJ, VESPERI.]

Declination of 14 of Hercules [Declinatio 14 Herculis]	31° 38′	northern [B.]
Between the head of Ophiuchus and 3 in the right arm of Hercules [Inter caput Ophiuchi & 3 in dextro brachio Herculis]	17° 48′	
Between the bright star of the Crown and [Inter lucidam coronæ &]	31° 31′	
10 of Hercules [10 Herculis]	31° 31¼′	
Between the bright star of the Crown and [Inter lucidam coronæ &]	31° 37¾′	
9 in the spoils of Hercules [9 in exuvijs Herculis]	31° 38¼′	
Between the bright star of the Crown and [Inter lucidam coronæ &]	33° 43′	
8 of Hercules [8 Herculis]	33° 43½′	
Declination of 9 of Hercules [Declinatio 9 Herculis]	30° 20′	
	30° 19¼′	
Declination of 8 of Hercules [Declinatio 8 Herculis]	28° 48′	

	28° 47⅙′	
Between 11 of Hercules and Lyra [Inter 11 Herculis & lyram]	24° 27′	
better [meliores]	24° 28¼′	
	24° 28½′	
Meridian altitude of 14 above the left buttock of Hercules, by the revolving quadrant [Altit. merid. 14 ſupra clunem ſiniſtrum Herculis per Volub.]	65° 41′	
Declination of 12 of Ophiuchus [Declin. 12 Ophiuchi]		
with both pinnules [vtroq. pinn.]	15° 6′	
Between the northern scale-pan and [Inter borealem lancem &]	28° 19¾′	
12 of Ophiuchus [12 Ophiuchi]	28° 19′	

20 August, evening [DIE 20 AUGUSTI, VESPERI.]

Between the apex of △ and the one preceding the head Algol, Aratus [Inter cuſpidem △ & præcedentem caput Algol, Arato]	14° 43⅔′	
unformed [informem]	14° 44′	

The brightness of the Moon prevented more.[1] [Splendor ☾ erat impedimento quo minus plura[1].]

7 September [DIE 7 SEPTEMBRIS.]

Between the head of Ophiuchus and the one that is above the tongue of the Serpent [Inter caput Ophiuchi et illam quæ eſt ſupra linguam Serpentis]	24° 13′	
mag. 3, no. 6 [mag. 3 num. 6]	24° 14′	
Between the tail of the Eagle and 2 [Inter caudam Aquilæ & 2]	46° 39′	
of the Serpent, in the tongue, mag. 3 [Serpentis in lingua mag.3]	46° 38⅔′	
Between 1 of the Serpent and the tail of the Eagle [Inter 1 Serpentis & caud. Aquilæ]	48° 55½′	
Between 5 in the head of the Serpent and [Inter 5 in capite Serpentis &]	47° 18′	
the tail of the Eagle [caudam Aquilæ]	47° 18⅙′	
Between the 3rd in the head of the Serpent [Inter 3^{am} in capite Serpentis]	45° 37′	
and the tail of the Eagle [& caudam Aquilæ]	45° 35½′	
	45° 35′	
Between 4 in the upper neck of the Serpent and the tail of the Eagle [Inter 4 in collo ſuperiori Serpentis & caudam Aquilæ]	48° 4′	twice [bis]
Northern declination of 6 in the nose [Declinatio B. 6 in naſo]	24° 6′	
of the Serpent [Serpentis]	24° 5⅚′	

8 September, evening [DIE 8 SEPTEMBRIS, VESPERI.]

Between 7 in the neck of the Serpent and [Inter 7 in collo Serpentis &]	51° 27′	
the tail of the Eagle [caudam Aquilæ]	51° 26⅔′	
Between 2 of the flying Eagle in the neck, magnitude 3, and the head of Ophiuchus [Inter 2 Aquilæ volantis in collo 3 magnit. & caput Ophiuchi]	35° 6′	twice [bis]
Between 1 of the Eagle (the dim one) and [Inter 1 Aquilæ (obſcuram) &]	37° 2½′	
the head of Ophiuchus [caput Ophiuchi]	37° 3′	
Between the little one that follows next after the bright star of the Vulture, toward the east, 6 [Inter parvulam quæ ſequitur proxime lucidam Vult. ad ortum 6]	34° 25⅓′	
magnitude, lesser, and the head of Ophiuchus [magn. min. & caput Oph.]	34° 26′	
Declination of 2 in the neck [Declinatio 2 in collo]	5° 28½′	
of the Vulture [Vulturis]	5° 29′	
Between 4 of the Vulture above the bright star [Inter 4 Vulturis ſupra lucidam]	33° 18′	
magnitude 6, and the head of Ophiuchus [magn. 6 & caput Oph.]	33° 19⅓′	

No more was observed this evening, because of the intermingling of clouds. [Plura hoc veſpere non obſeruabantur propter intermiſtionem nubium.]

10 September, evening [DIE 10 SEPTEMBRIS, VESPERI.]

Between 4 of Hercules in the right arm, at the hand, magnitude 5, and [Inter 4 Herculis in brachio dextro ad manum magnit. 5 &]	54° 35′	
the bright star of the Vulture [lucidam Vulturis]	54° 36′	
Declination of the same fourth one [Declinatio eiuſdem quartæ]	18° 14′	
	18° 13⅔′	
Between the same 4 of Hercules and [Inter eandem 4 Herculis &]	16° 12½′	
the head of Hercules [caput Herculis]	16° 12′	
Between 2 of the Eagle, mag. 3, and [Inter 2 Aquilæ mag. 3 &]	27° 8⅔′	
the mouth of Pegasus [os Pegaſi]	27° 8′	
Between the small one next following the bright star of the Vulture [Inter paruam proxime ſequentem lucidam Vulturis]	27° 11′	
mag. 5, and the mouth of Pegasus [mag. 5 & os Pegaſi]	27° 10¾′	

12 September, evening [DIE 12 SEPTEMBRIS, VESPERI.]

Declination of 1 of the flying Eagle [Declin. 1 Aquilæ volantis]	6° 14¾′	
the dim one, better [obſcuræ melior]	6° 13′	
Declination of 4 of the Vulture, 6 mag., lesser [Declin. 4 Vult. 6 mag. minor.]	9° 27′	
Declination of 6 of the Vulture [Declinatio 6 Vulturis]	10° 26′	
Between 1 of the Vulture, the dim one, and [Inter 1 Vulturis obſcuram &]	24° 51′	
the mouth of Pegasus [os Pegaſi]	24° 51½′	
Between 6 of the Vulture and the mouth of Pegasus [Inter 6 Vulturis & os Pegaſi]	27° 51′	
	27° 51¼′	

[1] Thus in the codex. [Sic in codice.]

Declination of 7 of the Vulture [Declinatio 7 Vulturis]	6° 36′
	6° 35½′
Between 7 of the Vulture, mag. 4 [Inter 7 Vulturis mag. 4]	32° 15′
lesser, and the mouth of Pegasus [minor. & os Pegaſi]	32° 14′
	32° 16′
Between 8 of the Vulture, mag. 5, and [Inter 8 Vulturis mag. 5 &]	31° 19¾′
the mouth of Pegasus [os Pegaſi]	31° 20⅙′
Declination of 8 of the Vulture [Declinatio 8 Vulturis]	4° 33⅙′
	4° 34′
Between the head of Hercules and 6 of the Vulture [Inter caput Herculis & 6 Vult.]	39° 8⅔′
Between the head of Ophiuchus and the same one of the Vulture [Inter cap. Oph. & eandem Vult.]	34° 39½′
Between 8 of the Dolphin, namely the one that most nearly precedes at the side 4 in the rhomboid, and [Inter 8 Delphini, illam ſcilicet quæ proxime ad latus præcedit 4 in Rhomboide &]	36° 1⅓′
Markab [Marcab]	36° 2′

19 September, evening [DIE 19 SEPTEMBRIS, VESPERI.]

Declination of 3 in the head of Hercules, northern [Declin. 3 in capite Herculis Bor.]	20° 12⅓′
Between the same 3 of Hercules and [Inter eandem 3 Herculis &]	51° 29′
the bright star of the Vulture [lucidam Vulturis]	51° 28⅙′
The same, vice versa [Eadem viceverſa]	
Between 3 of Hercules and [Inter 3 Herculis &]	18° 41⅙′
the head of Ophiuchus [caput Ophiuchi]	18° 41⅔′

On the same evening [Eodem Veſpere]

Between the last in the tail of the Dragon, mag. 3, and the last in [Inter vltimam in cauda Draconis mag. 3 & vltimam in]	25° 49′
the tail of the Greater Bear [cauda vrſæ maioris]	25° 49⅚′
Between the penultimate one, no. 30, in the tail of the Dragon, mag. 3, greater [Inter penultimam num. 30 in cauda Draconis mag. 3 maior.]	22° 20′
and the last in the tail [& vltimam in cauda]	22° 20¾′
of the Greater Bear [Vrſæ maioris]	22° 18½′
Between the antepenultimate one of the Dragon (it is 29 in Aratus), mag. 2, and [Inter antepenultimam Draconis (eſt Arato 29) mag. 2 &]	15° 14′
the last in the tail [vltimam in cauda]	15° 16′
of the Greater Bear, better [vrſæ maioris melior]	15° 15′
Between 29 (Aratus) of the Dragon and [Inter 29 (Arato) Draconis &]	26° 22′
the pole star [ſtellam polarem]	26° 21⅓′
Between the penultimate one of the Dragon [Inter penultimam Draconis]	20° 52½′
and the pole star [& ſtellam polarem]	20° 52⅔′

More could not be observed because of the brightness of the Moon. [Plura propter reſplendentiam ☾ obſeruari nequibant.]

26 September, evening [DIE 26 SEPTEMBRIS, VESPERI.]

Between 8 in the serpent of Ophiuchus and [Inter 8 in ſerpente Ophiuchi &]	37° 11′
9 in the right elbow of Ophiuchus [9 in cubito dextro Oph.]	37° 12′
Declination of the same 8 [Declinatio eiuſdem 8]	8° 45′
	8° 46′
Between 9 in the serpent of Ophiuchus and 10 of the same [Inter 9 in ſerpente Ophiuchi et 10 eiuſdem]	34° 50′

27 September, evening [DIE 27 SEPTEMBRIS, VESPERI.]

Between the pole star and the last [Inter ſtellam polarem & vlti-]	21° 12⅓′
in the tail of the Dragon [mam in cauda Draconis]	21° 12⅔′

28 September, evening [DIE 28 SEPTEMBRIS, VESPERI.]

Between the preceding one of the two in the head of the Dragon nearest the tongue, mag. 6, and 28 of the Dragon [Inter præcedentem duarum in capite Draconis linguæ proximarum mag. 6 & 28 Draconis]	30° 0′	twice [bis]
Vice versa [Viceverſa]		
Between the same 28 of the Dragon and the outermost one in the tail [Inter eandem 28 Draconis et extremam in cauda]	15° 20′	
of the Greater Bear [Vrſæ maioris]	15° 19⅓′	

29 September [DIE 29 SEPTEMBRIS.]

Declination of 4 in the Crown [Declinatio 4 in corona]	33° 53′
Gnosian [Gnoſia]	33° 52′
Declination of the preceding one of the two dim ones below the □ in the Dolphin, no. 9 [Declin. præced. duarum obſcurarum infra □ in Delphino num. 9]	11° 44′
Declination of the other, following one of the dim ones below the □ of the Dolphin, no. 10 [Declin. alterius ſequentis obſcurarum infra □ Delph. num. 10]	11° 58′

2 October, evening [DIE 2 OCTOBRIS, VESPERI.]

Between 10 in the spoils of Hercules [Inter 10 in exuvijs Herculis]	40° 50½′
and the head of the Dolphin [& caput Delphini]	40° 50⅓′

Between 9 of Hercules and the head of the Dolphin [Inter 9 Herculis & caput. Delph.]	40° 51′	
Between 15 of Hercules, mag. 3, and [Inter 15 Herculis mag. 3 &]	16° 13′	
Lyra [Lyram]	16° 12½′	
Between 17 of Hercules, mag. 4, and [Inter 17 Herculis mag. 4 &]	15° 39′	
Lyra [Lyram]	15° 38⅓′	
Declination of 15 of Hercules [Declinatio 15 Herculis]	37° 20⅙′	
	37° 21′	
Between 16 of Hercules,[1] mag. 3, lesser, and Lyra [Inter 16 Herculis[1] mag. 3 minor. & Lyram]	14° 29′	twice [bis]
Vice versa [Viceverſa]		
Between 15 of Hercules and [Inter 15 Herculis &]	36° 20′	
the breast of the Swan [pectus Cygni]	36° 21′	
Between 17 of Hercules and [Inter 17 Herculis &]	35° 41′	
the breast of the Swan [pectus Cygni]	35° 42′	
Between 16 of Hercules [Inter 16 Herculis]	34° 35½′	
(and the breast of the Swan) [[& pectus Cygni]]	34° 36′	
Declination of 16 of Hercules [Declinatio 16 Herculis]	37° 35′	
	37° 36′	

[1] These three stars, 15, 17, 16, are Fl. 67, 69, 75 of Hercules. In Tycho's catalogue they are 13, 14, 15. [Hæ tres ſtellæ 15, 17, 16 ſunt Fl. 67, 69, 75 Herculis. In catalogo Tychonis 13, 14, 15 ſunt.]

Between 18 of Hercules and [Inter 18 Herculis &]	28° 25⅙′
the breast of the Swan [pectus Cygni]	28° 25′
Declination of 17 of Hercules [Declin. 17 Herculis]	37° 48′
with the better pinnule [meliori pinn.]	37° 47⅙′
Declination of 18 of Hercules [Declinatio 18 Herculis]	37° 22⅓′
magnitude 3, lesser [magn. 3 min.]	37° 21½′
Between 18 of Hercules and 11 of Hercules (we suspect it is another [Inter 18 Herc. & 11 Herc. (ſuſpicamur aliam eße]	24° 11′[1]
star) [ſtellam)]	24° 11⅚′[1]
Vice versa [Viceverſa]	
23 of Hercules is distant from Lyra [23 Herculis diſtat a Lyra]	22° 6′
Repeated distance between 28 and 11 of Hercules [Repetita diſtantia inter 28 & 11 Herculis]	16° 22′

8 October, evening [DIE 8 OCTOBRIS, VESPERI.]

Between 19 in the left calf of Hercules, magnitude 3, and the breast of the Swan [Inter 19 in ſiniſtra ſura Herculis magn. 3 & pectus Cygni]	29° 54⅔′
Between the same 19 of Hercules and the one that is in the head of Boötes [Inter eandem 19 Herculis & illam quæ eſt in capite Bootis]	28° 55¾′
Between 25 of Hercules and [Inter 25 Herculis &]	15° 15′

the head of Boötes [caput Bootis]	15° 15¼′
Declination of 28 of Hercules [Declinatio 28 Herculis]	43° 39′
	43° 39½′
Between 26 of Hercules, magnitude 3, greater, and the head of Boötes [Inter 26 Herculis magn. 3 maior. & caput Bootis]	13° 2⅓′
Between 27 of Hercules, magnitude 4, and the head of Boötes [Inter 27 Herculis magn. 4 & caput Bootis]	12° 23⅚′
Declination of 29 at the extremity of the right foot of Hercules [Declinatio 29 in extremitate dextri pedis Herculis]	42° 20′
Between the left shoulder of Boötes and 28 of Hercules in the calf of the left foot, magnitude 4, lesser; it is joined with two other dim ones, with which it almost forms [Inter ſiniſtrum humerum Bootis & 28 Herculis in ſura ſiniſtri pedis, magn. 4 minor., eſt coniuncta cum alijs duabus obſcuris cum quibus fere con-]	15° 45′
an acute △ [ficit △ acutum]	15° 44⅓′
Between 23 of Hercules in the left foot and the head of Boötes [Inter 23 Herculis in ſiniſtro pede & caput Bootis]	19° 22′
Declination of 23 of Hercules [Declinatio 23 Herculis]	39° 45′
	39° 45½′
Between 24 of Hercules, magnitude 3, lesser, and the head of Boötes [Inter 24 Herculis magn. 3 min. & caput Bootis]	17° 19′
Between the one that precedes 24 of Hercules in the foot (it is unformed), magnitude 5, lesser, and [Inter eam quæ 24 Herculis in pede præcedit (eſt informis) magn. 5 min. &]	16° 19′
the head of Boötes [caput Bootis]	16° 20′
Declination of that small unformed one mentioned just above [Declinatio iſtius paruæ informis proxime ſupra memoratæ]	42° 49′
Vice versa [Viceverſa]	
The said unformed one is distant [Dicta informis diſtat]	24° 33½′
from Lyra [a Lyra]	24° 34⅓′

9 October, evening [DIE 9 OCTOBRIS, VESPERI.]

Between Lyra and 20 in the foot [Inter Lyram & 20 in pede]	15° 48¼′	
left, of Hercules, magnitude 6 [ſiniſtro Herc. magn. 6]	15° 47½′	
Between Lyra and 21 in the foot [Inter Lyram & 21 in pede]	14° 48′	
of Hercules, magnitude 6 [Herculis magn. 6]	14° 47⅓′	
Between Lyra and 22 (the dim one) [Inter Lyram & 22 (obſcuram)]	12° 35⅔′	
in the left foot [in pede ſiniſtro]	12° 34′	
Between Lyra and 29 in [Inter Lyram & 29 in]	35° 11′	
the right foot of Hercules [dextro pede Herculis]	35° 10¾′	
Declination of the head of Boötes [Declinatio capitis Bootis]	42° 4′	twice [bis]
Between 10 of the right wing of the Swan and the little star in the body [Inter 10 dextræ alæ Cygni & ſtellulam in corpore]	20° 18⅚′	
of Lyra, unformed [Lyræ informem]	20° 19⅓′	
Declination of the same unformed one [Declin. eiusdem informis]	35° 32⅙′	
Between 8 of Lyra, which is below the preceding one of the two bright ones in the body [Inter 8 Lyræ, quæ eſt ſub præcedente duarum lucidarum in corpore]	24° 14′	
magnitude 6, and 10 of the Swan [magn. 6, & 10 Cygni]	24° 13′	

Between 10 of Lyra and 10 of the Swan [Inter 10 Lyræ & 10 Cygni]		22° 14½′
		22° 13¼′
Declination of 8 of Lyra [Declinatio 8 Lyræ]		32° 7¾′
10 of Lyra [10 Lyræ]		31° 37′
20 of Hercules in the foot [20 Herculis in pede]		48° 41⅓′
21 of Hercules [21 Herculis]		48° 50½′
22 of Hercules [22 Herculis]		47° 48½′
19 in the left calf [19 in ſiniſtra ſura]		46° 17′
of Hercules [Herculis]		46° 17⅔′

10 October, evening [DIE 10 OCTOBRIS, VESPERI.]

Between the upper one in the right hand of Ophiuchus, magnitude 6, no. 11 [Inter ſuperiorem in manu dextra Ophiuchi magnit.6num.11]		34° 22′
and the lower horn of ♑ [& inferius cornu ♑]		34° 23′
Declination of 17 of Ophiuchus's [Declinatio 17 Ophiuchi]	M.	2° 54⅓′
Serpent [Serpentis]		2° 54½′
Declination of 11 of Ophiuchus [Declinatio 11 Ophiuchi]		8° 1⅓′
in the hand [in manu]		8° 1½′

The altitude was about 8°. [Altitudo erat circiter 8 g.]

Between 16 of Ophiuchus and [Inter 16 Ophiuchi &]		36° 22½′
the lower horn of ♑ [inferius cornu ♑]		36° 22′
Between 18, or the last in the tail of the Serpent, mag. 3, and [Inter 18 ſeu vltimam in cauda Serpentis mag. 3 &]		39° 59⅚′
the left shoulder of ♒ [ſiniſtrum humerum ♒]		40° 0½′
Declination of 16 of the Serpent [Declinatio 16 Serpentis]		3° 28′
		3° 29′

[1] Struck through with lines, but with the words added: “it will not be deleted”. [Lineis inducta, additis tamen verbis: »non erit deletum«.]

Between the head of Ophiuchus and [Inter caput Ophiuchi &]		21° 47¼′
18 of the Serpent [18 Serpentis]		21° 46½′
Declination of 18 of the Serpent, with both [Declin. 18 Serpentis, vtroque]	northern [B.]	3° 46′

11 October [DIE 11 OCTOBRIS.]

Between 10 of the Greater Bear, mag. 3 [Inter 10 Vrſæ maioris mag. 3]	34° 40½′
and the tail of the Greater Bear [& caudam Vrſæ maioris]	34° 39⅔′
Declination of the same [Declinatio eiusdem]	60° 54⅔′
	60° 55½′
Declination of 8 of the Greater Bear [Declinatio 8 Vrſæ maioris]	64° 47½′
	64° 48′
Between the one that is in a small triangle with 10 toward the east in the Greater Bear, mag. 6 (it is marked in the asterism with the letter f), and the outermost [Inter eam quæ eſt in triangulo paruo cum 10 verſus ortum in Vrſa maiore mag. 6 (notatur in aſterismo littera f) & extremam]	35° 41⅔′
of the tail of the same Bear [caudæ eiusdem Vrſæ]	35° 42′
Between 8 of the Greater Bear in the jaw, mag. 3, and the end of the tail of the Greater Bear [Inter 8 Vrſæ maioris in mandibula mag. 3 & extremam caudam Vrſæ maioris]	36° 22⅓′
Between the one that makes a triangle[1] with 8 in the upper part of the Greater Bear, mag. 4, lesser, and the end [Inter eam quæ facit cum 8 triangulum[1] ſuperiore parte Vrſæ maioris mag. 4 minor. & extremam]	38° 32½′
of the tail of the same [caudam eiusdem]	38° 33′

Diagram. A small star sketch set in the left column, in the indent to the left of the lines "maioris mag. 4 minor. & / extremam / caudam eiusdem": three six-pointed star sorts, with no connecting lines and no caption.

- left, at middle height: "8", set before its star
- upper right: "h", set after its star
- lower right: "g", set after its star

Declination of the same one in the Greater Bear [Declin. eiusdem in Vrſa]	65° 6′	
marked with the letter h [maiore litera h notatæ]	65° 7′	
Between the one in the Greater Bear, mag. 5, greater, which is marked with the letter g, and the outermost of the same [Inter eam in Vrſa maiore mag. 5 maior., quæ notata exiſtit littera g, & extremam eiusdem]	38° 40′	
Greater Bear [Vrſæ maioris]	38° 39½′	
Between the one that is in a straight line with 8 and the 1st in the maw of the Greater Bear [Inter eam quæ eſt in recta linea cum 8 & 1ª in rictu Vrſæ]	40° 52′	
a dim one,[2]… [maioris, obſcuram[2],…]	40° 53′	
Between the one which we noted to be the 9th, magnitude 4, in the Greater Bear, and the outermost in the tail of the same [Inter eam, quam notauimus 9ªm eße magn. 4 in Vrſa maiore & extremam in cauda eiusdem]	35° 43′	twice [bis]
Vice versa [Viceverſa]		
Between the same 9 and Capella [Inter eandem 9 & Capellam]	43° 5′	
Between 10 in the Greater Bear and Capella [Inter 10 in Vrſa maiore & Capellam]	41° 36′	
Between the one in the Greater Bear which we marked f, and [Inter eam in Vrſa maiore, quam f notauimus, &]	41° 27⅔′	
Capella [Capellam]	41° 28¼′	

12 October, evening [DIE 12 OCTOBRIS, VESPERI.]

Between the one that is marked above with the letter g in the Greater Bear, and [Inter eam, quæ ſupra notata eſt littera g in Vrſa maiore, &]	36° 47¼′
Capella [Capellam]	36° 46½′
Between the one that is placed between 8 and 1 in the Greater Bear, dim [Inter eam, quæ ſita eſt inter 8 & 1 in Vrſa maiore ob-]	34° 13′
and Capella [ſcura, & Capellam]	34° 12′
Between the one which we marked h, mag. 4, greater, in the Greater Bear [Inter eam, quam notauimus h, mag. 4 mai., in Vrſa]	36° 18′ 30″
and Capella [maiore & Capellam]	36° 19′
Meridian altitude of the preceding one of the brighter 4 above the uppermost in the □ [Altit. merid. lucidiorum 4 ſupra ſupremam in □ præcedentis]	33° 30′
Meridian altitude of the uppermost of all, which is marked with the letter o [Altit. merid. ſupremæ omnium quæ lit. o notatur]	43° 40′
Meridian altitude of the following one of the two upper ones in the small □ above the uppermost of the square of the Greater Bear [Altit. merid. ſequentis duarum ſuperiorum in □ paruo ſupra ſupremam quadrati Vrſæ maioris]	37° 5′
Between 8 in the Greater Bear and [Inter 8 in Vrſa maiore &]	38° 36¼′
Capella [Capellam]	38° 37′
Between 2 in the Greater Bear [Inter 2 in Vrſa maiore]	33° 1¼′
mag. 3, lesser, and Capella [mag. 3 min. & Capellam]	33° 2½′
Between 3 in the Greater Bear [Inter 3 in Vrſa maiore]	34° 46¼′
mag. 5, and Capella [mag. 5 & Capellam]	34° 47′
Meridian altitude of the following one in the small □ of the Greater Bear named above [Altit.merid. ſequentis in paruo □ Vrſæ mai. ſupra nominatæ]	33° 46′
Between the one[3] that forms a △ with 2 and 3 and is adjacent to 2, which is brighter, in the Greater Bear, and [Inter eam[3], quæ conſtituit △ cum 2 & 3 & contigua cum 2, quæ clarior eſt, in Vrſa maiore &]	32° 33′
Capella [Capellam]	32° 33⅚′

Diagram. A small star sketch set across the right column between the lines "Capellam 32 33⅚" and "Inter eam, quæ proxima eſt 2": three six-pointed star sorts, with no connecting lines and no caption.

- top, centre: "k obſeruata" — "k, observed" — set after its star
- lower right: "ſecunda" — "second" — set after its star
- lower left: "tertia" — "third" — set below and to the left of its star

Between the one that is nearest to 2 in the Greater Bear, magnitude 5, and Capella [Inter eam, quæ proxima eſt 2 in Vrſa maiore magnit. 5 & Capellam]	33° 1′
Between 4 in the Greater Bear [Inter 4 in Vrſa maiore]	35° 45′
mag. 4, and Capella [mag. 4 & Capellam]	35° 45⅚′
Between 5, to which the one marked with the letter k, mag. 4, is nearest, in the Greater Bear [Inter 5 cui proxima eſt littera k notata mag. 4 in Vrſa]	36° 27′
and Capella [maiore & Capellam]	36° 27½′

10 November, evening [DIE 10 NOUEMBRIS, VESPERI.]

Between Lyra and 6 in the neck [Inter Lyram & 6 in collo]	20° 10½′
of the Dragon, mag. 5 [Draconis mag. 5]	20° 11′

[1] In this triangle 8 is 23 h of the Bear, g = 16 c of the Bear, h = 14 τ of the Bear. Cf. T. III p. 354, 27–29, where, however, "the uppermost at the apex" (whose position is wrong) is not 28 but 14 τ of the Bear. The observation of this day gives for the year 1601: Long. ♋ 21° 58′, Lat. + 44° 30′. [In hoc triangulo 8 eſt 23 h Urſæ, g = 16 c Urſæ, h = 14 τ Urſæ. Cf. T. III p. 354, 27—29, ubi tamen »ſuprema in apice« (cujus poſitio falſa eſt) non 28 ſed 14 τ Urſæ eſt. Obſervatio hujus diei dat pro anno 1601: Long. ♋ 21° 58′, Lat. + 44° 30′.] [2] It is 1 o of the Bear. [Eſt 1 o Urſæ.] [3] P. VIII. 178, 6 of the Bear; the second is 4 π of the Bear, k is 2 A of the Bear. [P. VIII. 178, 6 Vrſæ, ſecunda eſt 4 π Urſæ, k eſt 2 A Urſæ.]

Between Lyra and 8 in [Inter Lyram & 8 in]	18° 20′	
the neck of the Dragon, mag. 5 [collo Draconis mag. 5]	18° 20⅔′	
Between Lyra and 7 in [Inter Lyram & 7 in]	16° 49½′	
the neck of the Dragon, mag. 5 [collo Draconis mag. 5]	16° 49′	
Between Lyra and [Inter Lyram &]	20° 45½′	
9 of the Dragon, mag. 4, lesser [9 Draconis mag. 4 min.]	20° 46′	
Vice versa [Viceverſa]		
Between 6 of the Dragon and [Inter 6 Draconis &]	24° 40½′	
the tail of the Swan [caudam Cygni]	24° 39⅔′	
Between 8 of the Dragon and the tail of the Swan [Inter 8 Drac. & caud. Cygni]	23° 2′	twice [bis]
Between 7 of the Dragon and [Inter 7 Draconis &]	21° 18′	
the tail of the Swan [caudam Cygni]	21° 17⅙′	
Between 9 of the Dragon and [Inter 9 Draconis &]	21° 43′	
the tail of the Swan [caudam Cygni]	21° 43¾′	

11 November [DIE 11 NOUEMBRIS.]

Minimum meridian altitude of the lower of the two in the front □ of the Greater Bear, by the revolving quadrant [Altit. merid. minima inferioris duarum in anteriori □ Vrſæ maioris per Volub.]	24° 29$^{1}/_{12}$′
Altitude of the upper one in the same □, by the revolving quadrant [Altit. ſuperioris in eodem □ per Vol.]	29° 51½′
by the steel instrument [per Chal.]	29° 51⅔′
By the smaller new armillae, not yet corrected: [Per minores nouas Armillas nondum correctas:]	
Declination of the preceding ones in the □ of the Greater Bear, the lower of the two [Declin. præcedentium in □ Vrſæ mai. inferioris duarum]	58° 50′
Declination of the other, the upper of the two [Declin. alterius ſuperioris duarum]	64° 11′
Between 10 of the Dragon, magnitude [Inter 10 Draconis magnit.]	27° 42′

4, lesser, and Lyra [4 minor. & Lyram]	27° 43′
Between 11 of the Dragon, mag. [Inter 11 Draconis mag.]	29° 21⅔′
3, lesser, and Lyra [3 minor. & Lyram]	29° 22⅙′
Between Lyra and the unformed one in a straight line with the two in the right arm of Cepheus and the 11th [Inter Lyram & informem in recta linea cum duabus in dextro brachio Cephei & 11am]	28° 51⅓′
of the Dragon, mag. 6¹ [Draconis mag. 6¹]	28° 53′
Between 12 of the Dragon, mag. 4, and [Inter 12 Draconis mag. 4 &]	31° 28′
Lyra [Lyram]	31° 28⅓′
Meridian altitude of the lower of the following ones in the □ of the Greater Bear, by the revolving quadrant [Altit.merid.inferioris ſequentium in □ Vrſæ maioris per Volub.]	21° 54⅓′
by the steel instrument [per Chalyb.]	21° 54½′
Between 13 of the Dragon, mag. 3, and [Inter 13 Draconis mag. 3 &]	32° 56′
Lyra [Lyram]	32° 55⅔′
Between 16 of the Dragon, mag. 4 [Inter 16 Draconis mag. 4]	31° 58½′
greater, and Lyra [maior. & Lyram]	31° 58⅔′
Altitude of the upper of the following ones in the □ of the Greater Bear, by the steel instrument [Altitudo ſuperioris ſequentium in □ Vrſæ maioris per Chalyb.]	25° 14¼′
by the revolving quadrant [per Volub.]	25° 15′
Between 14 of the Dragon, mag. 4, and [Inter 14 Draconis mag. 4 &]	32° 40½′
Lyra [Lyram]	32° 41¼′
Between 15 of the Dragon, mag. 4, and [Inter 15 Draconis mag. 4 &]	34° 54¼′
Lyra [Lyram]	34° 54½′
Vice versa [Viceverſa]	
Between the unformed one already mentioned, next to the Dragon, and the tail of the Swan [Inter prædictam informem iuxta Draconem & caudam Cygni]	20° 20′
Between 12 of the Dragon and [Inter 12 Draconis &]	23° 10½′
the tail of the Swan [caudam Cygni]	23° 11′
Between 13 of the Dragon and [Inter 13 Draconis &]	25° 52′
the tail of the Swan [caudam Cygni]	25° 52⅔′
Between 16 of the Dragon and the tail of the Swan [Inter16Drac.&caudamCygni]	26° 6′ twice [bis]
Between 10 of the Dragon and [Inter 10 Draconis &]	23° 11⅔′
the tail of the Swan [caudam Cygni]	23° 12½′
	23° 12′
Minimum meridian altitude of the first in the tail of the Greater Bear, by the steel instrument [Altit. primæ in cauda Vrſæ maioris merid. min. per Chalyb.]	25° 7½′
by the revolving quadrant [per Volub.]	25° 8⅓′
Between 11 of the Dragon and [Inter 11 Draconis &]	25° 11⅔′
the tail of the Swan [caudam Cygni]	25° 11′
Between 14 of the Dragon and the tail [Inter 14 Draconis & caudam]	29° 1′ twice [bis]
of the Swan; once more [Cygni adhuc ſemel]	29° 1′
Between 15 of the Dragon and [Inter 15 Draconis &]	29° 43′
the tail of the Swan [caudam Cygni]	29° 43¼′
Minimum meridian altitude of 2 in the tail of the Greater Bear, by the steel instrument [Altit. merid. minima 2 in cauda Vrſæ maioris per Chalyb.]	23° 1′
by the revolving quadrant [per Volub.]	23° 1⅓′

5 December [DIE 5 DECEMBRIS.]

Minimum meridian altitude of that unformed star which is between the last in the tail of the Greater Bear and the hair of Berenice, nearly in a straight line [Altit. merid. minima eius ſtellæ informis quæ eſt inter vltimam in cauda Vrſæ maioris & cæſariem Berenices in recta linea fere]	9° 35′
Between 19 of the Dragon, mag. 4, greater, and [Inter19Drac.mag.4maior.&]	18° 52′
the bright shoulder of Cepheus [lucid. humerum Cephei]	18° 53′
Between 20 of the Dragon, mag. 4, lesser [Inter 20 Drac. mag. 4 minor.]	28° 41′
and the bright shoulder of Cepheus [& luc. hum. Cephei]	28° 41¼′
Between 21 of the Dragon, the one nearest the pole of the zodiac, mag. 3, lesser, and [Inter 21 Draconis polo Zodiaci proximam mag. 3 min. &]	22° 47′
the bright shoulder of Cepheus [lucid. hum. Cephei]	22° 47⅓′
Between 22 of the Dragon, mag. 4, and [Inter 22 Draconis mag. 4 &]	27° 44′
the bright shoulder of Cepheus [lucid. hum. Cephei]	27° 44⅔′
Between 23 of the Dragon, mag. 4, lesser [Inter23Draconismag.4min.]	29° 21′
and the bright shoulder of Cepheus [& luc. hum. Cephei]	29° 20⅚′
Vice versa [Viceverſa]	
Between 23 of the Dragon and [Inter 23 Draconis &]	26° 1′
the pole star [ſtellam Polarem]	26° 0⅓′

[1] 64 e of the Dragon. [64 e Draconis.]

6 December, evening [DIE 6 DECEMBRIS, VESPERI.]

Vice versa [Viceverſa]		
Between 22 of the Dragon and [Inter 22 Draconis &]	25° 25′	
the pole star [ſtellam polarem]	25° 26′	
Between 20 of the Dragon and the pole star [Inter 20 Drac. & polarem]	21° 56′	
Between 21 of the Dragon and the pole star [Inter 21 Drac. & polarem]	21° 48′	twice [bis]
Between 10 in the left foot of Erichthonius [Inter 10 in ſiniſtro pede Erich-]	38° 22′	
mag. 3, and the bright star of ♈ [tonij mag. 3 & lucidam ♈]	38° 21¾′	
Declination of the same 10 [Declinatio eiusdem 10]	32° 26½′	
	32° 27′	
Meridian altitudes [Altitudines Meridianæ]		
18 of Erichthonius, by the revolving quadrant [18 Erichtonij per Volub.]	70° 1⅓′	
10 of Erichthonius, by the revolving quadrant [10 Erichtonij per Volub.]	66° 31¾′	
16 of Erichthonius [16 Erichtonij]	71° 17¼′	
22 of Erichthonius [22 Erichtonij]	72° 0½′	
21 of Erichthonius [21 Erichtonij]	73° 45′	
26 of Erichthonius [26 Erichtonij]	66° 13′	
25 of Erichthonius [25 Erichtonij]	66° 58′	
23 of Erichthonius [23 Erichtonij]	71° 0′	

9 December, evening [DIE 9 DECEMBRIS, VESPERI.]

Between the pole star and 2 of the Greater Bear [Inter ſtellam polarem & 2 Vrſæ maioris]	25° 45′	twice [bis]
Between 3 of the Greater Bear and [Inter 3 Vrſæ maioris &]	25° 3′	
the pole star [ſtellam polarem]	25° 2′	
Between the pole star and [Inter polarem &]	22° 31′	
4 of the Greater Bear [4 Vrſæ maioris]	22° 33′	
Between 5 of the Greater Bear and [Inter 5 Vrſæ maioris &]	23° 2′	
the pole star [polarem ſtellam]	23° 1⅓′	
Between the pole star and [Inter polarem &]	21° 25′	
6 of the Greater Bear [6 Vrſæ maioris]	21° 25⅚′	
Between 6 of the Greater Bear and [Inter 6 Vrſæ maioris &]	42° 22′	
the upper head of ♊ [ſuperius caput ♊]	42° 22⅔′	
Minimum meridian altitude of the lower of the two following ones in the □ of the Greater Bear, by the steel instrument [Altitudo merid. minima inferioris ſequentium duarum in □ Vrſæ maioris per Chalyb.]	21° 54′	
Declination from the meridian altitude [Declin. ex altitudine merid.]	55° 59½′	
Declination by the smaller armillae [Declin. per minores Armill.]	56° 5′	
	55° 58′	

The difference is too great; these armillae must therefore be corrected exactly. [Differentia nimis magna, corrigendæ igitur veniunt hæ armillæ ad amußim.]

Minimum meridian altitude of the upper of the two following ones in the □ of the Greater Bear, by the steel instrument [Altit. merid. min. ſuperioris ſequentium duarum in □ Vrſæ maioris per Chalyb.]	25° 13⅓′
Declination from the meridian altitude [Declin. ex. altit. merid.]	59° 18′ 50″
Declination by the smaller [Declin. per minores]	59° 25′
armillae [Armillas]	59° 19′
Minimum meridian altitude of the 1st in the tail of the Greater Bear, by the steel instrument [Altit. merid. min. 1ᵉ in cauda Vrſæ maioris per Chalyb.]	24° 7½′
Minimum meridian altitude of 2 in the tail of the Greater Bear, by the steel instrument [Altit. merid. min. 2 in cauda Vrſæ maioris per Chalyb.]	23° 1′

25 December [DIE 25 DECEMBRIS.]

Distance between Aldebaran and [Diſtantia inter Aldeboram &]	16° 44¾′	
the northern horn of the same [boreale cornu eiusdem]	16° 45′	
Between the upper head of ♊ and 10 in the left foot of Erichthonius [Inter ſuperius caput ♊ & 10 in ſiniſtro pede Erichtonij]	33° 3¾′	twice [bis]
Between the middle one in the neck of ♌ and the one in the belly of the same ♌, behind cor ♌; it was scarcely free from refraction [Inter mediam in ceruice ♌ & illam in ventre eiusdem ♌ poſt cor ♌, vix erat libera a refractione]	11° 3⅙′	
the one in the belly [illa in ventre]	11° 3⅓′	

27 December, morning [DIE 27 DECEMBRIS, MANE.]

Between both heads of ♊ [Inter vtrumque caput ♊]	4° 31′	
	4° 32′	twice [bis]
Between the little star in Boötes [Inter ſtellulam in Boote]	40° 34′	good [bo-]
in the shoulder, and Lyra [in humero & Lyram]	40° 34⅙′	[næ]
doubtful [dubia]	40° 38½′	

Little stars in the right shoulder of Boötes [*Stellulæ in humero Bootis dextro*]

Altitude [*Altitudo*]	*Azimuth*	
68° 43½′	*10° 18′*	
68° 46′	*8° 28′*	
68° 57½′	*4° 54′*	
68° 58′	*1° 50′*	west [occ.]

Take the altitude in the meridian as [Pone altit. in merid.]	69° 0′[1]	
Between the right shoulder of Boötes and the one which [*Inter humerum Bootis dextrum & eam quæ*]	*28° 30′*	*once* [*ſemel*]
is under the tail of the Bear [*eſt ſub cauda Vrſæ*]	*28° 31′*	*twice* [*bis*]

This star, which was taken from the shoulder of Boötes, is in a straight line with the outermost of the tail of the Greater Bear and the tail of ♌; but that little star deviated a little from this line toward the north, and was nearer to the end of the tail of the Bear by roughly a third part of the whole distance between the said tails of ♌ and of the Bear. From this, work out which star this was.[2] [Stella hæc, quæ capiebatur a Bootis humero, eſt in linea recta cum extrema caudæ Vrſæ maioris atque cauda ♌, ſed ſtellula illa paululum ab hac linea verſus ſeptentrionem declinabat & propior erat extremæ caudæ Vrſæ quaſi pro tertia parte totius diſtantiæ inter dictas caudas ♌ & Vrſæ. Hinc ratiocinare quænam hæc fuerit ſtella[2].]

[1] Therefore the declination = + 34° 54′.3, and the star must be δ of Boötes, of the third magnitude. [Ergo declinatio = + 34° 54′.3 et ſtella debet eße δ Bootis tertiæ magnitudinis.] [2] The star is 12 α of the Hunting Dogs. Its declination (+ 40° 31′) was observed on 1592 February 20. [Stella eſt 12 α Canum venaticorum. Eius declinatio (+ 40° 31′) die 20 Februarii a. 1592 obſervata eſt.]

Observations of stars in the southern constellations and in the zodiac [OBSERUATIONES STELLARUM IN ASTERISMIS AUSTRINIS & IN ZODIACO.]

7 January, evening [DIE 7 JANUARIJ, VESPERI.]

Between the outermost one of the wing of Pegasus [Inter extremam alæ Pegaſi]	38° 51′	
and 3 of the Whale in the maw [& 3 Ceti in rictu]	38° 51¼′	
Between 4 of the Whale and the outermost one [Inter 4 Ceti & extremam]	39° 4⅙′	
of the wing of Pegasus [alæ Pegaſi]	39° 4⅝′	
Between 1 of the Whale and 1 of the wing of Pegasus, twice [Inter 1 Ceti & 1 alæ Pegaſi bis]	57° 38¼′	
Meridian altitude of 9 of the Whale, the lower of the two in the breast, toward the west, by the revolving quadrant [Altitudo meridiana 9 Ceti, duarum infer. in pectore ad occaſum per Volub.]	17° 3′	
by the steel instrument [per Chalyb.]	17° 2¾′	
Altitude of the 11th in the breast of the Whale, by the revolving quadrant [Altitudo 11æ in pectore Ceti per Volub.]	20° 29⅝′	
Meridian altitude of 10 of the Whale in the breast, by the steel instrument [Altit. merid. 10 Ceti in pectore per Chalyb.]	18° 29′	
Between 7 of the Whale and the outermost one of the wing of Pegasus, twice [Inter 7 Ceti & extremam alæ Pegaſi bis]	29° 56⅓′	
Declination of 8 in the breast of the Whale; it had passed the meridian a little, by about 3° [Declinatio 8 in pectore Ceti, erat paululum transgreßa meridianum ad 3 fere gradus]	14° 10′	
	14° 10¼′	
Between 9 of the Whale and the outermost one [Inter 9 Ceti & extremam]	45° 52½′	
of the wing of Pegasus [alæ Pegaſi]	45° 52⅔′	
Between 8 in the Whale and the outermost one [Inter 8 in Ceto & extremam]	42° 50′	
of the wing of Pegasus [alæ Pegaſi]	42° 51′	
Declination of 7 of the Whale [Declinatio 7 Ceti]	6° 53′	
	6° 54′	
Between 10 in the breast of the Whale and the outermost one of the wing of Pegasus [Inter 10 in pectore Ceti & extremam alæ Pegaſi]	47° 18′	twice [bis]
Between 11 of the Whale and the outermost one [Inter 11 Ceti & extremam]	45° 11½′	
of the wing of Pegasus [alæ Pegaſi]	45° 11⅓′	
Vice versa [Viceverſa]		
Between 9 of the Whale and the bright [Inter 9 Ceti & lucidum]	40° 21′	
foot of Orion [pedem Orionis]	40° 22′	
Between 8 of the Whale and the bright [Inter 8 Ceti & lucidum]	41° 38′	
foot of Orion [pedem Orionis]	41° 37⅓′	
Between 10 of the Whale and the bright foot of Orion [Inter 10 Ceti & lucidum pedem Orionis]	37° 20′	twice [bis]
Between 11 of the Whale and the bright [Inter 11 Ceti & lucidum]	38° 20½′	
foot of Orion [pedem Orionis]	38° 21′	
Between the bright star of the jaw of the Whale and 17 of Orion [Inter lucidam mandibulæ Ceti & 17 Orionis]	29° 3′	twice [bis]
Between the bright star of the jaw [Inter lucidam mandibulæ]	29° 43⅔′	
of the Whale and 18 of Orion [Ceti & 18 Orionis]	29° 44⅓′	
Between the bright star of the jaw [Inter lucidam mandibulæ]	28° 39⅝′	
of the Whale and 20 of Orion [Ceti & 20 Orionis]	28° 40′	
Between the bright star of the jaw of the Whale [Inter luc. mandib. Ceti]	27° 20⅔′	
and 21 of Orion in the cloth[1] [& 21 Orionis in linteo[1]]	27° 21⅓′	
Between the bright star of the jaw of the Whale and 22 of Orion in the cloth, twice [Inter luc. mandib. Ceti & 22 Orionis in linteo bis]	26° 52⅓′	

Declination of 21 of Orion [Declinatio 21 Orionis]	north [B.] 8° 8⅔′
in the cloth [in linteo]	8° 9⅙′
Between the bright star of the jaw of the Whale [Inter luc. mandib. Ceti]	27° 13′
and 23 in the cloth of Orion [& 23 in linteo Orionis]	27° 13½′
Declination of 17, the upper one, namely in the cloth of Orion, mag. 5 [Declinatio 17 ſuperioris, ſcil. in linteo Orionis mag. 5]	north [B.] 13° 29½′ 13° 29⅔′
Between the bright star of the jaw of the Whale and 25 in the cloth of Orion [Inter lucidam mandibulæ Ceti & 25 in lintreo Orionis]	29° 10½′
Declination of 20 in the cloth of Orion [Declinatio 20 in linteo Or.]	north [B.] 9° 24½′
Between Aldebaran and the preceding one [Inter Aldeboram & præce-]	42° 34′
of the Lesser Dog [dentem Canis minoris]	42° 33½′

13 January, morning [DIE 13 JANUARIJ, MANE.]

The following were observed in ♍. [Obſeruabantur ſequentes in ♍.]

	Distance from 1 of the southern wing of ♍ [Diſt. a 1 alæ auſtr. ♍]		Declination [Declinatio]	
16 ♍	26° 35′	26° 34′	4° 3′	4 4½ south [M.]
19 ♍	28° 12⅔′	28° 13¼′	7° 59′	7 58
18 ♍	29° 40′	29° 39′	6° 35⅔′	6 34½
20 ♍	33° 14½′	twice [bis]		
27 ♍	31° 15⅙′	31° 16′	0° 35′	0 34 north [B.]
19 and 18, magnitude 6, lesser [19 & 18 6 magn. min.]			better [melior]	

Vice versa [Viceverſa]		
Between 19 ♍ and the northern scale-pan of ♎ [Inter 19 ♍ & bor. lancem ♎]	25° 38′	twice [bis]
Between 18 ♍ and the northern scale-pan of ♎ [Inter 18 ♍ & bor. lancem ♎]	23° 34′	
better [melior]	23° 35½′	
Between 27 ♍ and the northern scale-pan of ♎ [Inter 27 ♍ & bor. lancem ♎]	21° 55½′	
	21° 56′	
Between 34 ♍ and the northern one in [Inter 34 ♍ & borealem in]	33° 32′	
the hand of Ophiuchus [manu Ophiuchi]	33° 33′	
Declination of the same [Declinatio eiusdem]	3° 35′	
	3° 34⅔′	

The same day, 13 January, evening [EODEM DIE 13 JANUARIJ, VESPERI.]

Between the bright shoulder [Inter lucidum humerum]	49° 16′
of Orion and the 4th in the Whale [Orionis & 4^{am} in Ceto]	49° 16½′
Between the bright shoulder of Orion [Inter luc. humerum Orionis]	47° 55⅙′
and the 3rd in the Whale [& 3^{am} in Ceto]	47° 55½′
Between the middle one in the belt [Inter mediam in baltheo]	47° 32′
of Orion and 9 of the Whale [Orionis & 9 Ceti]	47° 33½′

[1] That is, in the shield. [Id eſt, in clipeo.]

Between 14 of the Whale and the bright foot of Orion [Inter 14 Ceti & luc. pedem Or.]	50° 8′	twice [bis]
Declination of 18 of Orion in the cloth, with both [Decl. 18 Orionis in linteo, vtroq.]	12° 48′	
Between the one preceding 14 of the Whale [Inter præcedentem 14 Ceti]	50° 34¾′	
toward the south, and the bright foot of Orion [ad auſtr. & luc. ped. Or.]	50° 35′	
Declination of 19 in the cloth, magnitude 3 [Decl. 19 in linteo, magn. 3]	20° 44′	
better [melior]	20° 45′	
Between the bright foot of Orion and 12 of the Whale, magnitude 3, twice [Inter luc. pedem Orionis & 12 Ceti magn. 3 bis]	51° 41½′	
Between the bright foot of Orion and [Inter luc. pedem Orionis &]	48° 35½′	
13 of the Whale, magnitude 4 [13 Ceti magn. 4]	48° 36′	
Declination of 30 of Orion, below the last one in the belt, twice [Declin. 30 Orionis infra vltimam in baltheo bis]	2° 54¾′	
Between 20 in the tail of the Whale [Inter 20 in cauda Ceti]	47° 26½′	
and 10 of Eridanus [& 10 Eridani]	47° 25′	
Between 19 in the tail of the Whale [Inter 19 in cauda Ceti]	46° 0′	
and 10 of Eridanus [& 10 Eridani]	46° 1′	
Between 18 in the tail of the Whale and 10 of Eridanus, twice [Inter 18 in cauda Ceti & 10 Eridani bis]	44° 27½′	
Between 15 of the Whale and 10 of Eridanus, twice [Inter 15 Ceti & 10 Eridani bis]	38° 8½′	
Declination of 10 of Eridanus [Declinatio 10 Eridani]	south [M.]	
	14° 42½′	
	14° 43′	
Between the bright foot [Inter lucidum pedem]	19° 31′	
of Orion and 10 of the River [Orionis & 10 fluvij]	19° 31¼′	
Between the Lesser Dog [Inter Canem minorem]	42° 5′	
and 17 of Orion [& 17 Orionis]	42° 6′	
Between the Lesser Dog and 18 of Orion [Inter Can. min. & 18 Orionis]	41° 2⅔′	
Between the Lesser Dog and 19 of Orion [Inter Can. min. & 19 Orionis]	41° 12½′	twice [bis]
Between the Lesser Dog and 20 of Orion, magnitude 4, a little greater [Inter Can. min. & 20 Orionis magn. 4 paulo maior.]	41° 6′	
Between the Lesser Dog and 21 of Orion [Inter Can. min. & 21 Orionis]	42° 5′	
Between 23 of Orion and the bright shoulder of the same [Inter 23 Orionis & lucidum humerum eiusdem]	15° 59½′	

Between 32 in the sword and 10 [Inter 32 in enſe & 10]	25° 10′	
of Eridanus [Eridani]	25° 10⅔′	
Between 10 of Eridanus and the one which is above the foot [Inter 10 Eridani & illam quæ eſt ſupra pedem]	16° 30½′	
in the Hare [in Lepore]	16° 31½′	
Between 10 of Eridanus and 6, which is [Inter 10 Erid. & 6 quæ eſt]	18° 19¼′	
in the foot of the Hare [in pede Leporis]	18° 20′	
Between 10 of Eridanus and 5 in the lower jaw of the Hare [Inter 10 Erid. & 5 in maxilla inferiori Leporis]	18° 18′	
Between 10 of Eridanus and 2 in the preceding ear [Inter 10 Erid. & 2 in præcedenti aure]	18° 20′	twice [bis]
Between 10 of Eridanus and 1 in the preceding ear [Inter 10 Erid. & 1 in præc. aure]	18° 12¼′	
Between 10 of Eridanus and 3 [Inter 10 Erid. & 3]	20° 1′	
in the left ear [in ſiniſtra aure]	20° 2′	
Between 10 of Eridanus and 9 in the right hind foot of the Hare, magnitude 4 [Inter 10 Eridani & 9 in poſteriori dextro pede Leporis 4 magn.]	26° 49¾′	twice [bis]
Between 10 of Eridanus and 4 in the left ear [Inter 10 Erid. & 4 in ſin. aure]	19° 51′	
Between 10 of Eridanus and 8 in the thigh of the left front foot [Inter 10 Eridani & 8 in femore ſiniſtri pedis anterioris]	22° 43′	
Between 10 of Eridanus and 7 in the breast [Inter 10 Erid. & 7 in pectore]	23° 11¼′	
Between the bright star of the jaw of the Whale and 10 in the following hind foot of the Hare [Inter lucidam mandibulæ Ceti & 10 in ſequenti pede poſteriori Leporis]	48° 19½′	
Between 10 of Eridanus and 11 of the Hare [Inter 10 Erid. & 11 Leporis]	26° 25′	
Between 10 of Eridanus and 12 of the Hare [Inter 10 Erid. & 12 Leporis]	28° 45′	
Vice versa [Viceverſa]		
Between 2 of the Hare in the ear and the Greater Dog [Inter 2 Leporis in aure & Canem maiorem]	22° 33¼′	
Between 1 of the Hare and the Greater Dog [Inter 1 Leporis & Can. mai.]	23° 3¼′	twice [bis]
Between 3 of the Hare and the Greater Dog [Inter 3 Leporis & Can. mai.]	21° 7′	
	21° 7½′	
Between 4 of the Hare and the Greater Dog [Inter 4 Leporis & Can. mai.]	21° 1′	
Declination of 3 of the Hare [Declinatio 3 Leporis]	12° 43½′	twice [bis]
Between 11 of the Hare and the Greater Dog [Inter 11 Leporis & Can. mai.]	14° 9¼′	
Between 12 of the Hare and the Greater Dog [Inter 12 Leporis & Can. mai.]	12° 3¾′	
Between 7 of the Hare and the Greater Dog [Inter 7 Leporis & Can. mai]	17° 24½′	
Meridian altitude of the one which is in the left front foot of the Hare, by the steel instrument [Altit. merid. eius quæ eſt in anteriori ſiniſtro pede Leporis per Chal.]	11° 11½′	
by the revolving quadrant [per Vol.]	11° 10⅚′	
Meridian altitude of the 1st in the Hare, by the steel instrument [Alt. mer. 1^{æ} in Lepore per Chal.]	21° 54′	
Meridian altitude of the 2nd in the Hare, by the revolving quadrant [Alt. mer. 2^{æ} in Lepore per Vol.]	20° 35½′	
Meridian altitude of the 5th in the Hare, by the steel instrument [Alt. mer. 5^{tæ} in Lepore per Chal.]	17° 23′	
Meridian altitude of the 4th in the left ear, by the steel instrument [Alt. mer. 4^{tæ} in ſiniſtro aure per Chalyb.]	20° 27½′	
Meridian altitude of the 8th in the thigh of the left front foot, by the steel instrument [Alt. mer. 8^{æ} in femore ſiniſtri pedis anterioris per Chal.]	13° 0¾′	
by the revolving quadrant [per Vol.]	12° 55½′	

Meridian altitude of the 7th in the middle of the body of the Hare, by the steel instrument [Alt. mer. 7æ in medio corpore Leporis per Chalyb.]	15° 58⅓′	
by the revolving quadrant [per Volub.]	15° 58½′	
Meridian altitude of the 9th in the Hare [Alt. mer. 9æ in Lepore]	11° 31′	
Meridian altitude of the 11th [Alt. mer. 11mæ]	19° 5′	
Meridian altitude of the 10th of the Hare [Alt. mer. 10æ Leporis]	13° 10′	
Meridian altitude of 12 of the Hare [Alt. mer. 12 Leporis]	19° 49′	

21 January, evening [DIE 21 JANUARIJ, VESPERI.]

Between the lowest one of the belt of Orion [Inter infimam balthei Orionis]	9° 3′	
and the bright foot of the same [& lucid. pedem eiusdem]	9° 2¾′	

Between 30, the uppermost in the sword [Inter 30 ſupremam in enſe]	25° 29′	
and 10 of Eridanus [& 10 Eridani]	25° 31′	
Declination of 31 of Orion [Declinatio 31 Orionis]	5° 43′	
	5° 43⅓′	
Between 10 of the River and the one that [Inter 10 fluvij & eam quæ præ-]	27° 12¾′	
precedes the lowest of the belt [cedit infimam balthei]	27° 13′	
Between 10 of the River and the middle one in the sword, number 31 [Inter 10 fluvij & mediam in enſe, 31 numero]	25° 18′	twice [bis]
Between the preceding one in the neck of the Lesser Dog, magnitude 3, and the bright shoulder of Orion [Inter præcedentem in collo Canis minoris 3 magn. & luc. hum. Orionis]	22° 49′	
Declination of the same [Declinatio eiuſdem]	9° 3′	

23 January, morning [DIE 23 JANUARIJ, MANE.]

Observation of some stars in ♏. [Obſeruatio aliquot ſtellarum in ♏.]

Between 8, the faint one in the [Inter 8 obſcuram in ala ♏]	10° 11¾′
southern wing of ♏, and 6 in the same wing [auſtr. & 6 in eadem ala]	10° 12′
Between the same 8 and the northern [Inter 8 eandem & borealem]	34° 41′
scale-pan of ♎, better [lancem ♎ melior]	34° 43¼′
Declination of the same [Declinatio eiuſdem]	1° 30′
Between 20 in ♏ and the northern [Inter 20 in ♏ & borealem]	20° 0′
scale-pan of ♎ [lancem ♎]	20° 1′
Declination of the 20th of ♏ [Declinatio 20æ ♏]	7° 16½′
better [melior]	7° 19′
Between 21 and the southern one [Inter 21 & auſtralem]	29° 44⅓′
of the left hand of Ophiuchus [ſiniſtræ manus Ophiuchi]	29° 45¼′
Declination of 21 of ♏ [Declinatio 21 ♏]	0° 21′ south [M.]

Between 24 and 6 of the wing of ♍, twice [Inter 24 & 6 alæ ♍ bis]	32° 6½′
Declination of 24 of ♍ [Declinatio 24 ♍]	0° 21′
	0° 20′

31 JANUARY, EVENING [DIE 31 JANUARIJ, VESPERI.]

Between the right knee of Orion [Inter dextrum genu Orionis]	31° 40′
and the Lesser Dog [& Canem minorem]	31° 40¼′
Between the Lesser Dog and 36 in the left foot of Orion [Inter Canem min. & 36 in ſiniſtro pede Orionis]	37° 32′ twice [bis]
Between the Lesser Dog and 37 [Inter Canem min. & 37]	36° 20′
of Orion [Orionis]	36° 20¾′
Between 34 of Orion and the Lesser Dog [Inter 34 Orion. & Can. min.]	34° 20′ twice [bis]
Between the Lesser Dog and the thirty- [Inter Can. min. & triceſi-]	32° 40⅙′
third of Orion [mam tertiam Orionis]	32° 40¼′
Between the tenth of Eridanus and [Inter decimam Eridani &]	25° 37⅔′
33 below the sword, magnitude 5 [33 infra enſem, 5 magn.]	25° 37′
Between the tenth of Eridanus and 34, [Inter decimam Eridani & 34,]	23° 54½′
magnitude 5 [5 magn.]	23° 53⅔′
Southern declination of 33 [Declinatio auſtrina 33]	7° 31′
of Orion [Orionis]	7° 32′
Between the same of Eridanus and 37, magnitude 5 [Inter eandem Erid. & 37, 5 magn.]	21° 53⅙′ twice [bis]
Southern declination of 34 of Orion [Declinatio auſt. 34 Orion.]	7° 40′
	7° 41′
Between 36 of Orion and 10 of Eridanus [Inter 36 Orion. & 10 Erid.]	20° 38⅚′ twice [bis]
Southern declination of 37 of Orion [Declin. auſt. 37 Orionis]	8° 15′
	8° 15⅔′
Declination of 36 of Orion, south [Declin. 36 Orionis A.]	7° 19⅔′
	7° 20′
Between the bright star of the jaw of the Whale and the uppermost of 3 contiguous ones in the head [Inter luc. mandibulæ Ceti & ſupremam 3 contiguarum in capite]	38° 19⅓′
of Orion, magnitude 4 [Orionis 4 magn.]	38° 20¼′
Between the bright star of the jaw of the Whale and the more westerly of the three contiguous ones in the head [Inter luc. mand. Ceti & occidentaliorem trium contiguarum in capite]	38° 15′
of Orion, magnitude 5 [Orionis 5 magn.]	38° 14½′
Northern declination of the upper one of the three, twice, with one pinnule [Declin. B. ſuper. trium, bis vno pinn.]	9° 35½′
Between the more easterly and lower one of the same and the Dog [Inter orientaliorem & inferiorem earundem & Canem]	30° 44¾′
the Lesser, magnitude 5 [minorem, 5 magn.]	30° 44⅚′
Between the Lesser Dog and the more [Inter Can. min. & occiden-]	31° 7′
westerly of the same [taliorem earundem]	31° 6′

Between the Lesser Dog and the uppermost of the three in the head [Inter Can. min. & ſupremam trium in capite]	31° 6¾′

The other one could not be distinguished with the instrument in its distance from the Lesser Dog; it seemed, however, to have a slightly smaller one. [Altera in diſtantia a Cane minore non potuit inſtrumento diſcerni, viſa tamen eſt paulo minorem habuiße.]

Southern declination of the 30th of Orion [Declin. auſt. 30æ Orionis]	5° 8½′
	5° 9′
Between the Lesser Dog and 30 of Orion [Inter Can. min. & 30 Orionis] doubtful because of the shining Moon [dubia propter replendentem ☾.]	32° 40′

3 February, evening [DIE 3 FEBRUARIJ, VESPERI.]

Between 13 in the right shoulder of Orion and the bright star of the jaw of the Whale [Inter 13 in dextro humero Orionis & luc. mandibulæ Ceti]	39° 7⅔′
Between 14 of Orion, a faint one, [Inter 14 Orionis, obſcuram,]	37° 55¾′
and the bright star of the jaw of the Whale [& luc. mandib. Ceti]	37° 56′
Declination of 13 in, better [Declinatio 13 in melior]	3° 48′
Orion, north [Orione, borea]	3° 49′
Between 15 of Orion, a faint one, [Inter 15 Orionis obſcuram]	37° 8′
and the bright star of the jaw of the Whale [& luc. mandib. Ceti]	37° 8⅓′
Declination of 14 of Orion, north [Declinatio 14 Orionis borea]	3° 25′
	3° 23′
Declination of 16 of Or-, better [Declinatio 16 Ori- melior]	2° 40′
ion, north [onis borea]	2° 41½′
Between 16 of Orion and the more northerly of the two brighter ones in the [Inter 16 Orionis & borealiorem duarum lucidiorum in inter-]	30° 26′
intersection of ϑ, 6th magnitude [ſectione ϑ, 6æ magn.]	30° 27′
Between the same one of ϑ and the preceding [Inter eandem ϑ & præced.]	29° 21⅔′
one next to 16 of Orion, 6th magnitude [16 Orion. prox., 6æ magn.]	29° 23′
Declination of the same, unformed [Declin. eiuſdem informis]	north [B.]
	3° 3½′
	3° 4⅔′
Between 4 of Orion, magnitude 5, in the left shoulder, and the breast of ϑ [Inter 4 Orionis 5 magn. in ſiniſtro humero & pectus ϑ]	23° 9′

Declination of the 4th of Orion [Declin. 4tæ Orions]	5° 32½′
	5° 33½′
Between 13 of Orion, magnitude 5 [Inter 13 Orionis magn. 5]	30° 3½′

lesser, and the Lesser Dog [minor. & Canem min.]	30° 3¾′
Declination of the more westerly of the three contiguous ones above the head of Orion [Declin. occidentalioris trium contiguarum ſupra caput Orionis]	9° 7′
Between 14 of Orion and the Lesser Dog [Inter 14 Orion. & Can. min.]	31° 16′
	limited [limitata]
Between 15 of Orion and the Lesser Dog [Inter 15 Orionis & Can. min.]	32° 8½′
	32° 8′
Between 16 of Orion and the Lesser Dog [Inter 16 Orionis & Can. min.]	33° 15′
	33° 14⅔′
Between the one immediately preceding [Inter præcedentem proxime]	34° 8′
16, magnitude 6, and the Lesser Dog [16, magn. 6, & Can. min.]	34° 9′
Between 4 in the left shoulder of Orion and the Lesser Dog [Inter 4 in ſiniſtro humero Orionis & Can. min.]	32° 3′
Between 25, the lowest in the shield [Inter 25 infimam in clypeo]	32° 5⅓′
of Orion, and the Lesser Dog [Orionis & Can. min.]	32° 5¼′
Between 20 of Orion and the last one [Inter 20 Orionis & vltimam]	16° 36½′
of the belt of the same [balthei eiuſdem]	16° 37⅓′
Northern declination of the 20th [Declinatio 20^{mæ} borea]	9° 25′
of Orion [Orionis]	9° 25⅓′
	9° 25½′

4 February, evening [DIE 4 FEBRUARIJ, VESPERI.]

Between 4 of Orion and the preceding one [Inter 4 Orionis & præced.]	29° 1½′
in the neck of the Lesser Dog [in collo Canis min.]	29° 1′
Declination of the same [Declinatio eiuſdem]	5° 32′
	5° 32½′
Between 19 of Orion and the Lesser Dog [Inter 19 Orionis & Can. min.]	41° 11′

7 February, evening [DIE 7 FEBRUARIJ, VESPERI.]

Between 25 of Orion and the preceding one in the Lesser Dog [Inter 25 Orionis & præcedentem in Cane minore]	37° 36¼′ twice [bis]
Between 17 of Orion and the preceding one [Inter 17 Orionis & præced.]	38° 18′
in the Lesser Dog [in Cane min.]	38° 18¼′
Its declination, with one pinnule [Declin. eius vno pinn.]	13° 38′
Declination of 15 of Orion [Declinatio 15 Orionis]	3° 3′
	3° 4½′
Between 19 of Orion and the bright star [Inter 19 Orionis & luc.]	28° 48⅙′
of the jaw of the Whale [mand. Ceti]	28° 48½′
Between 5 in the right shoulder [Inter 5 in dextro humero]	45° 2½′
and the bright star of the jaw of the Whale [& luc. mand. Ceti]	45° 2⅔′

Northern declination of the 5th of Orion [Declin. 5^{tæ} Orionis borea]	9° 34⅔′	twice [bis]
Between 6 of Orion in the arm [Inter 6 Orion. in brachio]	48° 38′	
magnitude 6, and the bright star of the jaw of the Whale [6 magn. & luc. mand. Ceti]	48° 38⅔′	
Between 7 of Orion in the right hand, the more southerly one, magnitude 4, lesser [Inter 7 Orionis in dextra manu auſtraliorem magn. 4 min.]	47° 48⅔′	
and the bright star of the jaw of the Whale [& luc. mand. Ceti]	47° 48¾′	
Northern declination of 6 of Orion [Declin. 6 Orionis borea]	12° 21′	
	12° 21⅙′	
Between the northern one of the two brighter ones in the intersection of ♉ and 8 of Orion in the right hand, magnitude 5, greater [Inter lucidiorum duarum boream in interſectione ♉ & 8 Orionis in manu dext. magn. 5 mai.]	39° 29⅔′	twice [bis]
Northern declination of 8 of Orion [Declin. 8 Orionis borea]	14° 44½′	
	14° 44⅔′	
Between the same one of Taurus and 9 [Inter eandem Tauri & 9]	40° 39′	
of Orion, magnitude 6, lesser [Orionis magn. 6 min.]	40° 39⅙′	
Declination of 7 of Orion [Declinatio 7 Orionis]	14° 14′	
	14° 14½′	
Between 10 of Orion in the hand [Inter 10 Orionis in manu]	41° 25⅓′	
and the same one of ♉ [& eandem ♉]	41° 25½′	
Declination of 9 in the right hand [Declinatio 9 in dextra manu]	16° 9⅓′	
	16° 9′	
Declination of the 10th [Declinatio 10^{æ}]	16° 11′	
	16° 12′	
Between 11 of Orion, magnitude 6 [Inter 11 Orionis magn. 6]	37° 2′	
and the same one of ♉ [& eandem ♉]	37° 2¼′	
Between 12 of Orion, magnitude 5, and the same one of ♉ [Inter 12 Orionis magn. 5 & eandem ♉]	39° 10′	twice [bis]

N.B. Below each of these lies one other, of magnitude 6.[1] [N. B. Sub vtramque hanc vna alia 6 magnit. ſita eſt[1].]

Declination of 11 of Orion [Declinatio 11 Orionis]	20° 8′	
	20° 7½′	
Declination of 12 of Orion [Declinatio 12 Orionis]	20° 5′	
	20° 4½′	

The same ones of Orion, the other way round, in distance from the Lesser Dog: [Eædem Orionis vice verſa a Cane minore in diſtantia:]

5 of Orion [5 Orionis]	24° 28⅓′	
	24° 29′	
6 of Orion, 21° 42′; let it be set at [6 Orionis 21 42, ponatur]	21° 43′	

This one, relative to the one joined contiguously to it on its preceding northern side..., which could be distinguished with the instrument, let alone observed.[2] [Hæc ad eam ſibi ad latus præcedens boreum contigue coniunctam..., quæ inſtrumento diſcerni nedum obſeruari poterat[2].]

8 of Orion from the Lesser Dog [8 Orionis a Cane minore]	24° 29′
7 of Orion [7 Orionis]	23° 20¼′
9 of Orion [9 Orionis]	24° 0¼′
	24° 0¾′
10 of Orion [10 Orionis]	23° 19¼′
11 of Orion [11 Orionis]	29° 35′
	29° 35⅓′
Declination of 9 of Cancer [Declinatio 9 Cancri]	14° 14½′

[1] 11 and 12 are χ^1 and χ^2 [Greek letter chi, as star designations], 54 and 62 Orionis, to which 57 and 64 Orionis are joined about ½° to the south. [11 and 12 ſunt χ^1 et χ^2, 54 et 62 Orionis, quibus 57 et 64 Orionis fere ½° ad auſtrum adjunctæ ſunt.] [2] 74 Orionis, which 73 precedes toward the north. [74 Orionis, quam 73 præcedit ad boreum.]

Between 12 of Orion and the Lesser Dog [Inter 12 Orionis & Canem min.]	27° 32¾′

Those wanting in Cancer and Leo. [Quæ deſiderantur in Cancro & Leone.]

9 of ♋ in the southern foot, from 17 in the up- [9 ♋ in auſtrali pede a 17 in ſu-]	21° 22½′	
per foot of the lower ♊ [periori pede inferioris ♊]	21° 23′	
Declination of the 11th of ♋ [Declinatio 11ᵉ ♋]	19° 34½′	
Between 11 of ♋ and [Inter 11 ♋ &]	25° 16¼′	
the bright foot of ♊ [lucidum pedem ♊]	25° 17½′	
The same from Aldebaran [Eadem ab Aldeboram]	54° 3′	
	54° 3⅙′	
Between 11 of ♌, magnitude 6, and the up- [Inter 11 ♌ magn. 6 & ſupe-]	44° 50′	
per foot of the lower ♊ [riorem pedem infer. ♊]	44° 50⅔′	
Declination of 11 of ♌ [Declinatio 11 ♌]	15° 49′	
	15° 49⅓′	
Between 17 of ♌ and the preceding one in the Lesser Dog [Inter 17 ♌ & præced. in Cane min.]	49° 9′	twice [bis]
Declination of the same, 17 of ♌ [Declin. eiusdem 17 ♌]	16° 23′	
Between 21 of ♌, a faint one, which is below 22, [Inter 21 ♌ obſcuram, quæ eſt infra 22,]	56° 18⅔′	
and the preceding one in the Lesser Dog [& præced. in Cane min.]	56° 19¼′	

Declination of the same [Declinatio eiusdem]	north [B.]	
	15° 29′	
	15° 29⅓′	
Between 30 of ♑ and the same one [Inter 30 ♑ & eandem]	49° 23¼′	
in the Lesser Dog [in Cane minore]	49° 24¼′	
	49° 25½′	
Declination of the 30th of ♑ [Declinatio 30^{mæ} ♑]	21° 5′	
	21° 4½′	

Vice versa [Viceverſa]

Between 21 of ♑ and Arcturus [Inter 21 ♑ & Arcturum]	43° 33′	
	43° 35′	
Between 30 of ♑ and Arcturus [Inter 30 ♑ & Arcturum]	49° 23¼′	
	49° 24′	
Between 11 of ♑ and its tail [Inter 11 ♑ & caudam eius]	30° 23¼′	

9 February, evening [DIE 9 FEBRUARIJ, VESPERI.]

Between the bright foot of Orion [Inter luc. pedem Orionis]	34° 10′	
and 16 in the River, magnitude 3, greater [& 16 in fluvio, mag. 3 mai.]	34° 10½′	
Declination of the same 16 in [Declin. eiusdem 16 in]	10° 35½′	
Eridanus, south, magnitude 4 [Eridano auſtr., magn. 4]	10° 35′	
Declination of 13 in [Declinatio 13 in]	10° 52′	
Eridanus, south [Eridano auſtr.]	10° 51⅓′	
Between the bright foot of Orion [Inter lucidum pedem Orionis]	29° 19′	
and 14 of Eridanus, magnitude 4 [& 14 Eridani mag. 4]	29° 20′	
Declination of 12 in Eridanus [Declinatio 12 in Eridano]	11° 11′	twice [bis]
Between the bright foot of Orion and 13 of Eridanus, magnitude 3, lesser [Inter lucidum pedem Orionis & 13 Eridani magn. 3 minor.]	25° 0¾′	twice [bis]
Between the bright foot, better [Inter luc. pedem melior]	22° 37¾′	
of Orion and 12 of Eridanus [Orion. & 12 Eridani]	22° 38½′	
Between the bright foot of Orion and 11 of Eridanus [Inter luc. ped. Orion. & 11 Erid.]	22° 4′	twice [bis]
Meridian altitude of 17, which is in the right one of the hind feet of the Greater Dog, by the revolving quadrant [Altit. merid. 17 quæ eſt in dextro poſteriorum pedum Canis maioris per Volub.]	4° 21¼′	
Between 10 of Eridanus and the same one [Inter 10 Eridani & eandem]	36° 45′	
in the right hind foot of the Dog [in poſt. dext. pede Canis]	36° 46′	
Meridian altitude of 10 of the Dog by the revolving quadrant [Alt. merid. 10 Canis per Volub.]	11° 26′	
Between 10 of Eridanus and [Inter 10 Eridani &]	44° 34′	
15 of the Greater Dog [15 Canis maioris]	44° 34½′	

Meridian altitude of 7 of the Greater Dog, of magnitude 6, by the revolving quadrant [Alt. mer. 7 Canis maioris 6 magnit. per Volub.]	15° 54′
Meridian altitude of the Greater Dog by the revolving quadrant [Alt. merid. Canis mai. per Volub.]	17° 53½′
Between 10 of Eridanus and 14 of the Greater Dog [Inter 10 Erid. & 14 Canis mai.]	46° 20′ twice [bis]
Meridian altitude of the sixth of the Greater Dog by the revolving quadrant [Alt. mer. ſexta Canis mai. per Vol.]	13° 33½′
(it is not the sixth, but stands next to it and is more southerly) [(non eſt ſexta ſed iuxta eam ſita eſt & auſtralior).]	

The meridian altitudes of the Greater Dog that are found here are doubtful. For they were observed with the instrument not set accurately enough to the meridian.[1] [Altitudines meridianæ Canis maioris, quæ inveniuntur, dubiæ ſunt. Inſtrumento enim non ſatis ad meridianum directo obſeruatæ ſunt[1].]

Vice versa [Viceverſa]

Between the heart of Hydra and 17 of the Greater Dog [Inter cor Hydræ & 17 Canis mai.]	48° 36½′
Declination of 9 in the upper foot of the Greater Dog, twice [Declinatio 9 in ſuperiore pede Canis maioris bis]	17° 48⅔′
Between 10 of Eridanus and 18 [Inter 10 Eridani & 18]	50° 8½′
of the Greater Dog [Canis maioris]	50° 9′
Meridian altitude of 6 of the Greater Dog [Altit. merid. 6 Canis maioris]	14° 21′
Meridian altitude of 13 of the Greater Dog [Altit. merid. 13 Canis maioris]	10° 34⅔′
Meridian altitude of 15 of the Greater Dog [Altit. merid. 15 Canis maioris]	5° 44′
Meridian altitude of 12 of the Greater Dog by the revolving quadrant [Alt. merid. 12 Can. mai. per Vol.]	10° 52½′
Between 12 of the Greater Dog and [Inter 12 Canis maioris &]	26° 57¼′
5 of the Hare, magnitude 3, lesser [5 Leporis magn. 3 min.]	26° 58′
Meridian altitude of 14 of the Greater Dog [Altit. merid. 14 Canis mai.]	8° 22¼′
better [melior]	8° 23⅔′
Between 13 of the Greater Dog [Inter 13 Canis maioris]	25° 1′
and 5 of the Hare [& 5 Leporis]	25° 0½′

Vice versa, from the heart of Hydra. [Viceverſa a corde Hydræ.]

Between the heart of Hydra and 15 of the Greater Dog [Inter cor Hydræ & 15 Can. mai.]	40° 24½′
Between the heart of Hydra and 14 [Inter cor Hydræ & 14]	37° 27½′
of the Greater Dog [Canis maioris]	37° 28′
Between the heart of Hydra and 12 [Inter cor Hydræ & 12]	37° 41½′
of the Greater Dog [Canis maioris]	37° 42¼′

[1] Added in the margin in another hand. [In margine alia manu adſcripta.]

Meridian altitude of 18 of the Greater Dog by the steel instrument [Altit. merid. 18 Canis maioris per Chalyb.]	5° 39¼′
Between 13 of the Greater Dog and [Inter 13 Canis maioris &]	39° 44½′
the heart of Hydra [cor Hydræ]	39° 45½′
Between 18 of the Greater Dog and [Inter 18 Canis maioris &]	35° 30½′
the heart of Hydra [cor Hydræ]	35° 31′

10 February [DIE 10 FEBRUARIJ.]

Between the Lesser Dog and [Inter Canem minorem &]	46° 37′	
6 of Eridanus [6 Eridani]	46° 36′	
Declination of 6 of Eridanus, south [Declinatio 6 Eridani auſtr.]	4° 14½′	
	4° 15′	
Between 5 of Eridanus and [Inter 5 Eridani &]	44° 18¾′	
the Lesser Dog [Canem minorem]	44° 19¼′	
Between 4 of Eridanus and [Inter 4 Eridani &]	43° 0′	
the Lesser Dog [Canem minorem]	42° 59½′	
Declination of 5 of Eridanus, south [Declinatio 5 Eridani auſtr.]	4° 2⅓′	
	4° 3′	
Between 2 of Eridanus and the Lesser Dog [Inter 2 Eridani & Canem min.]	39° 19′	twice [bis]
Declination of 4 of Eridanus, south [Declinatio 4 Eridani auſtr.]	6° 10½′	
better [melior]	6° 11½′	
Between 3 of Eridanus and [Inter 3 Eridani &]	41° 24′	
the Lesser Dog [Canem minorem]	41° 24⅙′	
Declination of 3 of Eridanus, south [Declinatio 3 Eridani auſt.]	7° 50′	
	7° 50⅔′	
Declination of 1 of Eridanus, south [Declinatio 1 Eridani auſt.]	9° 19¾′	
	9° 19′	
Between 2 of Eridanus and [Inter 2 Eridani &]	40° 3½′	
the Lesser Dog [Canem minorem]	40° 3⅓′	
Declination of 2 of Eridanus [Declinatio 2 Eridani]	5° 40′	
	5° 40⅓′	

16 February, evening [DIE 16 FEBRUARIJ, VESPERI.]

Between 1 of Eridanus and the bright star of the jaw of the Whale [Inter 1 Eridani & lucidam mandibulæ Ceti]	32° 42¾′
Between 14 of the Whale, in the belly, and [Inter 14 Ceti in ventre &]	10° 53′
16 of the River [16 fluvij]	10° 53⅓′
Between 14 of Eridanus and, better [Inter 14 Eridani & melior]	12° 45′
4 of the Whale [4 Ceti]	12° 48′
Between 4 of the Whale and 13 of Eridanus [Inter 4 Ceti & 13 Eridani]	16° 35′
	16° 36′

Between 4 of the Whale and 12 of Eridanus [Inter 4 Ceti & 12 Eridani]	18° 50½′
	18° 51′
Between 4 of the Whale and 11 of Eridanus [Inter 4 Ceti & 11 Eridani]	20° 44′
	20° 45′
Between 1 of Eridanus and the bright star [Inter 1 Eridani & lucidam]	34° 8′
of the jaw of the Whale [mandibulæ Ceti]	34° 9′
Between 3 of Eridanus and the bright star [Inter 3 Eridani & lucidam]	31° 45¼′
of the jaw of the Whale [mandibulæ Ceti]	31° 45⅓′
Between 4 of Eridanus and the bright star of the jaw of the Whale [Inter 4 Erid. & luc. mand. Ceti]	29° 13¼′twice [bis]
Between 5 of Eridanus and the bright star [Inter 5 Eridani & lucidam]	26° 49′
of the jaw of the Whale [mandibulæ Ceti]	26° 50′
Between 6 of Eridanus and the bright star [Inter 6 Eridani & lucidam]	24° 38⅔′
of the jaw of the Whale [mandibulæ Ceti]	24° 39′
Meridian altitude of 3 in the Ship by the revolving quadrant [Altit. merid. 3 in Navi per Vol.]	10° 16¾′
Meridian altitude of the first in the Ship, by the revolving quadrant [Altit. merid. primæ in Navi per Volub.]	12° 20′
by the steel instrument [per Chalyb.]	12° 18½′
Meridian altitude of 2 in the Ship, magnitude 3, by the steel instrument [Altit. merid. 2 in Navi, magnit. 3 per Chalyb.]	10° 59′
by the revolving quadrant [per Volub.]	10° 59′

17 February, evening [DIE 17 FEBRUARIJ, VESPERI.]

Between 10 of Eridanus and the last of the three in the tail of the Hare, [Inter 10 Eridani & vltimam trium in cauda Leporis,]	31° 4½′
unknown to Aratus [Arato ignotam]	31° 6′
Declination of the same in [Declinatio eiusdem in]	14° 56¾′
the Hare [Lepore]	14° 57′

Vice versa [Viceverſa]

Between the bright star of Hydra and the one noted above in the tail of the Hare [Inter lucidam Hydræ & præſcriptam in cauda Leporis]	49° 36′
	49° 37⅚′
Meridian altitude of the 10th in the Greater Dog by the revolving quadrant [Altit. meridiana 10æ in Cane maiore per Volub.]	11° 1½′
Meridian altitude of 11 in the Greater Dog [Alt. merid. 11 in Cane maiore]	11° 30′
Meridian altitude of 11 in the foot of the Greater Dog by the steel instrument [Alt. merid. 11 in pede Canis maioris per Chalyb.]	12° 18½′[1]
Meridian altitude of 8 of the Greater Dog by the steel instrument [Alt. merid. 8 Can. mai. per Chal.]	15° 9′
Meridian altitude of 7 of the Greater Dog by the steel instrument [Alt. mer. 7 Can. mai. per Chal.]	16° 12′

Meridian altitude of the Greater Dog by the revolving quadrant [Alt. mer. Canis mai. per Volub.]	17° 55⅙′
Between 5 in Argo and [Inter 5 in Argo &]	38° 51′
the bright foot of Orion [lucidum pedem Orionis]	38° 53′
Between 3 in Argo and [Inter 3 in Argo &]	40° 26′
the bright foot of Orion [lucidum pedem Orionis]	40° 27′
Between 2 in Argo and [Inter 2 in Argo &]	44° 17′
the bright foot of Orion [lucidum pedem Orionis]	44° 19′
Meridian altitude of the one in the shield of the Ship nearest the tail of the Greater Dog[2] (Aratus seems to place this one in the figure of the Greater Dog) [Altit. merid. eius quæ eſt in Nauis clypeo proxima caudæ Canis maioris[2] (Aratus videtur hanc collocare in Canis maioris imagine)]	8° 14⅔′
Meridian altitude of 3 in the Ship [Alt. merid. 3 in Navi]	10° 16⅓′
Between the bright star of Hydra and [Inter lucidam Hydræ &]	31° 29′
5 of Argo [5 Argi]	31° 30′

[1] No star crossed the meridian at this altitude at that time. [Nulla ſtella tunc meridianum in hac altitudine tranſivit.] [2] κ Puppis (P. VII. 175). Cf. Aratus, verse 349. It is the sixth star of the Ship in Ptolemy's catalogue. [ϰ Puppis (P. VII. 175) Cf. Arat. v. 349. Eſt ſexta ſtella Navis in catalogo Ptolemæi.]

Meridian altitude of 1 of Argo [Alt. merid. 1 Argi]	12° 18′
Meridian altitude of 2 in Argo [Alt. merid. 2 in Argo]	11° 0′ 0″

Position of certain stars in the Ship [Poſitus quarundam ſtellarum in Navi]

Diagram. A small star chart set in the left column under the line "Poſitus quarundam ſtellarum in Navi": five star marks (six-pointed asterisks), four of them numbered and the lowest labelled by a phrase. From upper left to lower right: a star with "2" to its left; a star a little higher with "1" above right; a larger star with "3" above right; a star lower with "5" above right; and, lowest and furthest right, a star with "in Cane" set above and to its right. No other labels, lines or letters are drawn.

- 1 (upper middle, above right of its star): 1
- 2 (left, left of its star): 2
- 3 (middle right, above right of the largest star): 3
- 5 (right, above right of its star): 5
- in Cane (lowest right, above right of the lowest star): in the Dog [in Cane]

Between the bright star of Hydra and 3 in the Ship [Inter lucid. Hydræ & 3 in Navi]	28° 27′	twice [bis]
Between the bright star of Hydra and [Inter lucidam Hydræ &]	24° 44′	
2 in the Ship [2 in Navi]	24° 44½′	

18 February, morning [DIE 18 FEBRUARIJ, MANE.]

Meridian altitude of 11 of ♏ by the revolving quadrant [Alt. merid. 11 ♏ per Volub.]	6° 49⅔′

19 February, morning [DIE 19 FEBRUARIJ, MANE.]

Between 29 of ♍ and the northern scale-pan of ♎ [Inter 29 ♍ & bor. lancem ♎]	45° 49′	twice [bis]
Between the same 29 and Spica [Inter eandem 29 & Spicam]	21° 38⅔′	
	21° 38¾′	
Between 31 of ♍ and [Inter 31 ♍ &]	45° 31′	
the bright star of the neck of ♌ [lucidam ceruicis ♌]	45° 32′	
Declination of 29 of ♍ [Declinatio 29 ♍]	north [B.]	
	5° 32′	
	5° 32⅓′	
Between 31 of ♍ and [Inter 31 ♍ &]	33° 13⅚′	
the northern scale-pan of ♎ [borealem lancem ♎]	33° 14⅙′	
Declination of the same 31 of ♍, north, with both pinnules [Declin. eiusdem 31 ♍ B., vtr. pin.]	7° 40½′	
Between the left knee [Inter ſiniſtrum genu]	29° 57⅚′	
of Ophiuchus and 24 of ♍ [Ophiuchi & 24 ♍]	29° 59′	
Declination of the same 24 of ♍, north [Declinatio eiusdem 24 ♍ B.]	2° 27′	
	2° 25′	
Meridian altitude of 11 of ♏ by the revolving quadrant (better than the preceding) [Altit. merid. 11 ♏ per Volub. (melior præced.)]	6° 46′	
Meridian altitude of cor ♏ [Altit. merid. cordis ♏]	8° 46½′	

On the same day, evening. [Eodem Die Veſperi.]

Meridian altitude of the shoulder of the Whale by the revolving quadrant [Altit. merid. humeri Ceti per Volub.]	26° 48¼′
by the steel instrument [per Chalyb.]	26° 47⅔′

20 February, evening[1] [DIE 20 FEBRUARIJ, VESPERI[1].]

Meridian altitude of the Greater Dog by the steel instrument [Altit. merid. Canis maioris per Chal.]	17° 54¼′
by the revolving quadrant [per Vol.]	17° 54½′
Between the bright foot of Orion and [Inter luc. pedem Orionis &]	35° 11½′
the jaw of the Whale [mandib. Ceti]	35° 12′
Declination of the bright foot [Declinatio luc. pedis]	9° 14½′

of Orion [Orionis]	9° 14⅚′
Repeated distance [Repetita diſtantia]	35° 11⅓′
Declination of the bright star of the jaw of the Whale [Declinatio luc. mandib. Ceti]	2° 27½′
	2° 28½′

4 April, evening[2] [DIE 4 APRILIS, VESPERI[2].]

Meridian altitude of 5 of the Cup [Alt. merid. 5 Crateris]	21° 23½′
Meridian altitude of 2 of the Cup [Alt. merid. 2 Crateris]	18° 41⅓′
Between 4 of the Crow and 11 of Hydra [Inter 4 Corvi & 11 Hydræ]	43° 16′
	43° 17′
Between 4 of the Crow and the one immediately following the heart of Hydra, number 13, twice [Inter 4 Corvi & proxime ſequentem cor Hydræ, 13 num. bis]	37° 27⅚′
Between 4 of the Crow and the one that follows the other one observed just before in Hydra [Inter 4 Corvi & eam, quæ alteram proxime in Hydra obſeruatam ſequitur]	34° 46′
more easterly, magnitude 5 [orientalior 5 magn.]	34° 45′
Between Spica and the one that is set above the one observed just before, one of two adjacent stars toward the west, 15 by our numbering[3], [Inter Spicam & eam quæ ſupra proxime obſeruatam ſita eſt, vna ex duabus contiguis ad occaſum, 15 noſtra numeratione[3],]	48° 51′
magnitude 5 [magn. 5]	48° 50¾′
Between Spica and the following one of the two adjacent stars of Hydra, number 16 by our numbering [Inter Spicam & ſequentem duarum contiguarum Hydræ num. 16 noſtra numeratione]	47° 35⅚′
magnitude 4, lesser [mag. 4 minor.]	47° 36½′
Between Spica and the one that is the 5th from the heart of Hydra, by our [Inter Spicam & eam quæ eſt a corde Hydræ 5ta, noſtra]	43° 43½′
numbering 17, magnitude 4[4] [numeratione 17, mag. 4[4]]	43° 42⅚′
Between Spica and the one that is the middle one in a straight line with the one observed just before, 17, and 19 by our numbering, to be ob- [Inter Spicam & eam quæ eſt media in recta linea cum proxime obſeruata, 17 & 19 iuxta numerationem noſtram inferius obſer-]	40° 44¼′
served below[5], magnitude 5, lesser [uandam[5], magn. 5 minor.]	40° 44⅚′
Meridian altitude of 2 of the Crow by the revolving quadrant [Altit. merid. 2 Corvi per Volub.]	13° 47½′
Meridian altitude of 4 of the Crow by the revolving quadrant [Altit. merid. 4 Corvi per Volub.]	18° 51¾′
Between Spica and the uppermost one in the straight line in Hydra, which we number 19 by the sequence of observation; to Aratus it is the 18th[6], [Inter Spicam & ſupremam in recta linea in Hydra, quam iuxta obſeruationis ſeriem numeramus 19, eſt Arato 18^{a}[6],]	38° 4′
magnitude 4 [mag. 4]	38° 3¼′

[1] Compare above, among the observations of Mercury, p. 159. [Cfr. ſupra inter obſeruationes Mercurii p. 159.] [2] Written beside it: "These are to be described among the southern signs." [Adſcripta ſunt: »Deſcribenda hæc ſunt Auſtralibus ſignis«.] [3] That is, according to Ptolemy. The star is 40 v^2 Hydrae. [Id eſt, juxta Ptolemæum. Stella eſt 40 v^2 Hydræ.] [4] 42 μ Hydrae. [42 μ Hydræ.] [5] 2 of the Cup, or φ Hydrae. [2 Crateris vel φ Hydræ.] [6] 4 of the Cup, or ν Hydrae. [4 Crateris vel ν Hydræ.]

Meridian altitude of 5 of the Crow by the revolving quadrant [Altit. merid. 5 Corvi per Volub.]	19° 54½′
Between 4 of the Crow and the heart of Hydra, twice [Inter 4 Corvi & cor Hydræ bis]	41° 50′
Meridian altitude of 7 of the Crow [Altit. merid. 7 Corvi]	13° 2′
Between Spica and 1 in the Cup [Inter Spicam & 1 in Cratera]	35° 45′
magnitude 5, a little greater [5 magnit. paulo maior.]	35° 46′
Between Spica and 3 [Inter Spicam & 3]	30° 49′
in the Cup, magnitude 4 [in Cratera mag. 4]	30° 49⅙′
Between Spica and 2 in the Cup [Inter Spicam & 2 in Cratera]	29° 50′
magnitude 4 [4 mag.]	29° 49¼′

12 April, evening [DIE 12 APRILIS, VESPERI.]

Between 4 in the Crow, the preceding one of the two [Inter 4 in Corvo præcedentem duarum]	17° 54′
upper ones, and Spica [ſuperiorum & Spicam]	17° 53⅚′
Between the following one of the bright [Inter ſequentem lucid.]	14° 25′
upper ones and Spica [ſuperiorum & Spicam]	14° 24⅓′
Declination of 14 in Hydra [Declinatio 14 in Hydra]	12° 56′
	12° 56⅔′
Declination of 16 in Hydra [Declinatio 16 in Hydra]	14° 45′
(17 for us) [(nobis 17)]	14° 44′
Between the preceding one of the lower bright stars in the □ of the Crow, the more north- [Inter præcedentem inferiorum lucidarum in □ Corvi bore-]	21° 17′
erly one, and Spica [aliorem & Spicam]	21° 17⅙′
Declination of 13 of Hydra [Declinatio 13 Hydræ]	12° 28′
	12° 27½′
Between the following one (number 7) of the brighter lower ones in the □ of the Crow and Spica, twice [Inter ſequentem (num. 7) lucidiorum inferiorum in □ Corvi & Spicam bis]	17° 12¼′
Declination of 18 of Hydra for us, [Declinatio 18 nobis Hydræ,]	14° 46′
17 for Aratus [Arato 17]	14° 47′
Between the heart of Hydra and 16 of Hydra [Inter cor Hydræ & 16 Hydræ]	16° 25½′
for Aratus, 17 for us [Arato, nobis 17]	16° 26′
Between the following one, 18 for us, in [Inter ſequentem nobis 18 in]	19° 7′
Hydra and the heart of Hydra [Hydra & cor Hydræ]	19° 6⅚′
Declination of 6 of the Serpent, north [Declinatio 6 Serpentis borea]	6° 39½′
in the neck [in collo]	6° 40′
Between 19 for us, 18 for Aratus, [Inter 19 nobis, Arato 18]	21° 21′
of Hydra and the heart of Hydra [Hydræ & cor Hydræ]	21° 21⅔′
Between 1 of the Cup and the heart of Hydra [Inter 1 Crateræ & cor Hydræ]	24° 23⅔′
	24° 23′
	24° 24′
Between 19 of Hydra and the heart [Inter 19 Hydræ & cor]	28° 40⅓′
of the same [eiusdem]	28° 41′
Declination of 3 of the Cup [Declinatio 3 Crateris]	12° 31⅚′
south [auſtrina]	12° 32⅙′

Declination of 2 of the Cup [Declinatio 2 Crateris]	south [M.]
	15° 26′
	15° 27′
Between 2 in the Cup and the heart [Inter 2 in Cratere & cor]	29° 55′
of Hydra [Hydræ]	29° 54¼′
Between 3 of the Cup and the heart [Inter 3 Crateris & cor]	28° 0¼′
of Hydra [Hydræ]	28° 0⅓′
Declination of 5 of the Cup [Declinatio 5 Crateris]	south [M.]
	8° 35½′
	8° 36½′
Declination of 7 of the Cup [Declinatio 7 Crateris]	south [M.]
	7° 31⅚′
	7° 32⅓′
Declination of 4 of the Cup [Declinatio 4 Crateris]	16° 0⅙′
	16° 0⅚′
Declination of 6 of the Cup [Declinatio 6 Crateris]	14° 52′
	14° 53′

9 December [DIE 9 DECEMBRIS.]

Meridian altitude of 16 of the Whale, on the back, by the revolving quadrant [Alt. merid. 16 Ceti in dorſo per Volub.]	21° 45⅔′
Meridian altitude of the belly of the Whale [Alt. merid. ventris Ceti]	16° 3′
Meridian altitude of the bright star of the jaw of the Whale by the revolving quadrant [Alt. merid. luc. mandibulæ Ceti per Volub.]	36° 33′

10 December [DIE 10 DECEMBRIS.]

Meridian altitude of the bright foot of Orion by the revolving quadrant [Alt. merid. lucidi pedis Orionis per Volub.]	25° 23′
Meridian altitude of the left shoulder of Orion by the revolving quadrant [Alt. merid. ſiniſtri humeri Orionis per Volub.]	40° 0⅓′
Meridian altitude of 1 of the belt of Orion [Alt. merid. 1 balthei Orionis]	33° 26′
Meridian altitude of the middle one of the belt of Orion [Alt. merid. med. balth. Orion.]	32° 35⅙′
Meridian altitude of the last one of the belt [Alt. merid. vlt. balthei]	31° 53′
Meridian altitude of the right foot of Orion by the revolving quadrant [Alt. merid. dextri pedis Orionis per Volub.]	24° 14′

For correcting the equatorial arc [PRO ARCU ÆQUATORIO CORRIGENDO.]

On the same day, 9 December, in the evening[1], at 4^h $16\frac{2}{3}^m$, the transit of Mars across the meridian was observed, and its altitude was then 25° 14′ by the steel instrument, 25° $13\frac{11}{12}$′ by the revolving quadrant. [Eodem die 9 X^{bris} Veſperi[1] H. 4 16⅔′ obſeruabatur tranſitus ♂ per meridianum, eratque tunc eius altitudo 25 14 per Chalyb. 25 $13\frac{11}{12}$ per Volub.]

At the very moment of the transit of Mars across the meridian, 0° 5⅓′ before the meridian were counted on the equator in the horizon of the revolving quadrant; this error in the equator is to be corrected. [In ipſo momento tranſitus ♂ per meridianum in horizonte quadrantis volubilis numerabantur in æquatore 0° 5⅓′ ante meridiem, qui error in æquatore venit corrigendus.]

[1] Written in the codex after the observation of Saturn. [In codice poſt obſeruationem Saturni conſcripta.]

At 5^h 17^m the outermost one of the wing of Pegasus was crossing the meridian, with an altitude of 47° 1½′ by the revolving quadrant. On the equator, however, it was still 0° 5⅔′ before the meridian. [H. 5 M. 17 tranſibat extrema alæ Pegaſi per meridianum habens altitudinem per Volub. 47 1½. Erat autem adhuc in æquatore 0° 5⅔′ ante meridiem.]

At 6^h $21\frac{2}{3}^m$ 15 of the Whale was crossing the meridian, with an altitude of 23° 49¾′ by the steel instrument; on the equator it was 0° 6½′ before the meridian. [H. 6 M. 21⅔ tranſibat 15 Ceti per meridianum habens altitudinem 23 49¾ per Chalyb., erat ante meridiem in æquatore 0° 6½′.]

At 8^h $49\frac{1}{3}^m$ the bright star of the jaw of the Whale was crossing the meridian. On the equator, however, it was still 0° 7′ before the meridian. [H. 8 M. 49⅓ tranſibat lucida mandibulæ Ceti per meridianum. Erat autem in æquatore adhuc ante meridiem 0° 7′.]

The meridian altitude of the preceding first one in the belt of Orion, 33° 26′. [Altitudo meridiana præcedentis primi in baltheo Orionis 33 26.]

The last one toward the east in the belt of Orion was crossing the meridian, with an altitude of 31° 52¾′ by the revolving quadrant. On the equator, however, it was still 0° 7½′ before the meridian. [Vltima verſus ortum in baltheo Orionis tranſibat per meridianum habens altitudinem per Volub. 31 52¾. Erat autem adhuc ante meridiem 0° 7½′.]

The altitude of the Greater Dog as it crossed the meridian, 17° 55′. At that time, however, it was 7½′ before the meridian on the equatorial arc. [Altitudo Canis maioris transeuntis per meridianum 17 55. Erat autem tunc in arcu æquatoreo ante meridiem 7½′.]

On 14 December the error was corrected in the equatorial arc that encircles the larger subterranean armillae over a semi-circumference. The correction was made in 7′: by that amount the meridian line on it had until now been found to deviate toward the east from the true one, which had earlier been found quite precisely in the horizon of the revolving quadrant. The observations taken on

several past nights of the stars of Orion and of others crossing the meridian, in both places, showed this clearly enough, and, limited with those 7′ corrected, very nearly all of them agreed. Therefore, in all the preceding observations, whenever this equatorial semicircle was used to obtain greater precision in the times, 28ˢ of time are to be added on the clock, for 7 multiplied by 4 makes that many; or, these 7′, which were lacking in the equatorial arc and have now been corrected, add at most, everywhere in all the observations, half of one minute to the clock time verified by the fixed stars. And this holds from the time when this equatorial semicircle was first set up until this present day, 14 December, that is, two days after the winter solstice of this current year 1591. And let this be carefully noted. [Die 14 Decembris correctus eſt error in arcu Æquatorio maiores ſubterraneas Armillas ad ſemiperipheriam ambiente, idque emendatione in 7 minutis facta, quibus linea Meridiana in hoc a vera, in horizonte Volubilis Quadrantis antea præciſe ſatis adinuenta, hactenus verſus ortum declinauiße deprehenſa fuit, quemadmodum animaduerſiones præteritis aliquot noctibus in ſtellis Orionis & alijs per Meridianum transeuntibus vtrobique habitæ ſatis manifeſtarunt & in 7′ illis correctis limitatæ proxime omnes conſentierunt. Itaque in omnibus antecedentibus obſeruationibus quotiescunque pro maiori temporum præciſione habenda vſus huius ſemicirculi Æquatorij adhibitus eſt, addenda ſunt 28″ ſecunda temporis in horologio, tot enim 7 in 4 multiplicata efficiunt, vel 7 hæc minuta quæ in Æquatorio arcu defecerunt & iam correcta ſunt addunt ad ſummum vbique in omnibus obſeruationibus tempori in horologio ad ſtellas fixas verificato ſemißem vnius minuti, idque ab eo tempore quo primum poſitus fuit ſemicirculus hic Æquatorius ad præſentem hunc diem 14 Decembris duobus ſcilicet diebus poſt ſolſtitium hybernum anni huius labentis 1591. Atque hoc diligenter notetur.]

N.B. To all the equatorial observations made for finding the time, from the very beginning of the setting-up of the largest stationary equatorial semicircle, half a minute is to be added, because they ran ahead of the exact line of the meridian by about 7′; and this up to the winter solstice of the year 1591[1]. [*N. B. OMNIBUS OBSERVATIONIBUS ÆQUATORIJS PRO TEMPORE INDAGANDO HABITIS AB IPSO INITIO COLLOCATIONIS SEMICIRCULI ÆQUATORIJ MAXIMI QUIESCENTIS ADDENDUM EST DIMIDIUM MINUTUM, EO QUOD SEPTEM QUASI SCRUPULIS MERIDIEJ EXACTEM LINEAM ANTEUERTERINT, IDQUE VSQUE AD SOLSTITIUM HYBERNUM ANNI 1591*[1].]

[1] Compare Tome I, p. XXVI. [Cf. T. I p. XXVI.]

Observations of the year 1592 [OBSERUATIONES ANNI 1592.]

Observations of the Sun [OBSERUATIONES SOLIS.]

28 January [DIE 28 JANUARIJ.]

The Sun was observed at noon as follows. [Obſeruabatur ⊙ in meridie vt ſequitur.]

Meridian altitude by the steel instrument [Altit. merid. per Chalyb.]	18° 39⅓′
by the revolving quadrant [per Volub.]	18° 38⅔′
Declination [Declin.]	15° 25′
by the largest armillae [per Armill. max.]	15° 25¼′
Repeated [Repetita]	15° 25′
	15° 25½′

The sky was quite clear. [Erat ſatis bene ſerenum.]

6 February[1] [DIE 6 FEBRUARIJ[1].]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	21° 37½′
by the revolving quadrant [per Volub.]	21° 38′ 0
Declination [Declin.]	12° 29′
by the largest armillae [per Armill. max.]	12° 29½′
Repeated [Repetita]	12° 29′
	12° 29⅓′
When the azimuth of the Sun on the revolving quadrant was 1½°, the altitude of the Sun [Quando Azimuth ⊙ erat in Volub. 1½ g., Altit. ⊙]	21° 37½′

It was very clear. [Erat bene ſerenum.]

9 February [*DIE 9 FEBRUARIJ.*]

The declination of the Sun was taken a little before noon [*Declin. ⊙ paulo ante merid. capiebatur*]	*with one* [*vno*]	*11° 26′*
	with the other [*altero*]	*11° 26⅔′*
Meridian altitude of the Sun by the revolving quadrant [*Altit. ⊙ merid. per Volub.*]		*22° 40⅙′*
by the steel instrument [*per Chalyb.*]		*22° 39½′*
Declination a little after [*Declin. paulo poſt*]		*11° 26⅙′*
noon, repeated [*merid. repetita*]		*11° 26⅔′*

10 February [*DIE 10 FEBRUARIJ.*]

We observed the declination a little before noon [*Obſeruauimus declinationem paulo ante meridiem*]	*with one* [*vno*]	*11° 5′*
in this way [*hoc modo*]	*with the other* [*altero*]	*11° 4¾′*
Altitude of the Sun by the steel instrument [*Altitudo ⊙ per Chalyb.*]		*23° 1½′*
by the revolving quadrant [*per Volub.*]		*23° 1⅓′*
Repeated declination a little [*Repetita Declin. paulo*]	*with one* [*vno*]	*11° 4½′*
after noon [*poſt merid.*]	*with the other* [*altero*]	*11° 4¾′*

The sky was exceptionally clear. I put two little balls on for the clock. [*Erat apprime ſerenum. Impoſui pro horologio duos globulos.*]

13 February [DIE 13 FEBRUARIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	24° 6⅙′
by the revolving quadrant [per Volub.]	24° 6½′
Declination [Declin.]	10° 0′
by the armillae [per Armill.]	10° 0⅙′

The clock was running faster than it should by 16⅔^{m} (corrected at noon). For this error we removed four little balls from the weight. [Horologium mouebatur celerius iuſto 16⅔ minutis (in Meridie correctum). Pro quo errore globulos quatuor remouebamus de pondere.]

The sky was moderately clear. [Erat mediocriter ſerenum.]

In the middle of the third hour the clock was corrected again, having run 2^{m} faster than it should since noon; one more little ball was taken off the weight to avoid this error. [Hora mediata tertia iterum correctum eſt horologium, motum a meridie 2 minutis iuſto celerius, dempto adhuc vnico globulo in pondere pro hoc errore vitando.]

17 February [DIE 17 FEBRUARIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ Merid. per Chalyb.]	25° 35$\frac{1}{12}$′
by the revolving quadrant [per Volub.]	25° 35⅙′
Declination [Declin.]	8° 31⅓′
by the armillae [per Armillas]	8° 31½′

The sky was exceptionally clear. [Erat apprime ſerenum.]

18 February [DIE 18 FEBRUARIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	25° 57¾′
by the revolving quadrant [per Volub.]	25° 58′
Declination [Declin.]	8° 9′
by the armillae [per Armill.]	8° 9¾′
Afterwards the declination is repeated [Poſtea repetitur declinatio]	8° 8′
at minute 10 [minuto 10]	8° 8½′

Not very clear. [Non bene ſerenum.]

The clock was corrected, which since noon of the preceding day had been running 5^m faster than it should; two little balls were taken off the clock's weight. [Correctum eſt horologium, quod a meridie antecedentis diej 5 minut. iuſto celerius mouebatur, demptis duobus globulis e pondere horologij.]

19 February, morning [DIE 19 FEBRUARIJ, MANE.]

For correcting the clock the Sun was observed on the equator. [Pro corrigendo horologio obſeruabatur ⊙ in Æquatore.]

Hours, minutes [H. M.]	Declination of the Sun [Declin. ⊙]	Altitude of the Sun [Altit. ⊙]	Azimuth [Azim.]	the Sun, east [⊙ orient.]
$7^h\ 35\frac{5}{6}^m$				63 0
$7^h\ 40\frac{1}{3}^m$	7° 46′	8° 33¾′	62° 7′	61 54
	7° 45′			
$7^h\ 44^m$	7° 46⅔′	9° 1′	61° 16′	60 53
	7° 47′			
$7^h\ 47^m$				60 10

[1] For the observation of the sunrise on 30 January, see below among the observations of the Moon. [Pro obſervatione ortus ſolis die 30 Januarii vide infra inter obſervationes lunæ.]

20 February [DIE 20 FEBRUARIJ.]

Meridian altitude of the Sun by the steel instrument [Alt. ⊙ merid. per Chalyb.]	26° 42½′
by the revolving quadrant [per Volub.]	26° 42½′
Declination [Declin.]	7° 22⅙′
by the armillae [per Armill.]	7° 22½′

The clock was corrected. [Horologium corrigebatur.]

It was very clear. [Erat bene ſerenum.]

21 FEBRUARY [DIE 21 FEBRUARIJ.]

At 6^h 8^m the Sun began to rise with its upper limb. [*H. 6 M. 8 Incepit ⊙ oriri ſupremo limbo.*]

6 12⅚: the Sun was seen half risen. [*6 12⅚ Medius ⊙ ortus videbatur.*]

6 15⅙: the whole Sun was seen risen. [*6 15⅙ Totus ⊙ ortus viſus eſt.*]

The sky was exceptionally clear and calm. [*Erat apprime ſerenum & tranquillum.*]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	27° 4¾′
by the revolving quadrant [per Volub.]	27° 5½′
Declination [Declin.]	6° 59⅙′
by the largest armillae [per Armill. max.]	7° 0′

It was very clear. [Erat bene ſerenum.]

The clock had advanced 33^m slower than it should since noon of the preceding day; we therefore added 3 little balls to the weight to correct this error. [Horologium a meridie præcedentis diej 33 M. tardius iuſto promotum; adiecimus ergo 3 globulos ponderi pro hoc errore corrigendo.]

22 FEBRUARY [DIE 22 FEBRUARIJ.]

At 5^h 50^m the Sun was beginning to rise (6 30⅔ corrected). *5 56: the whole Sun appeared risen* (6 37 corrected). The true rising of the Sun, 6^h 40^m, from Mästlin [Mæſthlino]. [*H. 5 50′ ⊙ oriri incipiebat* (6 30⅔ corr.) *5 56 ⊙ totus exortus apparuit* (6 37 corr.) Verus ortus ⊙ H. 6 M. 40 ex Mæſthlino.]

25 FEBRUARY [DIE 25 FEBRUARIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	28° 37½′
by the revolving quadrant [per Volub.]	28° 38′
Declination [Declin.]	5° 28⅙′
by the largest armillae [per max. Armillas]	5° 27⅚′

The sky was moderately clear. [Erat mediocriter ſerenum.]

25 MARCH [DIE 25 MARTIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	39° 57′
by the revolving quadrant [per Volub.]	39° 58⅙′
Declination [Declinatio]	5° 51′
	5° 51¼′

It was very clear. [Erat bene ſerenum.]

10 April [DIE 10 APRILIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	45° 45⅓′
by the revolving quadrant [per Volub.]	45° 45½′
Declination [Declin.]	11° 40⅙′
by the larger armillae [per Armillas maiores]	11° 41¼′

The sky was moderately clear, but the air was unsteady. [Erat mediocriter ſerenum ſed aër intranquillus.]

11 April [DIE 11 APRILIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	46° 6⅓′
by the revolving quadrant [per Volub.]	46° 5⅚′
Declination [Declin.]	12° 2⅓′
by the armillae [per Armill.]	12° 2′

It was not clear enough, but moderately so all the same. The clock was corrected. [Non erat ſatis ſerenum ſed tamen mediocriter. Horologium eſt correctum.]

13 April [DIE 13 APRILIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	46° 46½′
by the revolving quadrant [per Volub.]	46° 46′
Declination [Declinatio]	12° 40½′
	12° 41⅙′

19 April [DIE 19 APRILIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	48° 40⅔′
by the revolving quadrant [per Volub.]	48° 40½′
Declination [Declin.]	14° 35′
with the largest armillae [per Armillas maximas]	14° 35½′

The sky was quite clear. [Erat ſatis bene ſerenum.]

20 April [DIE 20 APRILIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	48° 59⅓′
by the revolving quadrant [per Volub.]	49° 0′
Declination [Declin.]	14° 54⅓′
by the armillae [per Armillas]	14° 54½′

It was very clear. [Erat bene ſerenum.]

16 May [DIE 16 MAIJ.]

Meridian altitude of the Sun by the revolving quadrant [Altit. ⊙ merid. per Volub.]	55° 17⅓′
Declination [Declin.]	21° 12′
by the armillae [per Armillas]	21° 12½′

The sky was moderately clear. [Erat mediocriter ſerenum.]

17 May [DIE 17 MAIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	55° 28⅙′
by the revolving quadrant [per Volub.]	55° 28′
Declination of the Sun [Declin. ⊙]	21° 23½′
by the larger armillae [per Armillas maiores]	21° 24⅓′

The sky was quite clear. [Erat ſatis bene ſerenum.]

18 May [DIE 18 MAIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	55° 37½′
by the revolving quadrant [per Volub.]	55° 38′ 0
Declination [Declin.]	21° 33⅙′
by the armillae [per Armill.]	21° 33⅓′

The sky was moderately clear, but the air was unsteady. [Erat mediocriter ſerenum, ſed intranquillus aër.]

23 May [DIE 23 MAIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	56° 20⅚′
by the revolving quadrant [per Volub.]	56° 20¾′
Declination by the armillae [Declin. per Armill.]	22° 17′
equatorial [æquatorias]	22° 17½′

The sky was quite clear. [Erat ſatis bene ſerenum.]

30 May [DIE 30 MAIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	57° 6′
by the revolving quadrant [per Volub.]	57° 6½′
Declination [Declinatio]	23° 2′
	23° 1¾′

31 May [DIE 31 MAIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. merid. ⊙ per Chalyb.]	57° 10½′
by the revolving quadrant [per Volub.]	57° 9¾′
Declination [Declin.]	23° 7⅙′
by the largest subterranean armillae [per Armill. max. ſubterr.]	23° 7⅔′

The sky was quite clear. [Erat ſatis bene ſerenum.]

7 June [DIE 7 JUNIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	57° 31⅚′
by the revolving quadrant [per Volub.]	57° 31½′
Declination of the Sun by the largest armillae, with both pinnules [Declin. ⊙ per Armill. max. vtroque pinnacidio]	23° 27½′

The sky was quite clear. [Erat ſatis bene ſerenum.]

14 June [DIE 14 JUNIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	57° 33⅔′
by the revolving quadrant [per Volub.]	57° 32¾′
Declination [Declinatio]	23° 29′
by the armillae [per Armillas]	23° 29⅓′

The sky was moderately clear. The clock was corrected. [Erat mediocriter ſerenum. Correctum eſt horologium.]

15 June [DIE 15 JUNIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	57° 32′
by the revolving quadrant [per Volub.]	57° 31⅙′
Its declination by the largest subterranean armillae, with both pinnules [Declin. eius per Armill. max. ſubterr. vtroque pinnacidio]	23° 27½′

Not clear enough. [Non ſatis ſerenum.]

The clock was running slower than it should by 6½^{m}, which is to be noted for correcting the times in the preceding eclipse of the Moon on 14 June. [Horologium tardius iuſto mouebatur 6½ minut. quod notandum venit pro temporibus in præcedenti Eclipſi Lunæ die 14 Junij corrigendis.]

27 June [DIE 27 JUNIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	56° 43′
by the revolving quadrant [per Volub.]	56° 42⅙′
Declination [Declin.]	22° 38′
by the armillae [per Armill.]	22° 37½′

It was very clear. [Erat bene ſerenum.]

28 July [DIE 28 JULIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	50° 30′
by the revolving quadrant [per Volub.]	50° 30′
Declination [Declin.]	16° 25′
by the armillae [per Armill.]	16° 25⅓′

The sky was moderately and fairly clear. [Erat mediocriter bene ſerenum.]

29 July [DIE 29 JULIJ.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	50° 12⅔′
by the revolving quadrant [per Volub.]	50° 12⅓′
Declination [Declin.]	16° 8′

by the armillae [per Armill.]	16° 8⅔′

The sky was moderately clear. [Erat mediocriter ſerenum.]

1 August [DIE 1 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	49° 20⅙′
by the revolving quadrant [per Volub.]	49° 20½′
Its declination [Declin. eius]	15° 14½′
by the largest subterranean armillae [per Armill. max. ſubterr.]	15° 14¾′

The sky was moderately clear. [Erat mediocriter ſerenum.]

8 August [DIE 8 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	47° 9½′
by the revolving quadrant [per Volub.]	47° 8⅔′
Declination [Declin.]	13° 5′
	13° 4⅔′

The clock showed 12^{h} $6½^{m}$; from this it can be corrected for the observations of the preceding evening. [Horologium indicabat H. 12 M. 6½, hinc poteſt corrigi pro obſeruationibus veſperi præcedentis.]

11 August [DIE 11 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	46° 10′
by the revolving quadrant [per Volub.]	46° 9⅔′
Declination [Declin.]	12° 4′
by the largest subterranean armillae [per Armill. max. ſubterr.]	12° 4½′

It was very clear. [Erat bene ſerenum.]

12 August [DIE 12 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	45° 49⅓′
by the revolving quadrant [per Volub.]	45° 50½′

Declination [Declin.]	11° 43½′
	11° 44⅙′

The sky was moderately clear. [Erat mediocriter ſerenum.]

15 August [DIE 15 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	44° 48′
by the revolving quadrant [per Volub.]	44° 47⅓′
Declination [Declinatio]	10° 43½′
	10° 44′

It was not clear enough. [Non erat ſatis ſerenum.]

16 August [DIE 16 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	44° 27⅓′
by the revolving quadrant [per Volub.]	44° 26½′
Declination [Declin.]	10° 22½′
by the largest subterranean armillae [per Armill. max. ſubterr.]	10° 22′

It was very clear. [Erat bene ſerenum.]

17 August [DIE 17 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	44° 5¾′
by the revolving quadrant [per Volub.]	44° 5⅔′
Declination [Declin.]	10° 0½′
by the largest armillae [per Armill. max.]	10° 0⅓′

It was very clear. [Erat bene ſerenum.]

18 August [DIE 18 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	43° 44⅓′
by the revolving quadrant [per Volub.]	43° 44⅔′
Declination [Declinatio]	9° 39⅓′
	9° 40′

The sky was moderately clear, but the air was unsteady. [Erat mediocriter ſerenum ſed aër intranquillus.]

21 August[1] [DIE 21 AUGUSTI[1].]

At noon the Sun was seen at an altitude, by the steel instrument [☉ *in meridie viſus eſt in altitudine per Chalyb.*]	42° 40′ 50″
by the revolving quadrant [*per Volub.*]	42° 40′
Declination, with both pinnules [*Declin. vtroque pinn.*]	8° 34′

	by the steel instrument [per Chalyb.]	by the revolving quadrant [per Volub.]
Altitude [*Altit.*]	42° 40′ 50″	42° 40′
Refraction, to be subtracted [*Refract. ſubtr.*]	7	7
	42 40 43	42 39 53
Parallax, to be added [*Parallaxis add.*]	2 10	2 10
True altitude [*Vera altit.*]	42° 42′ 53″	42° 42′ 3″
Elevation of the equator [*Eleuatio æquat.*]	34° 5′ 30″	34° 5′ 30″
True declination [*Vera declin.*]	8° 37′ 23″	8° 36′ 33″
Resp. [*Reſp.*]	7° 56⅙′ ♍	7 58

Our ephemerides have the place of the Sun at 7° 57′ ♍, roughly midway between the two places.[2] [*Ephemerides noſtræ habent locum ☉ in 7 57 ♍, quaſi medium inter vtrumque locum*[2].]

25 August [DIE 25 AUGUSTI.]

Meridian altitude of the Sun by the steel instrument [Altit. ☉ merid. per Chalyb.]	41° 12⅓′
by the revolving quadrant [per Volub.]	41° 10⅙′

It is doubted whether the revolving quadrant is exactly true, since a new screw was fixed into it two days before. [Dubitatur an Volubilis ad amußim ſe habeat, ex quo ante biduum noua coclea infigebatur.]

Declination [Declin.]	7° 7′
by the armillae [per Armill.]	7° 6¼′

It was very clear. [Erat bene ſerenum.]

1 September [DIE 1 SEPTEMBRIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	38° 33′ 40″
by the revolving quadrant [per Volub.]	38° 32′ 50″
Declination [Declin.]	4° 28′ 10″
with the largest armillae [per Armillas maximas]	4° 27′ 50″

[1] You will find the observations of the declination of the Sun on 20 August below, among the observations of the Moon. [Obſervationes declinationis Solis die 20 Auguſti infra inter obſervationes lunæ invenies.] [2] Compare the same place, under 21 August. [Cf. ibidem ad d. 21 Auguſti.]

4 September [DIE 4 SEPTEMBRIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	37° 24′
by the revolving quadrant [per Volub.]	37° 24½′
Declination [Declin.]	north [B.] 3° 19⅓′
by the armillae [per Armill.]	3° 19½′

It was not clear enough. [Non erat ſatis ſerenum.]

9 September [DIE 9 SEPTEMBRIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	35° 28⅔′
by the revolving quadrant [per Volub.]	35° 28⅚′
Declination [Declin.]	north [B.] 1° 22½′
by the armillae [per Armill.]	1° 22¾′

It was very clear. [Erat bene ſerenum.]

10 September [DIE 10 SEPTEMBRIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	35° 5$\frac{1}{12}$′	
by the revolving quadrant [per Volub.]	35° 5′	0
Declination, north [Declin. B.]	1° 0′	0
	1° 0′	15

The sky was moderately clear. The day before, the instruments were corrected to exactness. [Erat mediocriter ſerenum. Pridie inſtrumenta ad amußim corrigebantur.]

29 October [DIE 29 OCTOBRIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	20° 30½′
by the revolving quadrant [per Volub.]	20° 30⅔′
Declination [Declin.]	13° 36⅓′
by the armillae [per Armillas]	13° 36½′

The sky was moderately clear. [Erat mediocriter ſerenum.]

8 November [DIE 8 NOUEMBRIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	14° 45⅚′	
by the revolving quadrant [per Volub.]	14° 47′	0
Declination [Declin.]	19° 21⅙′	
	19° 21⅓′	

It was very clear. [Erat bene ſerenum.]

9 November [DIE 9 NOUEMBRIS.]

Meridian altitude of the Sun by the steel instrument [Altit. ⊙ merid. per Chalyb.]	14° 32′	0
by the revolving quadrant [per Volub.]	14° 33′	0
Declination [Declin.]	19° 35′	
by the armillae [per Armillas]	19° 35¼′	

It was very clear, but the air was unsteady. [Erat bene ſerenum ſed aër intranquillus fuit.]

Observations of the Moon [OBSERUATIONES LUNÆ.]

28 January [*DIE 28 JANUARIJ.*]

In the morning I observed the Moon in this way.[1] [*Mane obſeruaui ☾ hoc modo*[1].]

When the azimuth of Venus from the meridian toward the east was 23° 46′, the declination of the upper limb of the Moon [*Quando ♀ Azimuth a merid. verſus ortum erat 23 46, Declinatio ſuperioris limbi ☾*]	19° 44′
of the lower limb [*inferioris limbi*]	20° 14′
It was then distant from Jupiter, as to the eastern limb, the one nearest to it [*Diſtabat tunc a ♃ quoad limbum orientalem ipſi proximum*]	7° 2½′
The altitude of the lower limb was then [*Altit. infer. limbi tunc erat*]	14° 20′

Azimuth of Venus 23° 30′; declination of the upper limb [*Azim.* ♀ *23 30, Decl. ſup. limbi*]	19° 46′
of the lower limb [*infer. limbi*]	20° 10′
The limb was then distant, as before, from Jupiter [*Diſtabat tunc limbus vt prius a* ♃]	6° 59′

Afterwards the Moon was observed from Venus in this way. [*Poſtea obſeruabatur* ☾ *a* ♀ *hoc modo.*]

Azimuth of Venus [*Azim.* ♀]	Distance of the Moon from Venus, as to the eastern limb [*Diſt.* ☾ *a* ♀ *quoad or. limb.*]	Declination of the Moon [*Decl.* ☾]	Altitude of the Moon [*Altit.* ☾]
21° 20′	25° 54′	19° 46′	lower [*infer.*] 11¾°[2]
		20° 12′	

Azimuth of Venus [*Azim.* ♀]	Distance of the Moon from Venus, as to the eastern limb [*Diſt.* ☾ *a* ♀ *quoad or. limb.*]	Declination of the Moon [*Decl.* ☾]	Altitude of the Moon [*Altit.* ☾]
20° 22′	25° 52⅓′	19° 47′	lower [*infer.*] 13¾°
		20° 13′	
19° 35′	25° 52′	19° 48½′	upper [*ſup.*] 15°[3] 10′
		20° 14′	

Afterwards I observed azimuths and altitudes of the Moon itself, for the time; for the Moon was first approaching the 90th degree of the ecliptic. [*Poſtea obſeruaui azimutha & altitudines ipſius* ☾ *pro tempore, nam luna primum appropinquabat ad 90 Eclipticæ gradum.*]

Azimuth of the eastern limb of the Moon, approximately [Azim. or. limb. ☾ quaſi]			
12° 0′	25 44⅙	19 49 20 12½	lower [inf.] 14 10

The Sun had now risen, and the Moon was near the 90th degree. [*Sol iam erat ortus &* ☾ *prope 90 grad.*]

Azimuth of the eastern limb of the Moon, approximately [Azim. or. limb. ☾ quaſi]			
13° 30′	25 43	19 49⅚ 20 12	*int.* 13 17

Azimuth of the eastern limb of the Moon, approximately [Azim. or. limb. ☾ quaſi]			
14° 50′	25 40⅔	19 45⅔ 20 12	upper [*ſup.*] 13 5
{ 17° 0′	25 38⅔	19 49½	upper [*ſup.*] 13 0
{ good [*bona*]		20 13	lower [*inf.*] 12 20
18° 45′	25 32⅓	19 51	upper [*ſup.*] 12 40
		20 12⅔	lower [*inf.*] 12 5

[1] Added in another hand: "Because the cord of the clock had broken, azimuths were observed for the time. There is, however, some suspicion whether the azimuths observed here on the Moon are correct throughout." [Adſcriptum eſt alia manu: »Fracto fune Horologij obſeruabantur Azimutha pro tempore. Eſt autem ſuſpicio, an Azimutha in ☾ hic obſeruata vbique ſe rite habeant«.] [2] The degrees are hard to read. Perhaps 9¾ corrected to 10¾. [Gradus difficiles lectu. Fortaße 9¾ in 10¾ corr.] [3] So in the codex. It should be 14° 10′. [Sic in codice. Debet eße 14° 10′.]

At the end of the last observation the sundial showed about $8\frac{1}{2}^{h}$. At this time the Sun was about 20 14 east of the meridian. [In fine vltimæ obſeruationis monſtrabat Horologium ſciotericum quaſi Horas 8½. Hic erat ☉ a meridie orient. quaſi 20 14.]

N.B. A little later the clock was corrected to the Sun, a new cord with a weight having been hung on it. [N.B. Paulo poſt corrigebatur horologium ad ☉, appenſo nouo funiculo cum pondere.]

30 January, morning [DIE 30 JANUARIJ, MANE.]

Greatest distance between Jupiter and the eastern limb of the Moon, which inclines toward the horizon. [Inter ♃ & limbum ☾ orientalem verſus horizontem vergentem maxima diſtantia.]

Hours, minutes [H. M.]	Distance of Jupiter from the eastern limb of the Moon [Diſt. ♃ ab or. limb. ☾]	Altitude of the lower horn [Altit. inf. cornu]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]
6^{h} $42\frac{1}{3}^{m}$	16° 59⅙′		
6^{h} 44^{m}	16° 59⅔′		
6^{h} $45\frac{5}{6}^{m}$	17° 0′	7° 40′	
6^{h} $47\frac{5}{6}^{m}$	17° 2′		23° 40′
Azimuth of Jupiter [Azim. ♃] 3½°		altitude [Altit.] 12° 5′	24° 3′
6^{h} $51\frac{1}{2}^{m}$	17° 3′	7° 56′	23° 42′
			24° 1′

Hours, minutes [H. M.]	Distance of Jupiter from the eastern limb of the Moon [Diſt. ♃ ab or. limb. ☾]	Altitude of the lower horn [Altit. inf. cornu]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]
$6^h\ 56^m$			23° 41½′
			24° 0⅔′
$6^h\ 58^m$		8° 20′	

N.B. Also for the clock, which had been set merely at will to $6^h\ 0^m$ when we began to observe, because it showed the rising Sun in this way: [N.B. Etiam pro horologio, quod ponebatur ſaltem ad libitum H. 6 0′ cum incepißemus obſeruare, quia ſignificabat Solem exorientem hoc modo.]

7 0⅔	The upper limb of the Sun was first seen to rise. [⊙ ſuperior limbus primum oriri viſus.]	
7 2⅔	The middle of the Sun was rising. [Medius ⊙ oriebatur.]	
7 5⅓	The whole Sun had first risen. [Totus ⊙ primum exortus.]	
8 40	The horns of the Moon were passing through the meridian. Altitude [Tranſibant cornua ☾ per meridiem. Altit.]	10° 35′, good [bona] 10° 3′

The Sun toward the east 50 0 exactly. [⊙ verſus ortum 50 0 præciſe.]

Here you have good observations both for the fixed stars and for Venus, Jupiter and the Moon; for it was exceptionally clear and calm, and the air was cleared and purified by the frost, with only a gentle north wind blowing, inclining toward the east. From this you can examine quite precisely, in particular, both the parallaxes and the refraction of the Moon, together with its transit through the meridian, and other things of this kind; for the observation was good as regards the Moon and the other requirements (where the times were *limitata*). For the Moon was near the beginning of ♍, and moreover near the node as well, roughly in the middle position between the last quadrature [□] and the conjunction with the Sun. These observations were therefore exceptionally suited to investigating its appearances and its position. It was exceptionally clear almost until noon; then clouds arose. [Habes hic bonas obſeruationes tam pro ſtellis fixis quam ♀ ♃ atque ☾, erat enim apprime ſerenum atque tranquillum, defecataque & gelu depurata aura, flante leniter ſaltem boreali vento ad ortum inclinato. Potes autem ſingulariter hinc ☾ tum parallaxes tum refractionem vna cum tranſitu per Merid. & alia eiuſmodi ſcrutari ſatis præciſe: erat enim bona obſeruatio quoad ☾ & cœtera requiſita (vbi tempora fuerunt limitata). Nam ☾ erat iuxta principia ♍ & inſuper atque nodum quaſi in medio ſitu inter vltimam □ & coniunctionem cum ⊙. Quare hæc ipſius apparentijs & ſitui indagandis apprime fuerunt accommoda. Erat apprime ſerenum vſque fere ad Meridiem, tunc nubes oboriebantur.]

To work out the parallax of the Moon. [Pro parallaxi ☾ enucleanda.]

At 8^h 40^m, the place of the Sun from the tables [H. 8 40′ Locus ☉ ex tabulis]	20° 0′ ♒
Resp. ascension of the Sun [Reſp. Aſcenſio ☉]	322° 25′ 30″
Therefore the right ascension of the midheaven, or of the Moon [Ergo Aſcenſio R. MC. ſeu ☾]	272° 25′ 30″
Apparent meridian altitude of the centre of the Moon [Altit. merid. viſa centri ☾]	10° 19′
Therefore the declination [Ergo declinatio]	23° 46½′
Resp. apparent longitude of the Moon [Reſp. Longitudo ☾ viſa]	2° 13¼′ ♍
Argument of latitude of the Moon [Argumentum latitudinis ☾]	5 28 41
Latitude of the Moon from our tables [Latitudo ☾ ex noſtris tabulis]	0° 9′ 58″
Resp. true declination [Reſp. Declin. vera]	23° 20′ 32″
Observed declination [Declinatio obſeruata]	23° 46′ 30″
Parallax combined with the refractions [Parallaxis refractionibus particeps]	25 58
Parallax from the Prutenic Tables at such an altitude [Parallaxis ex tabulis Prutenicis in tali altit.]	52 14
Refraction [Refractio]	26 16

9 February [DIE 9 FEBRUARIJ.]

For correcting the clock: [Pro corrigendo horologio:]

5^h 35½^m [H. 5 35½]	The bright foot [Lucidus pes]	18 5
5 44 55	of Orion, east [Orionis orient.]	15 49

The Moon was at its greatest remoteness on both epicycles. [☾ *erat in maxima remotione vtriuſque epicycli.*]

By the old sextant. [*Per Sextantem veterem.*]

6 13⅓	*Distance between the western limb of the Moon and Aldebaran* [*Diſt. occid. limbi* ☾ *& Aldeb.*]	9° 58½′
	Altitude of the lower horn [*Altit. inferioris cornu*]	47° 50′
6 16	*The same distance repeated* [*Diſt. eadem repetita*]	9° 57½′
	Lower altitude [*Altit. infer.*]	47° 45′
	Declination of the lower horn [*Declin. infer. cornu*]	14° 40′+ north [B.]
6 21⅓	*Distance of the western limb of the Moon from Aldebaran* [*Diſt. occid. limbi* ☾ *ab Aldeb.*]	9° 53′
	Declination of the upper horn of the Moon [*Declin. ſuper. cornu* ☾]	15° 25′
	Declination of the lower horn [*Declin. infer. cornu*]	14° 41′ +
6 38¾	*The Moon from Aldebaran, as before* [☾ *ab Aldeb. vt prius*]	9° 49⅓′
		12 56[1]
6 43½	*Western limb of the Moon from Aldebaran* [*Occid. limb.* ☾ *ab Aldeb.*]	9° 48½′
	Altitude of the lower horn [*Altit. infer. cornu*]	46° 25′

6 47⅚	*Distance of the Moon from Aldebaran* [*Diſt. ☾ ab Aldeb.*]	9° 45′
	Altitude of the lower horn [*Altit. infer. cornu*]	46° 10′
6 51⅚	*Distance as before* [*Diſt. vt prius*]	9° 42½′

[1] So in the codex. [Sic in codice.]
For the clock: [*Pro horologio:*]

6 52⅙	*The bright shoulder of Orion, east, was* [*Fuit lucidus humerus Orionis orient.*]	8 24
6 56⅔	*The declination of the upper horn of the Moon was taken* [*Accipiebatur declinatio ſup. cornu ☾*]	15° 34′
	lower [*infer.*]	15° 1′
	(the better observation for the declination) [*(melior obſeruatio pro declin.)*]	
	Altitude of the lower horn [*Altit. infer. cornu*]	45½°

Afterwards the Moon was observed vice versa, from the bright star of ♈, so that the limb of the Moon nearest the star was taken. [*Poſtea obſeruabatur ☾ viceverſa a lucida ♈, ita vt limbus ☾ ſtellæ proximus caperetur.*]

7 3′	*Distance of the Moon from the bright star of ♈, as to the limb nearest it (for which reason 16′ are to be added for the centre)* [*Diſt. ☾ a lucida ♈ quoad limbum ipſi proximum (quare pro centro addantur 16′)*]	26° 26′
	The altitude of the lower limb was then [*Altit. inf. limbi tunc fuit*]	45° 0′
	Declination of the upper horn [*Declin. cornu ſuperioris*]	15° 35′
	of the lower [*inferioris*]	15° 2′
7 8½	*The same distance from the bright star of ♈* [*Eadem diſt. a luc. ♈*]	26° 29′
	Altitude of the lower horn of the Moon [*Altit. infer. cornu ☾*]	44⅔°
7 11⅔	*The same distance* [*Eadem diſt.*]	26° 30½′
	Declination of the upper horn [*Declin. ſuper. cornu*]	15° 36½′
	of the lower [*inferioris*]	15° 2½′
	Altitude of the lower horn [*Altit. inferioris cornu*]	44° 30′
7 14	*Again, to verify the clock, the bright shoulder of Orion was observed toward the east* [*Rurſus pro verificando horologio obſeruabatur Lucidus humerus Orionis verſus ortum*]	2 57

Afterwards the Moon was observed again from Aldebaran [*Poſtea denuo obſeruabatur ☾ ab Aldebora.*]

7 19⅔	*as to the western limb, at the distance* [*quoad limbum occ. in diſt.*]	9° 32′

	The altitude of the lower limb was then [*Fuit tunc. altit. infer. limbi*]	43° 47′
7 22	*Distance* [*Diſtantia*]	9° 30′
	Altitude of the lower limb [*Altit. infer. limbi*]	43° 35′
	Declination of the upper horn [*Declin. ſuper. cornu*]	15° 38′
	of the lower [*inferioris*]	15° 5′
7 27⅙	*Again, the distance of the Moon from Aldebaran* [*Rurſus diſt. ☾ ab Aldeb.*]	9° 27½′
	Altitude [*Altit.*]	43° 10′
7 29	*for the clock, the bright shoulder of Orion, west* [*pro horologio Luc. hum. Orionis occid.*]	0 50
7 31⅓	*The distance repeated, as before* [*Repetita diſt. vt prius*]	9° 26′
	Altitude [*Altit.*]	42° 55′
	Declination of the lower [*Declin. inferioris*]	15° 6′
	of the upper [*ſuperioris*]	15° 40′

Note. In all these observations the parallax of the Moon must be taken into account, because it was beyond the 90th degree, to the west. [*Nota. In omnibus his obſeruationibus habenda eſt ratio parallaxeos ☾, quia erat extra 90 grad. occid.*]

7 39⅔	Altitude of the lower horn [Altit. infer. cornu]	42° 2′
	Between the western limb of the Moon and the bright star of ♈ [Inter occid. limb. ☾ & lucid. ♈]	26° 36½′
7 43¾	From the western limb and the same ♈ [Ab occid. limbo & eadem ♈]	26° 37′
	Altitude of the lower limb [Altit. inferioris limbi]	41° 40′
	Declination of the upper horn [Declin. ſuper. cornu]	15° 43½′
	of the lower [inferioris]	15° 7′
7 55⅓	Between the western limb and the bright star of ♈ [Inter occ. limb. & luc. ♈]	26° 43′
	Altitude of the lower limb [Altit. infer. limbi]	40° 27′
7 59⅚	To correct the clock, the bright shoulder of Orion, west, was observed [Pro corrigendo horologio obſeruabatur lucidus humerus Orionis occid.]	8 35

N.B. At the following noon the clock had run exactly 10^{m} slower than it should. [*N.B. Horologium in meridie ſequente motum erat 10 exacte minutis iuſto tardius.*]

12 February [DIE 12 FEBRUARIJ.]

Time by the clock [Tempus Horol.]		
5^{h} 33½^{m}	For correcting the clock, [Pro horologio corri-]	15 40
5^{h} 35½^{m}	the bright foot [gendo Lucidus pes]	15 7
5^{h} 36⅚^{m}	of Orion, east [Orionis orient.]	14 53
5^{h} 39⅔^{m}	*with both slits, east, the bright foot of Orion* [*vtraque rima, or. luc. pes Orion.*]	14 6½

By calculation, the transit of the foot of Orion through the meridian was at 6^h 33¼^m; from this the times on the clock may be corrected. [Tranſitus pedis Orionis per meridianum iuxta calculum fuit H. 6 M. 33¼, hinc tempora in horologio corrigantur.]

The observation of the Moon follows. [*Sequitur obſeruatio* ☾]

At 6^h 42^m the Moon seemed to have passed Saturn by about a tenth part of its diameter beyond a whole one, that is, by a little more than the whole diameter; so, taking the diameter as 35, Saturn was distant from the western convexity about 38′ at most. And the apparent latitude was exactly the same; for Saturn faced exactly the middle space between the two horns. [*H. 6 42′ Videbatur* ☾ *prætergreſſa* ♄ *quaſi decima parte ſui diametri vltra integram, id eſt paulo plus toto diametro, ponendo itaque diametro 35 diſtabat* ♄ *a gibbo occid. quaſi 38 ad ſummum minutis. Erat autem eadem prorſus latitudo viſa; nam* ♄ *medium ſpatium inter ambo cornua exacte reſpiciebat.*]

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6 49¼	*The distance of Saturn from the convexity of the Moon nearest it, toward the west, was observed: 0° 40′ with the Radius.* [*obſeruabatur diſtantia* ♄ *a gibbo* ☾ *ſibi proximo verſus occaſum p. 0 M. 40 per Radium.*]	
6 52¾	*The same distance with the Radius, 0° 42′.* [*Eadem diſt. per Radium p. 0 M. 42.*]	
6 55½	*The same distance* [*Eadem diſtantia*]	0° 44½′

The Moon, however, should have been visibly in conjunction with Saturn around sunset, so that it would almost touch it with its upper horn. [Oportebat autem ☾ circa occaſum ☉ fuiße viſibiliter coniunctam cum ♄, ita vt ſuperiore cornu ipſum quaſi attingeret.]

The distance of the Moon from Saturn, as to the nearest limb, was then very nearly as great as a quarter of the diameter. [*Erat tunc diſtantia* ☾ *quoad limbum proximum a* ♄^{no} *quanta proxime quarta pars diametri.*]

For at 5^h 20^m the position was like this. [*Nam H. 5 M. 20 fuit talis poſitus.*]

Diagram. A small outline figure set at the right of the opening lines of the left column: a lens-shaped outline, bounded by a strongly convex arc on the right and a flatter arc on the left, its two points at top and bottom (the crescent Moon). Just beyond its upper point, to the right, stand two printed signs side by side.

- upper right, beside the upper point of the outline: "*" (a star sign)
- upper right, immediately after the star sign: "♄" (Saturn)

The apparent distance from the nearest convexity was then about three digits, barely a quarter part of the Moon's diameter, 9′ or 10′ at most. [*Diſtantia viſa a gibbo proximo erat tunc quaſi digitorum trium, vix quarta parte diametri* ☾*, 9 vel 10 ad ſummum min.*]

On this day, according to the calculation, the Moon passed through the 90th degree from the ascendant of the ecliptic at 8^h 26^m. [Hoc die pertranſiuit ☾ 90 grad. ab aſcendente Eclipticæ iuxta ſupputationem H. 8 M. 26.]

The following observations are very good for the Moon. Afterwards we observed the Moon moving toward the 90th of the ecliptic and standing a little beyond the beginning of ♋, near ☊. [*Sequentes obſeruationes ſunt admodum bonæ pro ☾. Poſtea obſeruauimus ☾ ad 90 Eclipticæ tendentem & paulo vltra principium ♋ verſantem iuxta ☊.*]

First, for the clock. [*Primum pro horologio.*]

7 8¼	*The bright foot of Orion, west* [*Lucid. pes Orionis occid.*]	8 13
7 10⅚	*The same bright foot, west* [*Idem luc. pes occid.*]	8 52
7 8⅙	with the clock corrected [correcto horologio]	
7 13	*The same bright foot, west* [*Idem lucid. pes occid.*]	9 22
	in 2^m it seems to move no faster than it should [*videtur 2 minutis iuſto nec celerius moueri*]	
7 18	*There was taken by the largest armillae the declination of the upper horn* [*Accipiebatur per Armill. max. declin. cornu ſup.*]	23° 15′
	lower [*inf.*]	22° 43′
	Diameter	32′
	Declination of the centre [*Declinatio centri*]	22° 59′
7 28⅙	*Repeated declination of the Moon, upper horn* [*Repetita declin. ☾ cornu ſuper.*]	23° 17′
	of the lower [*inferioris*]	22° 41′
	Diameter	36′
	Declination of the centre [*Centri declinatio*]	22° 59′
7 33¾	*Repeated declination* [*Repetita declinatio*]	23° 18′
		22° 42′
	Diameter	36′
	Declination of the centre [*Declin. centri*]	23° 0′

Afterwards the distance of the Moon from Aldebaran was observed by the old sextant, which searches out the intervals exquisitely. [*Poſtea obſeruabatur diſtantia ☾ ab Aldebora per Sextantem veterem, exquiſite intercapedines rimantem.*]

For the clock, the bright foot of Orion, west [Pro horol. Luc. pes Orion. occ.]	Hours, minutes [*H. M.*]		
17 10	*7^h 43⅚^m*	*Western limb of the Moon from Aldebaran* [*Occ. limb. ☾ ab Aldeb.*]	33° 36′
17 56	*7^h 47^m*	*The same distance* [*Eadem diſt.*]	33° 38½′

For the clock, the bright foot of Orion, west [Pro horol. Luc. pes Orion. occ.]	Hours, minutes [*H. M.*]		
18 45	$7^h\ 50\frac{5}{6}^m$	*The same, repeated a third time* [*Eadem tertio repetita*]	33° 40⅔′
19 40	$7^h\ 53\frac{2}{3}^m$	*The same, repeated a fourth time* [*Eadem quarto repetita*]	
	$7^h\ 51\frac{2}{3}^m$	corrected [correct.]	33° 42⅚′
	$7^h\ 59^m$	*Upper declination* [*Decl. ſuperior.*]	23° 20′
		of the lower [*inferioris*]	22° 45′

Afterwards the Moon was observed vice versa from cor ♌, in this way:[1] [*Poſtea obſeruabatur ☾ viceverſa a corde ♌ hoc modo*[1].]

The Greater Dog, east [Can. mai. orient.]	Hours, minutes [*H. M.*]		
	$7^h\ 58^m$	*The western limb of the Moon was distant from Regulus* [*Diſtabat occ. limb. ☾ a Regulo*]	46° 47⅓′
1 35	$8^h\ 0\frac{5}{6}^m$	*The same distance, better* [*Ead. diſt. melior*]	46° 47⅓′
1 12	$8^h\ 2\frac{1}{4}^m$	*The same, repeated* [*Ead. repetita*]	46° 45⅔′
0 40	$8^h\ 5^m$	*The same, repeated* [*Ead. repetita*]	46° 43⅓′
	$8^h\ 7\frac{1}{3}^m$	*The declination was taken* [*Accipiebaturdeclinatio*]	
		of the Moon as to each [☾ *quoad vtrum-*]	23° 21′
		limb [*que limbum*]	22° 44′
		Declination of the centre [*Declin. centri*]	23° 2½′
		from the mean of the observations just above [ex medio ſuperiorum proxime obſeruationum.]	

The Greater Dog, west [Can. mai. occ.]	Hours, minutes [*H. M.*]		
1 27½	$8^h\ 12\frac{5}{6}^m$	*The western limb of the Moon passed through the meridian* [*Tranſiuit limb. ☾ occid. per merid.*]	
1 48	$8^h\ 14\frac{1}{4}^m$	*About the middle of the Moon passed through the meridian; and the upper horn then had the altitude* [*Tranſiuit quaſi medium ☾ per merid. habuit autem tunc cornu ſuperius altit.*]	
		by the revolving quadrant [*per Volub.*]	57° 23¼′
		by the steel instrument [*per Chalyb.*]	57° 22½′
		Altitude of the lower horn, by the revolving quadrant [*Cornu infer. alt. per Volub.*]	56° 48½′
		by the steel instrument [*per Chalyb.*]	56° 49⅓′
		Altitude of the upper limb [*Altit. ſuperioris limbi*]	57° 23′ 15″
		of the lower limb [*inferioris limbi*]	56° 48′ 15″
		The Moon near 90. [☾ *prope 90.*]	

The Greater Dog [Can. mai.]	Hours, minutes [*H. M.*]		
4 37	*8h 25½m*	*The Moon, as before, from Aldebaran* [☾ *vt prius ab Ald.*]	33° 54½′
	8h 23½m	corrected [correctum]	
5 17	*8h 28m*	*The western limb of the Moon from Aldebaran* [☾ *occ. limb. ab Ald.*]	33° 56¼′
	8h 26m	corrected [correctum]	
6 0	*8h 30⅚m*	*The Moon a third time from Aldebaran* [☾ *tertio ab Ald.*]	33° 58½′
	8h 33⅚m	*The Moon a fourth time, as before* [☾ *quarto vt prius*]	34° 0′

[1] It is written in the margin: "These appearances of the Moon have been computed." [Adſcriptum eſt in margine: »Hæ ☾ apparentiæ ſunt ſupputatæ«.]

Soon the Moon was again observed vice versa, from Regulus. [*Mox* ☾ *rurſus obſeruabatur viceverſa a Regulo.*]

The Greater Dog, west [Can. mai. occ.]	Hours, minutes [*H. M.*]		
7 40	*8h 37⅓m*	*Distance of the western limb* [*Diſt. occ. limbi*]	46° 29′
8 15	*8h 39⅔m*	*from Regulus* [*a Regulo*]	46° 27¾′
9 20	*8h 44m*	*The same, repeated* [*Eadem repet.*]	46° 26′
9 50	*8h 46m*		46 25
10 19	*8h 48m*		46 24⅙
	8h 50m [*H. 8 50′*]	*Declination of the upper* [*Declin. ſuperioris*]	23° 21′
		of the lower [*inferioris*]	22° 44½′
	8h 54m	*Repeated declination* [*Repetita declin.*]	23° 21′
		as before [*vt prius*]	23° 44½′

N.B. All the preceding observations are very good and exact for searching out the appearances of the Moon. For it was near the summer solstice, close to the 7th degree of ♋, and also near ☊, so that it had no great latitude. From this it will be possible to examine its parallax and to compare it with another time, when it was also in ♋, around its greatest latitude, in order to determine the greatest latitude. You can therefore compare it with the one you took this same month, when the Moon was near the beginning of ♍, for working out the refraction and the parallax. The Moon was also not far from the greatest remoteness of its simple motion from the Sun, being around the outermost limits of both epicycles; this observation is therefore useful in establishing its motion. Let the times be corrected according to the transits of the fixed stars with respect to the meridian, although they will not be able to differ much from the truth. [*N. B. Omnes obſeruationes antecedentes ſunt pro lunæ apparentijs rimandis admodum bonæ atque exactæ. Erat enim illa circa ſolſtitium æſtiuum prope 7 gradum ♋ & etiam apud ☊, ita vt non magnam habuerit latitudinem. Hinc ipſius parallaxin ſcrutari licebit, & conferre cum alio tempore, vbi circa maximam latitudinem etiam in ♋ verſabatur propter latitudinem maximam eruendam. Igitur conferre potes cum*

ea, quam accepiſti hoc eodem menſe, cum ☾ eßet iuxta initia ♍ pro refractione & parallaxi enucleanda. Fuit quoque ☾ non longe a maxima remotione ſimplicis ſui motus a Sole, vtpote circa limites vtriusque epicycli extremos, quare in conſtituendo motu eius conducit hæc obſeruatio. Emendentur tempora iuxta tranſitus fixarum reſpectu meridiej, quæ tamen non multum differre a vero poterint.]

For the clock, by the Sun, on the following day. [*Pro horologio ad ☉ altero die.*]

$9^h\ 3^m$ *a.m.* [*H. 9 3′ A. M.*]	*The Sun before the meridian* [*☉ ante merid.*]	47 3
	so it was $8^h\ 52\frac{1}{6}^m$ [*fuit igitur H. 8 M. 52⅙*]	
9 6	*The Sun from the meridian* [*☉ a meridiano*]	46 22

Therefore, from the preceding noon, when it was corrected to the Sun, until 9 o'clock in the morning of this 13th day, the clock ran 11^m *faster than it should.* [*Ergo horologium a meridie antecedente, quando ad Solem corrigebatur, vsque in horam 9 antemeridianam huius 13 diej mouebatur 11 minutis iuſto celerius.*]

The procedure [Greek: ἔφοδος (ephodos, "approach, method")] of the Moon from the observations. [ἔφοδος ☾^{ae} ex obſeruationibus.]

At $8^h\ 26^m$, distance of the centre of the Moon from Aldebaran [H. 8 M. 26 Diſtantia centri ☾ ab Aldebora]	34° 12¼′
Declination of the centre of the Moon [Declin. centri ☾]	23° 0½′
Declination of Aldebaran [Declin. Aldeboræ]	15° 37½′
Right ascension of Aldebaran [Aſc. R. Aldeboræ]	63° 9′ 50″
Right ascension of the Moon [Aſc. R. ☾]	98° 39′ 10″
Resp. longitude [Reſp. Longitudo]	7° 57′ 36″ ♋
Latitude [Latitudo]	0° 16′ 38″ south [M.]
From the Prutenic Tables, corrected [Ex tabulis Pruten. corr.]	8° 44½′ ♋

The place of the Moon from the observations of 12 February, computed most carefully.[1] [Locus ☾ ex obſeruationibus D. 12 Feb. diligentißime ſupputatus[1].]

At $8^h\ 12^m$ the Moon passed through the meridian. Its altitude, carefully observed with two instruments [H. 8 M. 12 tranſijt ☾ per Mer. Altitudo eius diligenter per bina inſtrumenta obſeruata]	57° 5′ 50″
Therefore the declination [Ergo declinatio]	23° 0′ 20″

At the same time, the distance of its centre [Eodem tempore diſt. centri eius]

	from Aldebaran [ab Aldebora]	cor ♌ [Corde ♌]
	34° 6½′	46° 24′
Declination [Declin.]	15° 37′ 10″	13° 56′
Right ascension [Aſc. R.]	63° 8′ 50″	146° 37′ 45″
Angular difference of ascension [Ang. diff. aſc.]	35° 22′ 50″	48° 5′ 30″
Therefore the limited right ascension [Ergo Aſc. R. limitata]		98° 31⅗′
Resp. longitude [Reſp. Longitudo]		7° 50⅔′ ♋
Latitude [Latitudo]		0° 17¼′ south [Mer.]

18 February [DIE 18 FEBRUARIJ.]

In the morning the Moon was observed around the 90th degree. [Mane obſeruabatur ☾ circa 90 grad.]

Hours, minutes [H. M.]	Distance between the western limb and cor ♌ [Diſt. inter occ. limb. & cor ♌]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the upper limb [Altit. ſup. limbi]
2^h $51½^m$	23° 48½′	8° 55′ 8° 17′	36° 36′
2^h $59½^m$	23° 52½′	8° 47′	35° 56′
3^h 4^m corrected [corr.²]		8° 15′	
3^h $7⅓^m$	23° 56′		35° 11′

Vice versa, from Spica ♍. [Viceverſa a Spica ♍]

Hours, minutes [H. M.]	Between the western limb of the Moon and Spica [Inter occid. limb. ☾ & Spicam]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the upper limb [Altit. ſup. limbi]	Spica, west [Spica occ.]
3^h $12⅓^m$	30° 55′	8° 46½′	34° 42′	
3^h 17^m corrected [corr.]	good [bona]	8° 10′		
3^h $20⅓^m$	30° 51½′			13 46
3^h $25⅙^m$ corrected [corr.]				
3^h $29⅔^m$	30° 46′	8° 43′	32° 49′	16 10
3^h $34¾^m$ corrected [corr.]		8° 5′		

This morning it was very clear, and the air entirely calm. [Erat hoc mane bene ſerenum & aër omnino tranquillus.]

[1] From codex V. [E codice V.] [2] The corrected times from codex V. [Tempora correcta e codice V.]

N.B. Around this time the Moon was nearly full, but had passed opposition [☍] by one day; hence the fact that we observed it by the western limb can be corrected. [N. B. ☾ circa hoc tempus fere plena fuit, ſed die vno ☍ prætergreßa, vnde corrigi poteſt, quod ab occidentali limbo eandem obſeruauimus.]

For an exact correction of the clock: Spica ♍ was west at 18° 4′, the clock showing 3^h $39\frac{1}{3}^m$. From this let the other times be rectified more precisely. [Pro exacta correctione horologij Spica ♍ erat occid. 18 g. 4′, indicante horologio horam 3 M. 39⅓. Hinc cætera tempora præciſius rectificentur.]

21 February [*DIE 21 FEBRUARIJ.*]

The eastern limb of the Moon was observed from Jupiter in this way. [*Obſeruabatur ☾ limbus orient. a ♃ in hunc modum.*]

Now the Moon was not far from the 90th degree of the ecliptic, since, as far as sight goes, it stretched its blunt horns upward. [*Erat autem ☾ non longe a 90 eclipticæ gradu, quoniam ſurſum porrigebat obtuſa ſua cornua quoad viſum.*]

Hours, minutes [*H. M.*]	Distance between Jupiter and the eastern limb of the Moon nearest it [*Diſt. inter ♃ & limb. or. ☾ illi prox.*]	Declination of the Moon [*Declin. ☾*]	
5^h 39^m	50° 30⅓′		
5^h 41^m	50° 32′	6° 32½′	
		7° 3′	
5^h $43\frac{3}{4}^m$	50° 29½′	6° 33′	
		7° 3½′	
5^h 46^m	50° 29′		
5^h $47\frac{1}{2}^m$	*Jupiter was passing through the meridian, having the altitude* [*Ibat ♃ per meridianum habens altitudinem*]		
	by the revolving quadrant [*per Volub.*]		11° 55′
	by the steel instrument [*per Chalyb.*]		11° 54⅓′

From this verify the times. [*Hinc verifica tempora.*]

Hours, minutes [*H. M.*]	Distance between Jupiter and the eastern limb of the Moon nearest it [*Diſt. inter ♃ & limb. or. ☾ illi prox.*]	Declination of the Moon [*Declin. ☾*]	Altitude of the Moon, lower [*Altit. ☾ inf.*]
5^h $48\frac{1}{4}^m$	50° 27½′		
5^h $50\frac{1}{3}^m$	50° 27′	6° 34½′	14° 24′
		7° 3⅔′	
5^h 52^m	50° 26½′	6° 35′	14° 15′
		7° 3½′	
5^h $53\frac{1}{2}^m$	50° 24⅔′	6° 35¼′	14° 2′
		7° 4′	

Perhaps the Moon had passed somewhat beyond the 90th degree, especially in the last observations; and the Moon had almost the same altitude as Jupiter, except that it

had been a little higher; but this brought no refraction into the distances. [*Forte ☾ erat aliquid prætergreſſa 90 gradum, præſertim in vltimis obſeruationibus, & habuit ☾ cum ♃ quaſi ſimilem altitudinem, niſi quod fuerat paulo altior, ſed hoc nihil importabat refractionis in diſtantijs.*]

22 February [DIE 22 FEBRUARIJ.]

In the morning the Moon was observed from Spica ♍. [Mane obſeruabatur ☾ a Spica ♍.]

The Moon at apogee. At $5^h\ 4^m$ [H. 5 4′] the altitude of Spica 11° 20′. [☾ in apogeo. H. 5 4′ Altit. Spicæ 11 20]

Hours, minutes [H. M.]	Distance of the eastern limb of the Moon [Diſt. or. limbi ☾]	Declination of the Moon [Decl. ☾]	Altitude of the upper horn of the Moon [Altit. ☾ ſup. cor.]	The bright star of the Vulture, east [Luc. Vult. orient.]
$5^h\ 4^m$	21° 24½′			42 57
$5^h\ 41\frac{2}{3}^m$ corrected [corr.]				
$5^h\ 9\frac{1}{6}^m$	21° 27′	11° 4′	17° 25′	41 28
$5^h\ 47\frac{1}{2}^m$ corrected [corr.]		11° 34′		
$5^h\ 23\frac{2}{3}^m$		11° 7′		37 44[1]
$6^h\ 2\frac{1}{2}^m$ corrected [corr.]		11° 39⅔′		

Vice versa, from Jupiter. [Viceverſa a ♃.]

Hours, minutes [H. M.]	Distance between Jupiter and the eastern limb of the Moon [Diſt. ♃ & or. limbi ☾]	Declination of the Moon [Decl. ☾]	Altitude of the lower horn of the Moon [Alt. inf. cornu ☾]	
$5^h\ 27\frac{2}{3}^m$	38° 36½′			
$6^h\ 7^m$ corrected [corr.]				
$5^h\ 33^m$	38° 32½′	11° 34′	14° 44′	the Moon was approaching the 90th degree [☾ appropinquabat 90 grad.]
$6^h\ 12\frac{1}{2}^m$ corrected [corr.]		11° 8′		
$5^h\ 34\frac{2}{3}^m$ $6^h\ 14^m$	38° 33′			
$5^h\ 37^m$	38° 29⅔′	11° 36′	14° 20′	

Hours, minutes [H. M.]	Distance between Jupiter and the eastern limb of the Moon [Dift. ♃ & or. limbi ☾]	Declination of the Moon [Decl. ☾]	Altitude of the lower horn of the Moon [Alt. inf. cornu ☾]
6^h 17^m cor-rected [corr.]		11° 7′	

Again, the Moon from Jupiter. [*Rurſus ☾ a ♃*]

The Moon was now approaching more and more the 90th degree from the rising, and it should be there at about 6^h 25^m. [*☾ iam magis atque magis appropinquabat 90 gr. ab ortu, debet autem illic eße H. 6 M. 25 circiter.*]

Hours, minutes [H. M.]	Distance between Jupiter and the eastern limb of the Moon [Dift. ♃ & or. limbi ☾]	Declination of the Moon [Decl. ☾]	Altitude of the lower horn of the Moon [Alt. inf. cornu ☾]
5^h 39^m	*38° 29′*	*11° 36½′*	*14° 7½′ lower* [*inf.*]
6^h $19⅓^m$ corrected [corr.]		*11° 8′*	
5^h 42^m	*38° 28′*	*11° 37′*	*14° 20′ upper* [*ſup.*]
6^h $22⅖^m$ corrected [corr.]		*11° 9′*	*13° 50′ lower* [*inf.*]

*The last observation was not exact enough, because Jupiter could not be seen well enough on account of the dawn and of the Sun, which was already about to rise.** [*Vltima obſeruatio non erat ſatis exacta, eo quod Iupiter propter auroram Solemque iam ortui inſtantem² ſatis videri nequierit.*]

Afterwards we turned to observing the Moon near 90 from Venus, in this way. [*Poſtea attendebamus ad obſeruationem ☾ prope 90 a ♀ hoc modo.*]

6^h $5⅙^m$ [*H. 6 5⅙*]	*Declination of Venus by the* [*Declin. ♀ per*]	*18° 26′*
6 47⅖ corrected [corr.]	*zodiacal armillae* [*Armill. Zodiac.*]	*18° 27′*

Taking the place of Venus as 26° 20′ ♍, from yesterday's distance from our place of the Sun, which does not alter since it is near the extreme limits, we found by the smaller zodiacal armillae the eastern place of the Moon, as follows. [*Poſito loco ♀ in 26 20 ♍ ex diſtantia heſterna a loco ☉ noſtro, quæ non alteratur, cum ſit iuxta extremos terminos, inuenimus per Armillas minores zodiacales ☾ orientalem locum vt ſequitur.*]

	Place of the eastern limb of the Moon, derived from Venus [*Locus or. limb.* ☾ *a* ♀ *deductus*]	Declination of the Moon [*Decl.* ☾]	Altitude of the Moon [*Altit.* ☾]
6 16⅚	*9° 22′* ♏	*11° 41′*	*10° 10′ upper* [*ſup.*]
7 0¾ corrected [corr.]	*doubtful* [*dubia*]	*11° 9½′*	*9° 40′ lower* [*inf.*]
6 18½	*9° 30′*		
7 2½ corrected [corr.]			
6 20⅓	*9° 33′*	*11° 41′*	*10° 0′ upper* [*ſup.*]
7 5 corrected [corr.]		*11° 10′*	*9° 29½′ lower* [*inf.*]

Venus did not appear well. [♀ *non bene apparebat.*]

[1] It is written in the margin: "Transit of the Vulture through the meridian at 20^{h} $33½^{m}$." [Adſcriptum eſt in margine: »Tranſitus Vult. per Merid. H. 20 M. 33½«.] [2] Compare the observation above, p. 185. [Cf. obſervationem ſupra p. 185.]

Afterwards we took the Moon from the Sun in this way, with the place of the Sun fixed, above, at 13° 0′ ♓, which agrees very closely with our tables. [*Poſtea* ☾ *a* ☉ *accepimus hoc pacto poſito loco* ☉ *fixo ſup. 13 0* ♓*, qui cum noſtris tabulis proxime quadrat.*]

	Eastern limb of the Moon [*Or. limb.* ☾]	Declination of the Moon [*Decl.* ☾]	Altitude of the Moon, upper/lower [*Altit.* ☾ *ſup./inf.*]	Altitude of the Sun [*Alt.* ☉]
6 33	*9° 31′* ♏		*8° 32′*	*5° 0′*
7 18½ corrected [corr.]			*8° 0′*	
6 35½	*9° 32′* ♏		*8° 10′*	*5° 20′*
7 21			*7° 40′*	
6 38⅔	*9° 33½′* ♏	*11° 13′*	*7° 45′*	*6° 30′*
7 23⅓		*11° 43′*	*7° 15′*	

Afterwards, for the clock, we observed the Sun on the equator. [*Poſtea pro horologio obſeruauimus* ☉ *in æquatore.*]

7 6⅓	7 55⅓ corrected [corr.]	the Sun, east [☉ orientalis]	61 10
7 10	7 59½		60 8
7 11	8 0⅓		59 55

At 5^{h} 24^{m} the clock had moved slower than it should since the preceding noon, by 39^{m}. In proportion with these last observations of the Sun, where at 7^{h}

10^{m} the clock departs from the true time by 49½, these ought to be about 45^{m}. This disagreement is therefore to be ascribed partly to the refractions of the Sun, which was raised not much beyond 7°, and partly to some irregular alteration of the clock, from Vulcan kindled in the furnace yesterday evening toward twilight, toward a slackening of the clock's motion. [H. 5 M. 24 motum eſt iuſto tardius horologium a meridie antecedente 39 M., quæ iuxta proportionem cum his vltimis obſeruationibus ☉, vbi H. 7 M. 10 aberrat horologium a vero tempore 49½, deberent eße M. 45 fere. Quare hæc disconvenientia partim refractionibus ☉, qui vltra 7° fere non erat eleuatus, partim inordinatæ cuidam alterationi horologij, e Vulcano heſterna veſpera ſub crepuſculum in fornace incenſo ad motum remißionis horologij aſcribenda venit.]

The preceding times are therefore corrected in this way: 1^{h} 46^{m} give 10^{m}; how many, etc. [Corriguntur itaque præcedentia tempora hoc modo. H. 1 M. 46 dant 10 M., quot &c.]

Computation of the place of the Moon from the observations of the morning of 22 February, from Spica ♍ and Jupiter.[1] [Supputatio loci ☾ ex obſeruationibus ad diem 22 Februarij mane a Spica ♍ & ♃[1].]

The Moon in the 90th degree. [☾ in 90 gradu.]

At 5^{h} 46^{m}, distance of the centre of the Moon from Spica [H. 5 M. 46 Diſtantia centri ☾ a Spica]	21° 15′
taking account of the refraction of Spica [habita ratione refract. Spicæ]	
Declination of the centre of the Moon, south [Declin. centri ☾ Mer.]	11° 18′
Declination of Spica, south [Declin. Spicæ Mer.]	8° 58½′
Angular difference of ascension [Ang. diff. aſc.]	21° 28½′
Right ascension of Spica [Aſc. R. Spicæ]	195° 57½′
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	217° 26′
Resp. longitude [Reſp. Longitudo]	8° 45½′ ♏
Longitude in the prop. circle [Longit. in prop. circulo]	8° 40′
At 6^{h} 19^{m}, distance of the centre of the Moon from Jupiter [H. 6 M. 19 Diſt. centri ☾ a ♃]	38° 44′
Declination of Jupiter, south [Declin. ♃ Mer.]	22° 11′

Declination of the Moon [Declin. ☾]	11° 23′
Angular difference of ascension [Ang. diff. aſc.]	38° 59½′
Right ascension of Jupiter, observed and reduced from the preceding day; for the observations for the same day are doubtful or erroneous [Aſc. R. ♃ obſeruata & reducta ex præcedente die. Nam dubiæ vel erroneæ ſunt obſeruationes ad eundem diem]	256° 36′ 10″
Hence the right ascension of the Moon [Hinc Aſc. R. ☾]	217° 36′ 40″
Resp. longitude [Reſp. Longitudo]	8° 56′ ♏
Latitude [Latitudo]	3° 19′ north [B.]
True latitude [Latitudo vera]	4° 14½′
Resp. arc of inclination, subt. [Reſp. arcus inclin. ſubt.]	5⅚

Therefore the true longitude of the Moon [Ergo vera longitudo ☾]	8° 50⅙′ ♏

Repetition of the preceding calculation of the Moon. [Repetitio antecedentis calculi ☾.]

At 17^h 44^m, when the Moon was exactly in the 90th degree [H.17 M.44 cum ☾ eßet exacte in 90 gradu]

Distance of the eastern limb from Spica [Diſtantia or. limbi a Spica]	21° 26½′
Observed semidiameter of the Moon [Semid. ☾ obſeruata]	13
Altitude of Spica 11°; add [Spicæ altit. 11° adde]	2
Corrected distance [Diſtantia emendata]	21° 15½′
Declination of the centre of the Moon, south [Declinatio centri ☾ Mer.]	11° 18′ 30″
Declination of Spica [Declinatio Spicæ]	8° 58½′
Resp. Ang. right ascension [Reſp. Ang. Aſc. R.]	21° 28′ 15″
Right ascension of Spica [Aſc. R. Spicæ]	195° 57′ 25″
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	217° 25′ 40″
Resp. longitude of the Moon [Reſp. Long. ☾]	8° 44¼′ ♏

14 April, morning [DIE 14 APRILIS, MANE.]

The Moon was observed around the 90th degree from the ascendant, which it reached at about 12^h 56^m. The clock was corrected by Spica ♍, whose transit through the meridian was at 10^h $57⅓^m$. [Obſeruabatur ☾ circa 90 gradum ab aſcendente, quo peruenit H. 12 M. 56 fere. Corrigebatur horologium a Spica ♍, cuius tranſitus per merid. fuit H. 10 M. 57⅓.]

Hours, minutes [H. M.]	Between the western limb of the Moon and cor ♌ [Inter occ. limb. ☾ & cor ♌]	Northern declination [Decl. Bor.]	Altitude of the lower horn [Altit. inf. cornu]
12^h 35^m	40° 28¾′	2° 17′ upper [ſup.] 1° 48′ lower [inf.]	29° 14′
12^h $42⅚^m$	40° 31⅓′		28° 6⅙′
12^h 47^m	40° 31⅔′	2° 13½′ 1° 45′	
12^h $52⅓^m$	40° 33¾′		27° 30⅔′

Vice versa, from the northern ♎. [Viceverſa a boreali ♎]

Hours, minutes [H. M.]	Western limb of the Moon from the northern ♎ [Occ. limb. ☾ a bor. ♎]	Northern declination [Decl. Bor.]	Altitude of the lower horn [Altit. inf. cornu]	Spica, west [Spica occ.]
12^h $59⅔^m$	39° 0¼′		26° 45½′	
1^h $6⅓^m$	39° 0′	2° 9½′		

Hours, minutes [H. M.]	Western limb of the Moon from the northern ♎ [Occ. limb. ☾ a bor. ♎]	Northern declination [Decl. Bor.]	Altitude of the lower horn [Altit. inf. cornu]	Spica, west [Spica occ.]
		1° 40⅚′		
1h 10¾m	38° 59′ +			
1h 15m	38° 55′ +		25° 11′	34 21
1h 17½m	38° 53⅔′	The clock needs no correction. [Horol. non eget correctione.]		

[1] From codex V. [E codice V.]

7 May [DIE 7 MAIJ.]

The Moon was observed in the evening, around quadrature, at its greatest digression from the centre of the first epicycle, and it had been carried more than 1½ hours past the 90th degree when it was first observed. [Obſeruabatur ☾ veſperi circa quadraturam in maxima digreßione a centro primi epicycli, eratque plus quam H. 1½ transvecta 90 gradum cum primum obſeruaretur.]

The clock was corrected at 9 hours complete by Spica ♍, which passed the meridian at 9h 25m. [Horologium corrigebatur H. 9 completa a Spica ♍, quæ merid. tranſiuit H. 9 M. 25.]

Hours, minutes [H. M.]	Distance between the western limb of the Moon and the lower head of ♊ [Diſt. inter occ. limb. ☾ & inf. cap. ♊]	Northern declination of the Moon [Declin. B. ☾]	Altitude of the lower horn [Alt. inf. cornu]
9h 20½m	34° 1½′	17° 51½′	36° 21⅙′
		17° 21′	
9h 28m	34° 5⅓′		35° 3½′

Vice versa, from the penultimate star in the southern wing of ♍, namely the one that is in a straight line with the tail of ♌ and Spica. [Viceverſa a penult. in auſtr. ala ♍, ſcilicet quæ eſt in recta linea cum cauda ♌ & Spica.]

Hours, minutes [H. M.]	Distance between the western limb of the Moon and the lower head of ♊ [Diſt. inter occ. limb. ☾ & inf. cap. ♊]	Northern declination of the Moon [Declin. B. ☾]	Altitude of the lower horn [Alt. inf. cornu]	
9h 40m	42° 40′	17° 47′	33° 45′	
		17° 16½′		
9h 48⅙m	42° 38′			Spica, west [Spica occ.]
9h 54½m	42° 33½′		31° 45′	
9h 58m	For correcting the clock [Pro horologio corrigendo]			8 29

Hours, minutes [H. M.]	Distance between the western limb of the Moon and the lower head of ♊ [Diſt. inter occ. limb. ☾ & inf. cap. ♊]	Northern declination of the Moon [Declin. B. ☾]	Altitude of the lower horn [Alt. inf. cornu]
10^h $1\frac{5}{6}^m$			9 30

Computation of the Moon from the immediately preceding observations, for 7 May. [Supputatio ☾ ex proxime præcedentibus obſeruationibus ad diem 7 Maij.]

At 9^h 20^m, distance between the lower head of ♊ and the western limb of the Moon [H. 9 M. 20 Diſt. inter infer. cap. ♊ & occ. limb. ☾]	34° 1½′
Semidiameter of the Moon, add [Semidiameter ☾ add.]	15½
Distance of the centre of the Moon from the lower head of ♊ [Diſt. centri ☾ ab inf. cap. ♊]	34° 17′
Northern declination of the centre of the Moon [Declin. B. centri ☾]	17° 36′
At 9^h 40^m, distance of the centre of the Moon from the third star of the southern wing of ♍ [H. 9 M. 40 Diſt. centri ☾ a tertia auſtralis alæ ♍]	42° 25′
Declination of the centre [Declin. centri]	17° 32′
Right ascension of the lower head of ♊ [Aſc. Recta infer. cap. ♊]	110° 2⅔′
Its declination, north [Declin. eius B.]	28° 56′
Right ascension of the 3rd star of the wing of ♍ [Aſc. Recta 3 alæ ♍]	185° 14⅙′
Its declination, north [Declin. eius B.]	0° 49′
Therefore, with the earlier hour assumed [Ergo hora priori ſuppoſita]	9^h 20^m [9 M. 20]
Right ascension of the centre of the Moon [Aſc. Recta centri ☾]	145° 26¾′
Northern declination of the centre of the Moon [Declin. Borea centri ☾]	17° 36′
Altitude of the centre of the Moon 36° 36′, which was subject either to no refraction or to the least [Alt. centri ☾ 36 36, qui aut nulli aut quam min. refractioni obnoxia fuit.]	
Resp. longitude [Reſp. Longitudo]	21° $52\frac{1}{12}$′ ♌
Latitude [Latitudo]	3° 31′ 26″ north [B.]
From the Prutenic Tables, the true place of the Moon [Ex Tabulis Prutenicis verus locus ☾]	22° 10′ 36″ ♌
Absolute parallax [Parallaxis abſoluta]	48 4

17 May [DIE 17 MAIJ.]

At 0^h $50\frac{5}{6}^m$, between the western limb of the Moon and Jupiter [H.0 50⅚ Inter occid. limb. ☾ & ♃]	about 2° 0′ [2° 0′ fere]

The centre of the Moon, moreover, was at the same altitude as Jupiter, but a little lower. [Erat autem centrum ☾ in eadem altit. cum ♃, ſed paululum depreßius.]

14 June, evening [DIE 14 JUNIJ, VESPERI.]

Before the observation of the eclipse of the Moon, we observed the setting of the Sun, for correcting the clock, in this way. (N.B. By the tables the Sun

sets at 8^h 40^m.) [Ante obſeruationem Eclipſeos ☾ obſeruabamus pro horologio corrigendo occaſum ☉ in hunc modum. (N.B. ☉ iuxta tabulas occidit H. 8 M. 40).]

8^h $43⅔^{mm}$] 8 $43⅔'$]	The lower limb of the Sun was grazing the horizon. [Inferior ☉ limbus horizontem perſtringebat.]
8 46	The Sun had sunk to the half of its body. At this time the Moon was seen among denser clouds, having risen from the visible horizon in opposition to the Sun, and because of the clouds it could not be perfectly made out whether it had been darkened in some part of itself.[1] [Ad medietatem corporis ſui ☉ ſubmerſus fuit. Ad hoc tempus viſa eſt ☾ inter denſiores nubes ab horizonte viſibili in ☍ ☉ exorta, nec perfecte diſcerni potuit propter nubes, an aliqua ſui parte fuißet obfuſcata[1].]
8 49	The Sun sank wholly below the horizon. [☉ totus ſub horizontem ſuccubuit.]

9^h 30^m (I) [*H.9 30* [I]]	*The Moon appeared thus. Western azimuth* [*Luna talis apparuit. Azimuth occid.*]	
9 28 corrected [corr.]	*of the limb, from the meridian toward the rising* [*limbi a merid. verſus ortum*]	*32° 34′*
	Altitude [*Altitudo*]	*3⅙*
9 38 (II) [*9 38* [II]]	*Altitude of the lower limb* [*Altit. inferioris limbi*]	*3° 36′*
9 36 corrected [corr.]	*Western azimuth of the limb* [*Azim. occid. limbi*]	*31° 54′*
	The Moon had entered almost half into the shadow of the Earth. [*Luna quaſi dimidia vmbram terræ intrarat.*]	

Diagram. A drawing of the Moon, set at the right of the "H.9 30" lines: a circle whose left part, bounded by a heavy curved line, is hatched with parallel strokes; a dot stands near the centre, in the unhatched part.

• Right of the circle: "[I]"

Diagram. A drawing of the Moon, set at the right of the "9 38" lines: a circle whose left part, larger than in figure (I) and bounded by a heavy curved line, is cross-hatched; a dot stands just right of the boundary.

• Right of the circle: "[II]"

[1] The copy of this observation of the eclipse, later inserted into codex E, begins as follows: "There follow the observations of the eclipse of the Moon, as soon as it had risen out of the denser clouds in which it had until then been wrapped around its rising, and as often as it had offered itself to us for observation on account of other small clouds lying between." [Apographum hujus obſervationis eclipſis in codicem E poſtea inſertum incipit ut ſequitur: »Sequuntur animaduerſiones in eclipſin ☾ ſimulatque ex nubibus quibus circa ortum ſuum hactenus inuoluebatur denſioribus, aſcendißet, & quoties propter interiectas alias nubeculas ſe nobis obſeruandum præbuißet«.]

9 43	*Arcturus* [*Arctur*]		*Altitude* [*Altitudo*]	*48° 42′*
9 41 corrected [corr.]			*Azimuth*	*45° 52′* east [or.]
9 52 (III) [*9 52* [III]]	*The Moon was again just as it was when it was first* [*Luna rurſus talis qualis fuit cum primo nobis*]			
9 50	*seen by us.* [*videbatur.*]		*Altitude of the Moon* [*Altitudo ☾*]	*4° 34′*
			Eastern azimuth [*Azimuth orientale*]	*28° 55′*
9 57½	Declination, lower [Declin. infer.]	24° 57½	Altitude of Arcturus [Altit. Arcturi]	47° 37′
9 56		24 59	Azimuth	49° 7′
10 3¼	*Spica ♍, west, was in degrees of the equator* [*Fuit Spica ♍ occ. in grad. æquat.*]			*48° 0′*
10 1¾ emended [emend.]				
10 6¼	Spica ♍, west [Spica ♍ occid.]			49 19
10 15	*With the Radius more of the Moon seemed, as it were, to be missing.* [*Quaſi plus de ☾ viſum eſt abeße per Radium*]			
10 13	(IV) *The illuminated part was 14½.* [[IV] *Pars illuminata erat 14½.*]		*Azimuth of the Moon* [*Azim. ☾*]	*23° 54′*
			Altitude of the lower limb [*Altit. infer. limbi*]	*5° 58′*
	The Radius is not to be trusted too much. [*Non eſt fidendum Radio nimis.*]			
10 27	*The Moon about 14′ still illuminated.*[1] [*☾ quaſi 14 minuta adhuc illuminata*[1].]			
10 25 corrected [correct.]	(V) [[V]]		*Spica, west* [*Spica occid.*]	*53 48*
10 30½			*Spica, west* [*Spica occid.*]	*54 30*
10 49⅓ (VI) [*10 49⅓* [VI]]	*The Vulture, east* [*Vultur orient.*]			*37⅔*
10 46⅙ corrected [correct.]	*Size of the bright body 16′.*[2] [*Magnitudo lucidi corp. M. 16*[2].]			
	From both horns of the Moon 32′ were observed with the radius, [*Ab vtroque cornu ☾ obſeruabantur per radium*]			
	at most 32½′. [*minuta 32, ad ſummum minuta 32½.*]			
11 4½	The Vulture, east [Vultur orient.]			33 40
	The colour of the darkened part of the Moon was rust-red. [Color partis ☾ obfuſcatæ erat ferrugineus.]			
	About two thirds illuminated. [*Quaſi duæ tertiæ illuminatæ.*]			

11 12¼ (VII) [*11 12¼* [VII]]	*The Vulture, east* [*Vultur orientalis*]	*31 44*
11 9 50 corrected [correct.]	*Size of the illuminated part 22 or 21.* [*Magnitudo part. illuminatæ 22 vel 21.*]	

From this the clock is found, at the last consideration, to be running 2½^{m} faster than it should. Therefore at this instant, 11½^{h}, we drew the index back by the same amount, so that it would agree more correctly in what follows; this must be borne in mind when the times are corrected. [*Ex quo horologium in vltima conſideratione inuenitur M. 2½ iuſto celerius moueri, idcirco totidem hoc inſtanti H. 11½ retraximus indicem, vt in ſequentibus rectius concordaret, quod cauendum eſt, dum temporum fit emendatio.*]

11 24½ (VIII) [*11 24½* [VIII]]	*About a quarter of the Moon was missing.* [*Quarta quaſi pars ☾ deerat.*]		
11 24⅙ corrected [corr.]	*The head of Ophiuchus, west* [*Caput Ophiuchi occid.*]		*5 35*
	More correctly, with the Radius, 24′ illuminated. [*Rectius per Radium M. 24 illuminata.*]		
11 28 (IX) [*11 28* [IX]]	*A little less than a quarter was lacking.* [*Paulo minus quarta parte deſiderabatur.*]		
11 29 corrected [corr.]		*The Vulture, east* [*Vultur orient.*]	*26 56*
11 40½ (X) [*11 40½* [X]]	*The Vulture, east* [*Vultur orient.*]		*23 48*
11 41½ corrected [corr.]	*The Radius showed the illuminated part as 27½.* [*Radius oſtendebat partem illuminatam M. 27½.*]		

Diagram. A drawing of the Moon at the right of the "9 52" lines: a circle whose left part, bounded by a heavy curved line, is heavily cross-hatched and partly inked solid.

• Right of the circle: "[III]"

Diagram. A drawing of the Moon at the right of the "9 57½" lines: a circle whose left part, bounded by a heavy curved line running from top to bottom right of centre, is hatched with parallel strokes.

• Right of the circle: "[IV]"

Diagram. A drawing of the Moon at the right of the "10 15" lines: an unhatched circle crossed by a heavy curved line running from the upper right to the lower left.

• Right of the circle: "[V]"

Diagram. A drawing of the Moon at the right of the "10 27" lines: a circle whose upper part, above a heavy line running nearly horizontally across it, is hatched with parallel strokes.

• Right of the circle: "[VI]"

Diagram. A drawing of the Moon at the right of the "10 49⅓" and "11 4½" lines: a circle whose upper part, above a heavy curved line, is hatched and partly inked solid; the lower outline is drawn partly broken.

• Right of the circle: "[VII]"

Diagram. A drawing of the Moon at the right of the "11 12¼" lines: a circle with a small hatched cap at the top, bounded by a heavy curved line; two dots stand one above the other below the cap.

• Right of the circle: "[VIII]"

Diagram. A drawing of the Moon at the right of the "Ex quo horologium" paragraph: a circle with a lightly hatched cap at the upper right, bounded by curved strokes; two dots stand one above the other below it.

• Right of the circle: "[IX]"

Diagram. A drawing of the Moon at the right of the "11 28" and "11 40½" lines: a circle with a small hatched cap at the top, bounded by a heavy curved line; two dots stand one above the other below it.

• Right of the circle: "[X]"

[1] In the copy: "Between this and the preceding consideration the darkening of the Moon was greatest, yet never so great that the remaining illuminated part did not equal at least 14′." [In apographo: »Inter hanc & præcedentem conſiderationem maxima fuit ☾ obſcuratio, neque tamen vnquam tanta, quin pars reſidua illuminata ad minimum 14 M. adæquaret«.] [2] In the copy: "Here the shadow of the Earth rose above the horns of the illuminated half of the Moon in a fairly even balance, level with the horizon." [In apographo: »Hic vmbra terræ dimidiæ parti ☾ illuſtratæ ad æquilibrium Horizontis ſatis æquali bilance cornua ſupereminebat«.]

11 49¼ (XI) [*11 49¼* [XI]]	*The Vulture, east* [*Vultur orient.*]	*21 35*
11 50⅖ corrected [corr.]	*Size of the illuminated part about 30′.* [*Magnitudo partis illuminatæ quaſi 30 M.*]	
11 58½	*The whole Moon seemed to have recovered its light.* [*Tota ☾ viſa eſt recuperaße lumen.*]	
11 59⅔ corrected [corr.]	*The Vulture, east* [*Vultur orient.*]	*19 11*

Set the end of the eclipse at 11^{h} 58^{m}. [Pone finem deliquij H. 11 M. 58.]

12	*The centre of the Moon passed through the meridian,*[*1]		
2⅓	*having* [*Tranſiuit medium ☾ per merid.*[*1] *habens*]		
12	*an altitude, at the lower limb, by the revolving quadrant*		*9° 1′*
3¾	[*altitudinem inferiori limbo per Volub.*]		
		by the steel instrument [*per Chalyb.*]	*8° 59½′*
12	*For the clock* [*Pro horologio*]	*The Vulture, east* [*Vultur orient.*]	*17 38*
5⅓			
12			16 35
9½			
12			15 53
12½			

Diagram. A drawing of the Moon at the right of the "11 49¼" and "11 58½" lines: an open circle with a small cap at the upper right inked dark with dense strokes.

- Right of the circle: "[XI]"

	Our calculation [Noſter calculus]	Copernicus's [Copernici]	Alphonsine [Alphonſinus]
Beginning [Initium]	8 33	8 44	9 21
Middle [Medium]	10 12⅓	10 23	10 51
End [Finis]	11 52	12 3	12 21

N.B. I received these following observations of three eclipses[2] *from M. Christianus Iohannis of Ribe, formerly my student.* [*N.B. Has ſequentes obſeruationes in tribus deliquijs*[2] *accepi a M. Chriſtiano Iohannis Ripenſe olim meo ſtudioſo.*]

Observation of the lunar eclipse on 1592 June 14, for the meridian of Wittenberg. [Obſeruatio eclipſis lunaris ad diem 14 Junij anni 1592 ad meridianum Witebergenſem.]

The beginning of the Moon's entry into the shadow could not be obtained because of the clouds. [Initium ingreßus ☾ in vmbram propter nubes haberi non potuit.]

The northern scale-pan of ♎, west [Borealis Lanx ♎ occid.]

36 15

37 0

N. B. The greatest eclipse. [N. B. Eclipſis maxima.]

38 20

Afterwards it was wrapped in clouds. [Poſtea nubibus involuebatur.]

Altitude of the lower limb of the Moon by the quadrant [Altit. infer. limb. ☾ per Quadrantem]

12½

13° 0′

Altitude of the northern scale-pan [Altit. bor. lancis]

23° 30′

The Vulture, east [Vultur or.]	The western limb of the Moon, east [Occ. limb. ☾ orient.]
26 0	2½

The Moon on the meridian [☾ in meridiano]	
The Vulture, east [Vultur or.]	Altitude of the lower limb [Alt. infer. lymbi]
23 30	14° [14 grad.]
21⅚	
20 20	
	Altitude of the lower limb [Altit. infer. lymbi]
16 15	13° 30′

Diagram. Four drawings of the eclipsed Moon down the left side of the two-column block, one beside each group of figures (”36 15 / 12½”, ”37 0 / 13 0”, ”38 20 / 23 30”, ”26 0 / 2½”). In the first three the circle is hatched with parallel diagonal strokes over all but a segment at the bottom, with a few small star-like spots drawn in the hatching and short dashes in the unhatched segment; in the fourth the hatching covers the upper part above a boundary running from the upper right to the lower left, with a few short strokes below it. No figure number, letter or label is printed on or beside them.

Diagram. Four drawings of the eclipsed Moon down the right side of the two-column block, one beside each group of figures (”23 30 / 14 grad.”, ”21⅚”, ”20 20”, ”16 15 / 13 30”). Each is a circle with a hatched cap at the upper right, the cap growing smaller from the first drawing to the fourth (a thin sliver at the top in the last); the first carries a small spot in the cap, and all four carry scattered short strokes in the unhatched part. No figure number, letter or label is printed on or beside them.

The end and the full consideration could not be obtained because of the clouds coming round. [Finis & totalis deliberatio propter nubes circumvenientes haberi non potuit.]

[1] Added in another hand: ”as far as it was possible to observe between the clouds”. [Alia manu adſcriptum eſt: »quantum inter nubes obſeruare licuit«.]
[2] That is, of the days 1592 June 14, 1593 May 20, 1595 September 23. [Id eſt, dierum 14. Junii 1592, 20 Maii 1593, 23 Sept. 1595.]

11 July, evening [DIE 11 JULIJ, VESPERI.]

The meridian altitude of the Moon was observed near the beginning of the tropic of ♑, for deriving the parallax. [Obſeruabatur altitudo ☾ meridiana circa initium tropici ♑ pro parallaxi eruenda.]

At 9^h $53⅓^m$ the middle of the body of the Moon was passing through the meridian, and the upper limb had an altitude [H. 9 53⅓′ Tranſibat medium corporis ☾ per meridianum, habuitque ſuper. limbus altitudinem]

by the steel instrument [per Chalyb.]	9° 46½′
by the revolving quadrant [per Volub.]	9° 46′
Lower limb, by the revolving quadrant [Infer. limb. per Volub.]	9° 21′

At this time, moreover, the Moon was wrapped in some rather thin clouds, so that the lower limb could not be observed exactly, and afterwards it was wholly covered by clouds. [Erat autem hoc tempore ☾ nubibus quibuſdam rarioribus implicata, ita vt inferior limbus exacte obſeruari non poßet, & poſtea nubibus tota obtegebatur.]

For correcting the clock [Pro horologio corrigendo]

10^h 3⅔^m [H. 10 3⅔′]	The Vulture, east, on the equator [Vultur or. in æquat.]	20° 30′

4 August [DIE 4 AUGUSTI.]

The Moon was observed about the first quadrature [circa □ I], when it was not far from the apogee, ascending. Hence these observations serve both for investigating the parallaxes and for restoring the place. Moreover, it had gone a little past 90 degrees, as far as could be seen. [Obſeruabatur ☾ circa □ I, cum non procul eßet ab Apogæo aſcendendo. Vnde hæ obſeruationes tam parallaxibus indagandis quam loco reſtituendo conducunt. Erat autem paululum prætergreßa 90 grad. quantum ad viſum.]

Hours, minutes [H. M.]	Distance of the western limb of the Moon from Jupiter [Diſt. ☾ occ. limb. a ♃]	Declination [Declin.]	Altitude [Altit.]
8^h 7¾^m	20° 48⅔′	15° 39′ lower [inf.]	12° 13′ lower [inf.]
		15° 11′ upper [ſup.]	12° 40′ upper [ſup.]
8^h 13½^m	20° 45⅚′		

N.B. At the time of these observations Jupiter was almost level with the Moon with respect to the horizon, but a little higher; hence no perceptible refractions enter into the distances. [N.B. ♃ erat circa has obſeruationes in æquilibrio fere horizontis cum ☾, ſed paululum eleuatior; vnde nullæ ſenſibiles refractiones in diſtantias ingeruntur.]

Hours, minutes [H. M.]	Distance of the western limb of the Moon from Jupiter [Diſt. ☾ occ. limb. a ♃]	Declination [Declin.]	Altitude [Altit.]
8^h 16½^m	20° 44½′	15° 12½′ upper [ſup.]	11° 25½′ lower [inf.]

Hours, minutes [H. M.]	Distance of the western limb of the Moon from Jupiter [Diſt. ☾ occ. limb. a ♃]	Declination [Declin.]	Altitude [Altit.]
		15° 40½′ lower [inf.]	11° 53½′ upper [ſup.]
8^h 22½^m	20° 41½′	15° 39½′ lower [inf.]	10° 51′ lower [inf.]

For correcting the clock. [Pro corrigendo horologio.]

8 26⅗ we observed the Vulture, east [8 26⅗ obſeruauimus Vulturem or.]	
	24 17
8 29 Repeated equatorial distance of the Vulture [8 29 Repetita diſt. æquat. Vult.]	
	23 32½

From these you will be able to correct the clock, set as you please at the beginning of the observation. [Ex his poteris corrigere horologium pro libitu ad initium obſeruationis poſitum.]

9 19⅝	The Vulture, east [Vultur orient.]	9 3½

Computation of the Moon for 4 August, at quadrature.[1] [Supputatio ☾ ad 4 Aug. in □[1].]

At 9^h 0^m, distance of Jupiter from the Vulture [H.9 M.0 Diſtantia ♃ a Vulture]	52° 48½′
Right ascension of the Vulture [Aſc. R. Vult.]	292° 42½′
Declination [Declinatio]	7° 53′ north [B.]
Declination of Jupiter [Decl. ♃]	21° 28′ south [M.]
Angular difference of ascension [Ang. diff. aſc.]	44° 45′
Therefore the right ascension of Jupiter [Ergo Aſc. R. ♃]	247° 57½′
For the Moon. [Pro ☾.]	
At 7^h 58^m, distance of the Moon from Jupiter [H. 7 M.58 Diſtantia ☾ a ♃]	20° 23′
Declination [Declinatio]	15° 25′
Angular difference of ascension [Ang. diff. aſc.]	20° 43½′
Right ascension of Jupiter at this time, account taken of refraction [Aſc. R. ♃ ad hoc tempus habita rat. refract.]	247° 56′
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	227° 12½′
Resp. longitude [Reſp. Longitudo]	19° 2½′ ♏
The Moon in the 90th degree of the ecliptic at 7^h 23^m [☾ in 90 gradu Eclipt. H. 7 M. 23]	

Difference of time 35^m. Resp. in the parallax of longitude 2⅓′ added, of latitude 6½′ subtracted. [Diff. temporis 35′. Reſp. in parall. longit. 2⅓′ add., latit. 6½′ ſubt.]
Therefore the true place of the Moon [Ergo verus locus ☾] 18° 58⅓′ ♏.

7 August, evening [DIE 7 AUGUSTI, VESPERI.]

The Moon was observed near the winter tropic, for investigating the parallax near the apogee, namely when it had the least possible latitude. [Obſeruabatur ☾ circa Tropicum hybernum pro parallaxi indaganda iuxta Apogæum, quando videlicet quam minimam obtinebat latitudinem.]

At $7^h\ 42^m$ ($7^h\ 48^m\ 25^s$ corrected), moreover, the altitude was [Erat autem H.7 42′(7 48′25″ corr.)alt.]

by the steel instrument [per Chalyb.]	10° 13′
	9 44⅓
by the revolving quadrant [per Volub.]	10° 12½′
	9 45

7 41¼	The western limb was passing [Tranſibat occid. limbus]
7 47½ corrected [corr.]	of the Moon through the meridian. [☾ per merid.]

But the clock will have to be rectified if it is to be of use in searching out the place of the Moon by its transit, for earlier, at 7^h, it was set to the Sun only roughly. [Verum oportebit horologium rectificari, ſi in ☾ loco per tranſitum eius rimando vſui eße debet, nam prius hora 7 lato modo ad ☉ directum eſt.]

This evening, about the meridian at the time the Moon was observed, it was fairly clear, but there were rather dense exhalations; account of them must not be neglected in subtracting the refraction, yet they are not to be weighted especially heavily beyond the usual either. [Erat hac veſpera circa meridiem tempore obſeruatæ ☾ ſatis ſerenum, ſed exhalationes denſiores, quarum ratio in refractione ſubtrahenda negligenda non eſt, neque tamen præter ſolitum ſingulariter multis aggrauanda.]

[1] From codex V. [E codice V.]

For correcting the clock the Vulture was observed afterwards in equatorial distance. [Pro corrigendo horologio obſeruabatur Vultur poſtea in æquatoria diſtantia.]

8 6′	It was the Vulture, east [Fuit Vultur orient.]
8 12⅓ corrected [corr.]	22 34

9 5½		
9 12 7″ corrected [corr.]	The Vulture, east [Vultur orient.]	7 37

Transit through the meridian at 9^h 42½^m. [Tranſitus per Merid. H. 9 42½′]

From these correct the clock to the transit through the meridian, and afterwards, if you like, look for the place of the Moon by the time of the transit. [Ex his rectifica horologium ad tranſitum per meridianum, & quære poſtea ſi lubet per tempus tranſitus locum ☾.]

Examination of the observation of the Moon when it was near the winter tropic. [*Examinatio obſeruationis ☾ cum eßet iuxta tropicum hibernum.*]

At 7^h 48^m, when the Moon passed through the meridian, its place from Magini's Ephemerides, with the time reduced, was 25° 2′ ♐, whose declination is 23° 25⅚′. But the southern latitude adds 6½, so that the true declination is 23° 32⅓′. The observed altitude 9° 58¾′. But refraction adds about 10′, so that the true altitude is 9° 49′. Therefore the declination 24° 16½′. Accordingly the parallax 44′. According to Copernicus the parallax would have been about 50′. Therefore the refraction must have been greater. [*H. 7 M. 48, quando ☾ tranſiuit meridianum, fuit locus eius ex Magini Ephemeridibus tempore reducto in 25 2 ♐, cuius declinatio 23 25⅚. Sed latitudo meridiana addit 6½, vt ſit vera declinatio 23 32⅓. Altitudo obſeruata 9 58¾. Sed refractio addit quaſi 10′, vt ſit vera altitudo 9 49. Ergo declinatio 24 16½. Proinde Parallaxis M. 44. Iuxta Copernicum fuißet Parallaxis quaſi M. 50. Ergo oportet maiorem fuiße refractionem.*]

Investigation of the parallax of the Moon from the observations on 7 August near the meridian. [Inquiſitio παράλλαξεως ☾ ex obſeruationibus die 7 Auguſti circa meridianum.] [Greek: παράλλαξεως (parallaxeōs, "of the parallax")]

Corrected time [Tempus correct.] 7^h 48⅔^m [H. 7 M. 48⅔]	The centre of the Moon passed through the meridian, having an altitude limited on both quadrants [Tranſiuit centrum ☾ per meridianum habens altitudinem in vtroque quadrante limitatam]	9° 58⅔′
	Refraction subtracted [Refract. ſubtr.]	10
	Altitude of the centre of the Moon, refraction eliminated [Altit. centri ☾ refractione eliminata]	9° 48′ 40″
	Elevation of the equator [Eleuatio æquatoris]	34° 5′ 30″
	Declination of the centre of the Moon [Declin. centri ☾]	24° 16′ 50″

For the place of the Moon from the transit through the meridian. [Pro loco ☾ ex tranſitu per meridianum.]

Right ascension of the Sun [Aſcenſio recta ☉]	147° 2′ 30″
Right ascension resolved from the time [Aſc. R. e tempore reſol.]	117° 10′ 0″

Right ascension of the midheaven, or of the Moon [Aſc. recta M. C. ſeu ☾]	264° 12′ 30″
Parallax of the Moon, approximately [παράλλαξις ☾ ἐν πλάτει] [Greek: παράλλαξις (parallaxis, "parallax"); ἐν πλάτει (en platei, "approximately")]	50
True declination of the Moon [Declin. vera ☾]	23° 26′ 50″
Resp. true longitude of the Moon [Reſp. vera longitudo ☾]	24° 41¼′ ♐
true latitude [vera latitudo]	4° 2′

Given the longitude and latitude, the true declination comes out 23° 29′ 7″, the parallax 47′ 43″. From the Prutenic Tables the true longitude of the Moon is 25° 14′ 27″, the difference 33′ 12″. [Datis longitudine & latitudine Declinatio vera prouenit 23 29 7, παράλλαξις 47′ 43″. Ex tabulis Prutenicis vera longitudo ☾ 25 14 27, differentia 33′ 12″.]

N.B. This difference serves for correcting the prosthaphaeresis [Greek: προσθαφαιρέσει (prosthaphairesei, "prosthaphaeresis", dative)], or the diameter, of the second epicycle. [N. B. Conuenit differentia hæc pro emendanda προσθαφαιρέσει ſeu diametro ſecundi epicycli.]

18 August, morning [DIE 18 AUGUSTI, MANE.]

The Moon was observed near the meridian, approaching the perigee, a few days before the last quadrature, for the parallax. [Obſeruabatur ☾ circa meridianum appropinquans Perigæo paucis diebus ante □ vltimam pro parallaxi.]

3^h 23½^m [H.3 23½′]	The eye of ☋, east, on the equator [Oculus ☋ or. in æquat.]	33° 6′
(5^h 46^m 15^s [(H.5 46′ 15″]	Transit of the eye of ☋ through the meridian, according to the computation). [Tranſitus oculi ☋ per merid. iuxta ſupputationem).]	
	Declination of the upper limb [Declin. ſuper. limbi]	11° 18½′
	of the lower [inferioris]	10° 43′
3 34⅝	The eye of ☋, east [Oculus ☋ or.]	30 10
	Repeated declination [Declin. repet.]	
	upper limb [ſuper. limbi]	11° 17½′
	lower [infer.]	10° 44′
4 0¼	Meridian altitude [Altit. merid.]	
	by the steel instrument, upper [per Chalyb. ſuper.]	45° 26⅔′
	lower [infer.]	44° 55′
	by the revolving quadrant, upper [per Volub. ſuper.]	45° 26′
	lower [infer.]	44° 53¼′
4 1	The eye of ☋, east [Oculus ☋ orient.]	23 18
4 13$^1/_{12}$ corrected [corr.]	The eastern limb of the Moon was passing through the meridian. [Tranſibat orientalis limbus ☾ per meridianum.]	

20 August, morning [DIE 20 AUGUSTI, MANE.]

The Moon was observed near the perigee and the last quadrature, and therefore at its nearest distance from the Earth. Hence the parallaxes for this situation

of the epicycles can conveniently be derived from these observations, both near the nonagesimal degree and near the meridian, especially since here it had no great latitude. [Obſeruabatur ☾ circa Perigæum & □ vltimam, ideoque in proxima a terra diſtantia, vnde parallaxes commode pro hoc ſitu Epicyclorum erui poterunt ex obſeruationibus hiſce tam iuxta nonageſ. gradum, quam meridianum, præſertim cum hic non magnam haberet latitudinem.]

For the clock, which we corrected by the Sun yesterday evening at $4^h\ 20^m$, we observed Aldebaran in the morning at $4^h\ 13^m$, east, on the equator, 22° 25′, holding it back at the same instant by 3^m, by which it had run faster than it should over an interval of $11^h\ 53^m$; that is, the correction since yesterday evening would be $3^m\ 40^s$. Therefore the clock is slow by 40^s. [Pro horologio, quod heſterna veſpera H. 4 M. 20 ad Solem correximus, obſeruabamus H. 4 M. 13 matutina Aldeboram in æquat. orient. 22 25 remorantes eodem inſtanti in 3 M., quibus plus iuſto mouebatur interſtitio H. 11 M. 53, ſcilicet ab heſterna veſpera correctio eßet 3′ 40″. Ergo horologium in 40″ tardat.]

At $5^h\ 16^m$ a.m. the Moon was near 90°. Aldebaran passed through the meridian, according to the computation, at $5^h\ 39^m$. Now follow the observations of the Moon. [H. 5 M. 16 A. M. ☾ circa 90°. Aldeboram tranſijt per Meridianum iuxta ſupputationem H. 5 M. 39. Sequuntur nunc obſeruationes ☾.]

$4^h\ 19½^m$ [H. 4 19½′]	Distance of the eastern limb of the Moon from the bright star of ♈ [Diſt. or. limbi ☾ a lucida ♈]	39° 17′
	Azimuth of the Moon from the meridian toward the east [Azim. ☾ a merid. ad ortum]	37° 30′
	Altitude of the limb, lower [Altit. limbi infer.]	49° 22⅓′
	upper [ſuper.]	49° 51⅓′
	Declination of the upper limb [Declin. ſuper. limbi]	20° 16′
	lower [infer.]	19° 37′
4 31⅔	Distance of the eastern limb from the eye of ♉ [Diſt. or. limbi ab oculo ♉]	6° 38′
	Azimuth	32° 30′
	Altitude of the upper limb [Altit. ſuperioris limbi]	50° 50′
4 40⅚	Azimuth of Aldebaran, east, from the meridian [Azim. Aldeb. or. a merid.]	22° 25′

From this verify the clock again.[1] *No more stars were seen here.* [*Hinc rurſus verifica horologium*[1]. *Nullæ hic amplius viſæ ſunt ſtellæ.*]

4 50	*Azimuth of the eastern limb of the Moon* [*Azim. orient. limbi* ☾]	27° 17′
	Altitude of the limb, upper [*Altit. limbi ſuper.*]	52° 5′
	lower [*infer.*]	51° 36½′
4 52⅙	*Declination, lower, by the armillae* [*Declin. infer. per Armill.*]	19° 45½′
	upper [*ſuper.*]	20° 20′
4 55 8	*Azimuth of the Moon* [*Azimuth* ☾]	25° 25′
	Altitude of the upper limb [*Altit. ſuper. limbi*]	52° 24′

		51 55
	Declination, lower [*Declin. infer.*]	19° 46⅙′
	upper [*ſuper.*]	20° 21′
5 0 30	*Azimuth*	23° 32′
	Altitude, upper [*Altit. ſuper.*]	52° 43½′
	lower [*infer.*]	52° 12½′
	Declination [*Declin.*]	19° 47½′
		20 21

In the following, the Moon approached 90 degrees from the Ascendant. [*In ſequentibus ☾ appropinquauit 90 grad. ab Aſcendente.*]

Hours, minutes, seconds [H. M. S.]	Azimuth	Altitude [Altitudo]	Declination [Declinatio]
$5^h\ 7^m\ 35^s$	20° 52′	53° 6′	19° 49′
		52° 36½′	20° 22½′
$5^h\ 12^m\ 28^s$	19° 0′	52° 19′	19° 50½′
		52° 55⅙′	20° 22½′
$5^h\ 16^m\ 10^s$	17° 40′	53° 30½′	19° 51′
		52° 58′	20° 23⅓′

Hours, minutes, seconds [H. M. S.]	Azimuth	Altitude [Altitudo]	Declination [Declinatio]
$5^h\ 19^m\ 45^s$	16° 19′	53° 40⅙′	19° 51½′
$5^h\ 19^m\ 15^s$ corrected [corr.]		53° 8′	20° 24′
The Moon was then at 90.² [*☾ tunc fuit in 90².*]			
$5^h\ 23^m\ 25^s$	14° 55′	53° 48′	19° 52′
		53° 16′	20° 24½′
$5^h\ 26^m\ 18^s$	13° 48½′	53° 54½′	19° 52⅓′
		53° 22′	20° 25′

Then, to verify the clock, we observed these. [*Deinde pro horologio verificando hæc obſeruauimus.*]

	Of the Sun, now risen: altitude [*Solis iam exorti / Altitudo*]	*Azimuth*	*Apparent declination of the Sun* [*Declin. viſa ☉*]
5 32 22	3° 40½′	100° 52′	9° 13′
			9° 13½′
5 35 10	4° 2¼′	100° 18′	9° 12′
5 34 44 corrected [corr.]			9° 11½′

The Moon was observed again. [*Rurſus obſeruabatur ☾.*]

	Azimuth of the Moon [*Azimuth* ☾]	*Altitude of the Moon* [*Altitudo* ☾]	*Declination of the Moon* [*Declinatio* ☾]
5 41 40	8° 2′	54° 20½′	19° 54⅔′
		53° 47⅔′	20° 25½′
5 45 8	6° 34′	54° 23′	19° 54⅓′
		53° 52′	20° 26′

	Altitude of the Sun [*Altitudo* ☉]	*Azimuth of the Sun* [*Azimuth* ☉]	*Declination of the Sun* [*Declinatio* ☉]
5 48 35	5° 53′	97° 32′	9° 9′
5 49 22	6° 2′	97° 17′	9° 8½′
5 50 30	6° 9⅓′	97° 8′	9° 8½′

Afterwards we observed the Moon approaching the meridian, as follows. [*Poſtea obſeruauimus* ☾ *appropinquantem ad meridianum vt ſequitur.*]

	Azimuth of the Moon [*Azim.* ☾]	*Altitude of the Moon* [*Altit.* ☾]	*Declination* [*Declinatio*]
5 54 40	3° 3′	54° 32′	19° 57¼′
		53° 59½′	20° 28′
5 56 45	2° 2′	54° 32½′	19° 58′
		54° 1′	20° 29½′

6 0 57	*The western horn of the Moon passed* [*Tranſiuit cornu occid.* ☾]	
6 0 40 corrected [corr.]	*through the meridian* [*per meridianum*]	
	Altitude by the revolving quadrant [*Altit. per Volub.*]	54° 32⅚′ *upper* [*ſup.*]
		54 1⅚ *lower* [*inf.*]
	by the steel instrument [*per Chalyb.*]	54° 34⅓′
		54 2⅓
6 2 0	*The eastern limb passed through the meridian, and the altitude was* [*Tranſiuit limb. orient. per merid. fuitque Altit.*]	
	by the steel instrument [*per Chalyb.*]	54° 34′
		54 1⅚[3]
	by the revolving quadrant [*per Volub.*]	54° 33′
		54 2

[1] Added in another hand: "This is not to be trusted. For the star could scarcely be seen because of the clouds and the dawn." [Adſcriptum eſt alia

manu: »Huic non eſt fidendum. Vix enim videri poterat ſtella propter nubes & auroram«.] [2] Added: "*Here both horns of the Moon seemed to incline upward.*" [Adſcriptum eſt: »*Hic videbantur ☾ vtraque cornua ſurſum inclinare*«.] [3] These figures are from a copy written out in another hand; in Tycho's autograph they are struck through with thick lines. [Hi numeri ex apographo alia manu conſcripto; in autographo Tychonis lineis craßis inducti ſunt.]

	And the declination of the lower limb was then [*Fuitque tunc Declin. inf. / limbi*]	19° 59′
	of the other horn, doubtful [*alterius cornu, dubia*]	20° 30′

The Sun was observed again. [*Denuo obſeruabatur* ☉]

Hours, minutes, seconds [*H. M. S.*]	*Altitude* [*Altitudo*]	*Eastern azimuth* [*Azim. or.*]	*The Sun on the equator* [☉ *in æquat.*]
$6^h\ 6^m\ 35^s$	8° 21⅔′	93° 47′	
$6^h\ 6^m\ 20^s$ corrected [corr.]			
$6^h\ 8^m\ 25^s$	8° 36′	93° 27′	
$6^h\ 10^m\ 36^s$	8° 53½′	93° 3′	87° 28′ east [or.]
$6^h\ 10^m\ 8^s$ corrected [corr.]			
$6^h\ 15^m\ 30^s$	*From this too the clock* [*Hinc etiam horo-*]		86° 15′
$6^h\ 16^m\ 0^s$	*may be corrected* [*logium corrigatur*]		86° 0′

Afterwards observation was made with the zodiacal armillae, the place of the Sun being set at 6° 45′ ♍. (N.B. The Sun was then truly at 6 47, but because of parallax and refraction it appeared at 6 44, a difference of at least 3′ from the set place.)[1] [*Poſtea obſeruabatur per Armillas Zodiacales, poſito loco ☉ in 6 45 ♍. (N.B. Erat ☉ tunc vere in 6 47, at propter parallaxin & refractionem videbatur in 6 44, diff. ſaltem 3′ a poſito)*[1].]

6 56½	*the Moon appeared at 10° 33½′ ♊, and that as regards the eastern limb* [*apparuit ☾ in 10 33½ ♊, idque / quo ad orientalem limbum.*]	
6 57⅓	*Azimuth of the Sun 83° 7′, altitude* [*Azim. ☉ 83 7, Alt.*]	15° 29′
6 59	*the Sun by the armillae, east* [☉ *per Armillas orient.*]	75 15
7 3	*the Moon appeared as before* [*apparuit ☾ vt prius*]	10° 38½′ ♊
7 3⅓	*the Sun: azimuth 81° 52′, altitude* [☉ *Azim. 81 52, Alt.*]	16° 17′
7 5	*the Sun by the armillae, east* [☉ *per armillas or.*]	73 45
7 6½	*the Moon as before* [☾ *vt prius*]	10° 41′ ♊
7 7	*Azimuth of the Sun 81° 5′, altitude* [*Azim. ☉ 81 5, Alt.*]	16° 49′
7 8⅓	*the Sun by the armillae, east* [☉ *per Armill. or.*]	72 53½

7 10 35″	*the Moon as before* [☾ *vt prius*]	10 43
7 11⅓	*Azimuth of the Sun 80° 10′, altitude* [*Azim.* ☉ *80 10, Alt.*]	17° 22½′
7 12½	*Equatorial distance of the Sun* [*Diſt.* ☉ *æquat.*]	71° 52′
7 16	*Azimuth of the eastern limb of the Moon 28° 14′,* [*Az.* ☾ *or. limb. 28 14,*]	
	upper altitude [*Alt. ſup.*]	52° 11′
	Declination [*Declin.*]	20° 6′
	with the other [*altero*]	20° 37½′
7 19⅚	*Azimuth of the Moon 29° 32′, altitude* [*Az.* ☾ *29 32, Alt.*]	51° 56½′
7 22	*the Sun, east, 69 28 by the armillae* [☉ *or. 69 28 per armillas.*]	

Let the declination of the centre of the Moon when it passed the meridian be put, well enough, at 20° 13′. [*Declinatio centri* ☾ *cum tranſiret meridianum ponatur 20 13 ſatis bene.*]

	Azimuth of the Sun [Azim. ☉]	Altitude of the Sun [Altit. ☉]	Equatorial distance, east [Diſt. æq. or.]
7 28⅙	76° 30′	19° 50′	
7 30⅚	75° 52′	20° 6½′	
7 32½			66° 52′
7 33⅓			66° 39′

N.B. If the declinations on the larger equatorial armillae are compared with the meridian altitudes of the Sun, carefully collected over the last two summers at an altitude very nearly similar to this meridian altitude of the Moon, the limited values are found to be greater than the correct ones by 1½′. If this error is subtracted from these declinations of the Moon taken by the said armillae, they give, about the meridian transit, a corrected declination of the centre of the Moon of 20° 13¼′; the steel quadrant established it from the altitude of both horns as 20° 12′ 45″, and the revolving quadrant, by the same method, as 20° 12′ 0″. If therefore we put the declination of the centre of the Moon at the time of the Moon's transit through the meridian at exactly 20° 13′, we shall err imperceptibly. But for the reasoning behind all of these, see below. [N. B. Si conferantur declinationes in Armillis æquatorijs maioribus cum altitudinibus ☉ meridianis in conſimili proxime cum altitudine hac ☾ᵉ meridiana proximis duabus æſtatibus diligenter conquiſitis, inueniuntur limitatæ M. 1½ iuſtis maiores. Qui error, ſi his declinationibus ☾ per dictas Armillas acceptis ſubducatur, largiuntur circa meridiani tranſitum emendatam declinationem ☾ centri 20 13¼, quam chalybæus quadrans ex altitudine vtriusque cornu conſtituit 20° 12′ 45″, Volubilis vero eadem ratione 20° 12′ 0″. Si igitur poſuerimus ad

tempus tranſitus ☾ per meridianum declinationem centri ☾ fuiße exacte 20 13, inviſibiliter aberrabimus. Sed rationem horum omnium hic vide infra.]

The greatest difference between the declinations of the Sun by the armillae and those from the meridian altitudes is about 2′. [Maxima differentia inter declinationes ☉ per Armillas & quæ ex altitud. merid. quaſi M. 2.]

The least of the same is about 1. [Minima earundem quaſi 1.]

You may therefore use 1½′ in the declination for this limitation. [Poteris itaque vti ad hanc limitationem in declinatione 1½ minuti.]

About the time of the transit of the Moon through the meridian, declination of the lower horn on the armillae [Circa tempus tranſitus ☾ per merid. / declin. inferioris cornu / in Armillis]	19° 59′
	1 30
Therefore the true declination of the lower horn [Ergo vera declin. infer. / cornu]	19° 57′ 30″
Semidiameter, added [Semidiameter add.]	15′ 45″
True declination by the armillae, corrected [Vera declin. per Arm. corr.]	20° 13′ 15″
Maximum meridian altitude, upper limb [Altit. max. merid. / ſuper. limbi]	54° 34′ 30″
Lower altitude [Altit. infer.]	54° 2′
Semidiameter	16′ 15″
Altitude of the centre of the Moon [Altit. centri ☾]	54° 18′ 15″
Elevation of the equator, subtracted [Eleuatio æquatoris ſub.]	34° 5′ 30″
Therefore the declination of the centre [Ergo declin. centri]	20° 12′ 45″
Minimum altitude of the upper horn [Minima altit. ſuper. cornu]	54° 33′ 0″
Altitude of the lower horn [Altit. infer. cornu]	54° 2′
Semidiameter of the Moon [Semidiameter ☾]	15′ 30″
Therefore the altitude of the centre of the Moon [Ergo altit. centri ☾]	54° 17′ 30″
And the declination [Et declinatio]	20° 12′ 0″

With everything therefore limited, let the declination of the centre of the Moon be put, as above, quite safely at 20° 13′ at the meridian; or, if the quadrants alone are to be used, [Limitatis igitur omnibus, ponatur vt ſupra declinatio centri ☾ ſatis tuto 20° 13′ in meridie, vel ſi ſolis quadrantibus vtendum ſit,]

the declination to be put comes to 20° 12¾′. [Declin. ponenda venit 20 12¾.]

A demonstrative calculation for investigating the appearances and parallaxes of the Moon from the observations made on the morning of 20 August, when the Moon was in its last quadrature and as near as possible to the Earth, in respect of both epi- [Calculus demonſtrativus inquirendi apparentias & parallaxes ☾ ex obſeruationibus Die 20 Auguſti mane habitis, cum ☾ eßet in vltima □, ac quam proxima terræ, ratione vtriusque epi-]

[1] Added afterwards by Tycho. [Poſtea a Tychone addita.]

-cycles, with a comparison made at the same time with the Prutenic Tables, both in the investigation of the true motions of the Moon (corrected from the mean motions according to our own emendation) and in that of the par-allaxes. [cycli, facta vna collatione Tabularum Prutenicarum tam in motuum

☾$^{\text{rium}}$ verorum (ex medijs ſecundum propriam emendationem correctis) quam parallaxium inueſtigatione.]

I. For the correction of the clock and of the times. [I. Pro horologij ac temporum correctione.]

At 4^{h} 10^{m} Aldebaran was at an equatorial distance of 22° 25′ toward the east. [H. 4 M. 10 Aldeboram in diſt. æquat. fuit 22 25 verſus ortum.]

At that same instant [In ipſo inſtan-ti]	Right ascension of the Sun [Aſc. recta ⊙]	158° 25′ 15″
	Right ascension of Aldebaran [Aſc. recta Ald.]	63° 9′ 40″
	Right ascension of the midheaven [Aſc. recta M. C.]	242° 19′ 25″

Resp. in time 16^{h} 9^{m} 18^{s}. Therefore the clock here moved faster than it should by 42^{s}. [Reſp. in tempore H. 16 M. 9 S. 18. Ergo hic horologium celerius iuſto motum eſt 42″.]

II.

5^{h} 35⅙^{m} [H. 5 35⅙′]	Azimuth of the Sun from the meridian toward the north [Azim. ⊙ / a merid. verſus ſept.]	100° 18′
	At the same time the true declination of the Sun [Eodem tempore / declin. ⊙ vera]	9° 4½′ north [B.]

So that, in examining the time, the intrusion of the solar refraction at a very low altitude, together with the parallax in the circle of altitude, could be avoided, the true solar motions for the times sought were extracted from our own tables; from these, afterwards, by the computation of triangles, using at least the observed azimuth, the true moments of the times will be derived. [Vt in tempore examinando vitari poßet ⊙$^{\text{li}}$$^{\text{s}}$ in admodum decliui altitudine refractionis inſinuatio vna cum parallaxi in circulo altitudinis, excerpebantur ad tempora quæſita veri ⊙$^{\text{li}}$$^{\text{s}}$ motus ex proprijs tabulis, vnde poſtea per triangulorum ſupputationem, adhibito ſaltem Azimutho obſeruato, vera temporum momenta elicientur,]

In the triangle ABC are given: [In triangulo ABC dantur:]

Diagram. A circle, set in the left column beside the "In triangulo ABC dantur" values. A horizontal diameter crosses it, and a second diameter runs from the upper left of the circumference to the lower right through the centre. From A at the top of the circumference an arc curves down to C, which lies a little to the right of the centre and above the horizontal diameter; below C a short straight stroke continues the arc down to the horizontal diameter. From B on the upper right of the circumference a line runs down through C and on to meet the oblique diameter just right of the centre. Three letters are printed; no other labels.

- A (top of the circumference): A
- B (upper right of the circumference): B
- C (near the centre, right of the meeting of the lines from A and B): C

BA	34° 5′ 30″
BC	80° 55′ 30″
CAB	79° 42′ 0″
ABC	96° 19′ 0″

The arc of the distance of the Sun from the meridian on the equator, reduced to time, shows $4^h\ 25^m\ 16^s$ [recte: $6^h\ 25^m\ 16^s$ — by the page's own arithmetic: ABC 96° 19′ 0″ reduced to time is $6^h\ 25^m\ 16^s$, and the true time of the next clause, $5^h\ 34^m\ 44^s$, is $12^h - 6^h\ 25^m\ 16^s$; the page prints a clear 4]. Hence the true time is $5^h\ 34^m\ 44^s$. Therefore the clock here was running faster than it should by at least 26^s. But from these and the following the clock was corrected; it showed $5^h\ 19¾^m$ when the Moon was near 90°, and was corrected by 30^s, so that the supposed true time of the transit is $5^h\ 19^m\ 15^s$. [Diſtantiæ ⊙ a meridie in æquatore arcus, qui in tempus reductus oſtendit H. 4 25′16″. Quare verum tempus H. 5 34′ 44″. Ergo hic horologium ſaltem celerius iuſto ibat 26″. Atqui ex his & ſequentibus correctum eſt horologium, quod monſtrabat H. 5 M. 19¾ cum ☾ eßet circa 90°, in 30 S., vt ſit verum tempus ſuppoſitum tranſitus H. 5 19′ 15″.]

III.

At $6^h\ 6^m\ 35^s$ the azimuth of the Sun observed 93° 47′; the true declination of the Sun 9° 4′ north [B.]. [H. 6 6′ 35″ Azimuth ⊙ 93 47 obſeruata / Declin. ⊙ vera 9 4 B.]

In the triangle ABC are given, as before: [In triangulo ABC dantur vt antea]

BA	34° 5′ 30″	Elevation of the equator [Eleuatio Æquat.]
BC	80° 56′ 0″	Complement of the declination [Complem. declin.]
CAB	86° 13′ 0″	Complement of the azimuth to 180 [Compl. Az. ad 180.]
Therefore ABC [Ergo ABC]	88° 25′ 0″	Distance of the Sun on the equator from the meridian [Diſtantia ⊙ / æquat. a meridiano.]

This, converted into time, gives $5^h\ 53^m\ 40^s$; hence the true time is $6^h\ 6^m\ 20^s$. Therefore the clock here had run ahead by at least 15^s. [Hæc in tempus converſa largitur H. 5 53′ 40″, ideo verum tempus H. 6 6′ 20″. Ergo hic horologium anticiparat ſaltem 15″.]

From this examination together with the preceding ones the clock was corrected for the transit of the Moon through the meridian by 17^s, so that the true transit of the centre is at $6^h\ 0^m\ 40^s$. [Ex hac examinatione cum præcedentibus

correctum eſt horologium pro tranſitu ☾ per meridianum in 17″, vt ſit verus tranſitus centri H. 6 M. 0 S. 40.]

Besides these things, which have been demonstrated for the examination of the time, we also made a trial in the same matter by means of certain other azimuths, setting the place of the Sun for the time sought on the great globe, and we found that all of them agree as closely as possible with these. In what follows, however, the clock needs no correction, since afterwards it was brought fully into agreement with the equatorial distances (the Sun having risen higher). [Præter hæc, quæ pro temporis examine demonſtrata ſunt, periculum inſuper fecimus in eodem negotio per quædam reliqua Azimutha, impoſito loco ☉ ad tempus quæſitum, in globum magnum, inuenimusque ea omnia his quam proxime adſtipulari. In ſequentibus autem Horologium emendatione non eget, quippe quod ad æquatoreas diſtantias (☉^{le} eleuatiore facto) omnino poſtea conformabatur.]

There follows the calculation for the appearances of the Moon from the observations. [Sequitur calculus pro apparentijs ☾ ex obſeruationibus.]

I. From the distances from two fixed stars. [I. Ex diſtantijs a duabus affixis.]

$4^h\ 18^m\ 40^s$ [H. 4 M. 18 S. 40]	Distance of the eastern limb of the Moon from the bright star of ♈, in the order of the signs [Diſt. orient. limbi ☾ a / lucida ♈ in conſequentia]	39° 17′
	Semidiameter of the Moon, subtracted [Semidiameter ☾ ſubt.]	16
	Distance of the centre [Diſtantia centri]	39° 1′
	Declination of the bright star of ♈ [Declin. lucidæ ♈]	21° 30½′
	Declination of the upper horn [Declin. ſuperior. cornu]	20° 16′
	Correction of the armillae, subtracted [Correctio Armill. ſubt.]	1 30
	Declination of the upper limb, corrected, north [Declin. ſup. limbi corr. B.]	20° 14′ 30″
	Declination of the centre of the Moon [Declin. centri ☾]	19° 58′ 30″

Diagram. A spherical triangle, set in the right column beside its values. Two curved sides descend from the apex A to B on the left and C on the right; a curved line joins B and C. Below BC the two sides continue a short way down to a second curved line that closes the figure at the foot. Three letters are printed; no other labels.

- A (apex, top): A
- B (left end of the curved line BC): B
- C (right end of the curved line BC): C

BA	68° 29′ 30″
CA	70° 1′ 30″
BC	39° 1′
BAC	41° 48′ 44″

Right ascension of the bright star of ♈ [Aſc. recta lucidæ ♈]	26° 6′ 30″
Right ascension of the centre of the Moon [Aſc. recta centri ☾]	67° 55′ 14″

Resp. longitude [Reſp. Longitudo]	9° 18′ 10″ ♊
Latitude [Latitudo]	1° 58′ 18″ south [M.]

Both from our table and from the working of triangles. [tam ex tabula noſtra quam ex operatione triangulorum.]

4^h 31^m 0^s [H. 4 31′ 0″]	Distance of the eastern limb of the Moon from Aldebaran [Diſt. orient. limbi ☾ ab Aldeb.]	6° 38′
	Distance of the centre from Aldebaran [Diſt. centri ab Aldeb.]	6° 22′
	Declination of the centre of the Moon [Declin. centri ☾]	19° 59′
	Declination of Aldebaran [Decl. Aldeb.]	15° 37′ 15″

Diagram. A narrow spherical triangle, set in the left column beside the "Decl. Aldeb." line and the four values that follow. Two curved sides descend from the apex A at the top and draw slightly apart towards the foot; a short straight line joins them at B (left) and C (right). Below BC the two sides continue a little way down to a straight line that closes the figure at the bottom. Three letters are printed; no other labels.

- A (apex, top right of the figure): A
- B (left end of the short line BC): B
- C (right end of the short line BC): C

BA	70° 1′
CA	74° 22¾′
BC	6° 22′
BAC	4° 52⅓′

Right ascension of Aldebaran [Aſc. recta Aldeb.]	63° 9′ 40″
Right ascension of the centre of the Moon [Aſc. recta centri ☾]	68° 2′ 0″
Resp. longitude of the Moon [Reſp. Longitudo ☾]	9° 24′ 17″ ♊

Interval of time between the two observations 12^m 20^s. [Interſtitium temporis inter vtramque obſeruationem 12′ 20″]

Difference of the motions 6 7. [Differentia motuum 6 7]

The observations here therefore agree for establishing the place of the Moon. [Conueniunt itaque hic obſeruationes pro loco ☾ ſtabiliendo.]

II.

Near the nonagesimal degree from the Ascendant, from the observation of the azimuth and of the altitude and of the declination, with the corrected time. The Moon near 90, $5^h\ 22^m$. [Iuxta nonageſ. gradum ab Aſcendente ex obſeruatione azimuthi & altitudinis & declinationis cum tempore correcto. ☾ iuxta 90 H. 5 M. 22.]

$5^h\ 19^m\ 15^s$ [H. 5 19′ 15″]	Azimuth of the eastern limb [Azim. orient. limbi]	16° 19′

For the correction of the azimuth [Pro correctione azimuthi]

In the triangle BAC are given [In triangulo BAC dantur]

Diagram. A tall, narrow, horn-shaped figure, set in the left column beside the "In triangulo BAC dantur" values. Two curved lines descend from A at the top, drawing apart towards the foot, where a straight line closes the figure. Part-way down, a small circle straddles the left-hand curve; its right half is shaded. B stands outside the figure to the left of the small circle; C stands inside the small circle. Three letters are printed; no other labels.

- A (top, at the meeting of the two curves): A
- B (left of the small circle, outside the figure): B
- C (inside the small circle): C

BA	36° 36′	complement of the altitude [compl. alt.]
BC	0° 16′	semidiameter of the Moon [ſemidiam. ☾]
Therefore BAC [Ergo BAC]	0° 26⅚′	the true semidiameter of the Moon in the horizontal azimuth [vera ſemidiameter ☾ in Azimutho horizontali.]

Therefore the azimuth of the centre of the Moon [Ergo Azim. centri ☾]	15° 52⅙′
Declination of the centre, corrected, by the armillae [Declin. centri correcta, per Armillas]	20° 6¼′

From this, first using the time and the right ascension of the Sun, the right ascension of the Moon is sought. [Hinc primum adhibito temp. & aſcenſione recta ☉, quæritur Aſcenſ. recta ☾.]

In the triangle ABC are given: [In triangulo ABC dantur:]

Diagram. A semicircle on a straight base, set at the foot of the left column beside the "BA" and "BC" values. A stands at the top of the arc and B on the arc to the upper right. A second, inner arc runs from B leftwards, passing just below A and through C, and comes down to the base inside the semicircle near its left end; a further arc runs from near A down to the left side of the

semicircle. A straight line runs from the left side of the semicircle down to the base near its middle. C stands inside the figure at the upper left. Three letters are printed; no other labels.

- A (top of the semicircle): A
- B (upper right of the semicircle): B
- C (inside, upper left, on the inner arc): C

BA	34° 5′ 30″	Complement of the elevation of the pole [Compl. Eleuat. Poli]
BC	69° 53′ 45″	Complement of the declination of the Moon [Compl. declin. ☾]
CAB	164° 7′ 56″	Complement of the azimuth to the semicircle [Compl. Az. ad ſemicirculum]
Therefore AC [Ergo AC]	36° 34′ 45″	Complement of the altitude by computation; by observation it was 36° 36′, but limited, 36° 35⅓′ [Compl. altit. per ſupputationem, quod per obſeruationem fuit 36 36, limitatum autem 36 35⅓]
And ABC [Et ABC]	9° 57′ 33″	comes out at 10 3 25 [provenit 10 3 25]

For the declination of the Moon from the observed azimuth and altitude near the nonagesimal degree. [Pro declinatione ☾ ex obſeruatis azimutho & altitudine iuxta nonageſ. gradum.]

The complement of the declination is given by computation, and therefore the declination [Datur complementum declinationis ex ſupputatione & propterea declinatio]	20° 5′ 0″
Observed declination [Declinatio obſeruata]	20° 6¼′
Declination of the Moon near 90, limited from both sought [Declin. ☾ iuxta 90 ex vtroque quæſito limitata]	20° 5′ 40″

With this corrected declination set, together with the observed altitude of the Moon, 53° 24′ 0″, the angle ABC comes out anew, as appears, at 10° 4′ 0″. [Hac autem declinatione correcta poſita vna cum altitudine ☾ obſeruata 53 24 0 emergit vt apparet denuo angulus ABC 10 4 0.]

Finally, with all the givens [δεδομένοις] [Greek: δεδομένοις (dedomenois, "the givens")] limited against one another, the same angle, which measures the distance of the Moon from the meridian and is to be set as settled, is at last traced out by a computation made according to the preceding method. [Denique limitatis inter ſe omnibus δεδομένοις idem angulus, qui diſtantiam ☾ a meridiano metitur pro rato ponendus, vltimo per ſupputationem iuxta præcedentem methodum inſtitutam, perueſtigatur.]

BA	34° 5′ 30″	Complement of the elevation of the pole [Complem. Eleuat. Poli]
CB	36° 35′ 20″	Complement of the limited altitude [Compl. Altit. limitatæ]

CA	69° 54′ 20″	Complement of the limited declination [Compl. Decl. limitatæ]
CAB	9° 59′ 55″	Arc of the distance of the Moon from the meridian [Arcus diſtantiæ ☾ a meridiano]

Given time [Tempus datum]	$17^h\ 19^m\ 15^s$ [H. 17 19′ 15″]
Resp. right ascension [Reſp. Aſcenſio recta]	259° 48′ 45″
Right ascension of the Sun at this time [Aſc. R. ⊙ ad hoc tempus]	158° 27′ 30″
Arc of the distance of the Moon from the midheaven [Arcus diſt. ☾ a M. C.]	9° 59′ 55″
The sum, with the whole circle cast out: right ascension of the Moon [Reiecto toto circulo aggregatum, Aſc. R. ☾]	68° 16′ 10″
Declination of the Moon [Declinatio ☾]	20° 5′ 40″
Resp. longitude [Reſp. Longitudo]	9° 38½′ ♊
Latitude [Latitudo]	1° 56⅓′ south [M.]
Longitude of the head ☊, mean between the Copernican and the Alphonsine calculation [Longitudo capitis ☊ media inter calculum Copernicæum & Alphonſinum]	23° 17′ 30″
Argument of latitude of the Moon [Argumentum Latit. ☾]	11^s 16° 21′ 0″
True latitude of the Moon [Vera latitudo ☾]	1° 14′ 55″
Parallax of the Moon [Parallaxis ☾]	0° 41′ 25″

For the true place of the Moon near the nonagesimal degree, from the tables for the motions corrected according to our own emendation. [Pro vero loco ☾ iuxta nonageſ. gradum ex tabulis pro motibus iuxta propriam emendationem correctis.]

On 20 August [Die 20 Auguſti]	$5^h\ 19¼^m$ [H. 5 19¼′]
Equation of time [Æquatio temporis]	5¼
Equated time [Tempus æquatum]	$5^h\ 19^m\ 0^s$
Time equated and reduced [Temp. æquatum & reductum]	$5^h\ 54^m$ A. M. [H. 5 54 A. M.]
Simple longitude of the Moon from the tables [Simplex longit. ☾ ex tab.]	4^s 30° 59′ 24″
Simple longitude of the Moon, corrected [Simplex long. ☾ correcta]	4 30 54 4
Anomaly of the Moon from the tables [Anomalia ☾ ex tabulis]	3 0 6 20
Anomaly of the Moon, corrected [Anomalia ☾ correcta]	2 59 15 50
Double longitude of the Moon [Duplex longit. ☾]	3 1 48 8
Prosthaphaeresis of the second epicycle [Proſtaph. II Epicycli]	0° 19′ 11″
The proportional minutes [Scrupula proportionalia]	59 59
Equated anomaly [Anomalia coæquata]	2 58 56 39
Prosthaphaeresis of the first epicycle [Proſtaph. I Epicycli]	5 58
Excess [Exceßus]	3 48
Corresponding part [Pars congruens]	3 47
Absolute prosthaphaeresis, subtracted [Proſtaph. abſoluta, ſubt.]	0° 9′ 45″
Longitude of the Moon from the Sun [Longitudo ☾ a ⊙]	4 30 44 19
Our simple Sun [Noſter ſimplex ⊙]	2 38 30 12

True place of the Moon [Verus locus ☾]	♊ 9° 14′ 31″
The Prutenic calculation without correction of the motions [Prutenicus calculus absque motuum correctione]	9 27 0
Observed longitude of the Moon [*Longitudo ☾ obſeruata*]	*9° 38′ 30″*
Longitude of the Moon from the Prutenic Tables [*Long. ☾ ex tab. Prut.*]	*9° 14′ 31″*
Difference [*Differentia*]	*24 0*

By about this much the simple Moon falls short from the Sun according to this reckoning: 18′ will be added to the simple Moon. [*In tantum ferme ſimplex ☾ a Sole deficit iuxta hanc rationem: addentur in ſimpl. ☾ 18′.*]

III.

From the transit of the Moon through the meridian, to search out its apparent place, together with the parallax from the altitude. [Ex tranſitu ☾ per meridianum apparentem eius locum rimari vna cum parallaxi ex altitudine.]

At 6^{h} 0^{m} 43^{s} the transit of the centre of the Moon through the meridian. [H. 6 0′ 43″ Tranſitus centri ☾ per mer.]

Time converted into right ascension [Tempus in Aſc. rect. conuerſum]	270° 10′ 45″
Right ascension of the Sun [Aſc. recta ☉]	158° 29′ 0″
Right ascension of the centre of the Moon [Aſcenſ. recta centri ☾]	68° 39′ 45″
Declination from the altitude, corrected [Declin. ex altit. correcta]	20° 12′ 45″
Resp. longitude [Reſp. Longitudo]	♊ 10° 1′ 26″
Latitude, south [Latitudo M.]	1° 50′ 18″
Argument of latitude [Argumentum latitudinis]	11^{s} 16° 44′ 0″
Resp. true latitude of the Moon [Reſp. Latitudo ☾ vera]	1° 12′ 10″ south [M.]

And these are without the parallax of longitude. But if that is added, 8′, [Atque hæc absque parallaxi longitudinis. Si autem ea addatur M. 8.]

the argument of latitude comes out [Provenit argum. latit.]	11 16 52 0
And therefore the true latitude [Et propterea latit. vera]	south [M.] 1° 11′ 24″

Diagram. A semicircle on a straight base, set at the top of the right column to the left of its values. A stands on the arc at the upper left and B on the arc near the top, a little right of A. From A a curved line runs down to the right to C, which stands inside the figure near the right side of the semicircle; from B two curved lines run down to the right, one passing C and reaching the base near its right end. A straight line runs from the base, a little right of its middle, up through C to the right side of the semicircle. Three letters are printed; no other labels.

- A (upper left of the arc): A

- B (near the top of the arc, right of A): B
- C (inside, near the right side): C

BA	23° 31′ 30″
CA	91° 11′ 24″
BAC	19° 50½′
Therefore BC [Ergo BC]	69° 7′ 30″

True declination [Vera declinatio]	20° 52′ 30″
Observed declination [Obſeruata declinatio]	20° 12′ 45″
Parallax of altitude of the Moon [Parallaxis altitudinis ☾]	39 45

IV.

Finally, to derive the same apparent motion of the Moon from its observation from the Sun, newly risen, and to conclude an analogue to those that became known from the foregoing. [Poſtremo eundem ☾ motum apparentem, ex obſeruatione eius a ☉ recenter exorto producere & analogon ijs, qui ex ſuperioribus innotuerunt concludere.]

At $6^h\ 56^m\ 30^s$, the place of the Sun being set at 6° 45′ ♍. [H. 6 56′ 30″ Poſito loco ☉ in 6 45 ♍]

The eastern limb of the Moon appeared on the zodiacal armillae at [Apparebat orient. limbus ☾ in Armillis zodiacalibus in]	10° 33½′ ♊
But the Sun, according to the computation from our Ephemerides, was at [At ☉ iuxta ſupputationem ex noſtris Ephemeridibus eßet in]	6° 47′ 0″ ♍

Altitude of the Sun a little over 15°. [Altit. ☉ paulo vltra 15 grad.]

Parallax of the Sun, added [Parallaxis ☉ add.]	2 54
Refraction, subtracted [Refractio ſubt.]	7 20
Difference between the true and the apparent altitude [Differentia inter veram viſamque altit.]	4 26
It corresponds in the longitude of the Sun to [Reſpondet in longitudine ☉]	3 30 subtracted [ſub.]
Apparent place of the Sun [Locus ☉ apparens]	6° 43½′ ♍

For the correction of the zodiacal armillae with respect to the fixed stars, those having the same positions as the Moon about the meridian were examined afterwards,[1] and this chiefly in the observation of the bright star of ♈ and of the lower head of ♊; we found that at least 7′ must be added, so that the

eastern limb here was in longitude 10° 39′ 0″ ♊. [Pro correctione Armillarum zodiacalium prout ad ſtellas fixas, poſtea examinabanur[1] eoſdem ſitus cum ☾ circa meridianum habentes idque præcipue in lucidæ ♈ & inferioris capitis ♊ obſeruatione, inuenimus ad minimum 7′ addenda, vt eßet hic orient. limbus in longitudine 10 39 0 ♊]

Semidiameter of the Moon, subtracted [Semidiameter ☾ ſub.]	16
Observed or apparent place of the Moon [Locus ☾ obſeruat. ſeu apparens]	10° 23′ 0″ ♊

But if all these lunar appearances, according to the observations demonstrated above, and after the nonagesimal degree, are reduced by its diurnal motion to the time of its stay there, with the parallaxes of longitude of the Moon applied everywhere, there will appear both the agreement of the observations among themselves and, of the same observations, from the ta- [Si autem hæ omnes ☾$^{re^s}$ apparentiæ ſecundum prædemonſtratas obſeruationes, & poſt nonageſ. gradum ad tempus moræ eius ibidem per motum eius diurnum reducantur, applicatis vbique parallaxibus longitudinis ☾, apparebit tum obſeruationum inter ſe conuenientia, tum earundem a ta-]

[1] Compare below, among the observations of the fixed stars, on 2 September. [Cf. infra inter obſervationes ſtellarum fixarum die 2 Septembris.]

bles, even corrected, the discrepancy around this perigean position of the Moon.[1] [bulis vel correctis circa hunc perigæum ☾ ſitum diſcrepantia[1].]

For the parallax of the Moon from our recent hypothesis, found in the year 96.[2] [Pro parallaxi ☾ ex noſtro recenti hypotheſi anno 96 inuenta[2].]

At 6^h 1^m the transit of the Moon. [H. 6 M. 1 ☾ tranſitus]

Meridian altitude [merid. alt.]	54° 18¼′
Double longitude of the Moon [Duplex longitudo ☾]	6^s 2° 34′ [6ſig·2 34]
Equated anomaly [Anomalia coæquata]	6° 0′ 21″

From this the side of the distance of the Moon from the Earth is 87920. [Hinc latus diſtantiæ ☾ a terra 87920.]

Resp. parallax in the circle of altitude, in units of which the semidiameter of the eccentric is set at 100000: 60 semidiameters. [Reſp. parall. in circulo alt. qual. ſemidiameter Eccent. 100000 ponitur 60 ſemid.]

Resp., I say [Reſp. inquam]	38′ 2″
Corrected by [Correcta per]	2 30
	40 30

21 August, morning [DIE 21 AUGUSTI, MANE.]

The Moon was observed in the same way as it approached the nonagesimal degree and the meridian. [Obſeruabatur eodem modo ☾ appropinquans nonageſ. gradui & meridiano.]

6 11¾	Azimuth of the Moon [Azim. ☾]	22° 0′	Declination [Decl.]	22° 36⅓′ lower [inf.]
	Altitude [Altit.]	55° 15⅔′		23° 6′ upper [ſup.]
		55 45⅔		
6 18½	Azimuth of the Sun [Azim. ☉]	92° 19′	Distance of the Sun, east [Diſt. ☉ orient.]	
	Altitude of the Sun [Alt. ☉]	8° 55′		86° 54′
6 20¾	Azimuth of the Sun [Azim. ☉]	91° 49′		86° 18′
	Altitude of the Sun [Alt. ☉]	9° 16′		

These were for correcting the clock by the Sun, which here did not shine very clearly because of the nearness of the horizon and the rather thin clouds passing across. [Hæc pro corrigendo horologio in ☉, qui hic non admodum pure ſplendebat propter vicinitatem horizontis & rariores nubes intercurrentes.]

The Moon was observed again. [Iterum ☾ obſeruabatur.]

	Azimuth	Altitude [Altit.]	Declination [Declinatio]
6 26⅔	15° 55′	55° 55⅔′	23° 7¾′
		56° 27⅓′	22° 37′
6 32 0	13° 43′	56° 3′	23° 7′ about [fere]
		56° 33′	22° 37⅓′
6 38⅚	10° 54′	56° 21½′	23° 7½′ good [bona]
		56° 53⅓′	22° 38′

Here the Moon seemed to linger about 90, as both horns, standing up at right angles to the horizon, sufficiently showed. [Hic viſa eſt ☾ circa 90 morari, id quod vtraque cornua ad angulos rectos horizonti ſupereminentia ſatis arguebant.]

	Azimuth	Altitude [Altit.]	Declination [Declinatio]	The Sun on the equator [☉ in æquat.]
6 45¾	7° 58′	56° 29′	23° 8⅙′	79° 48½′
6 40¾ corrected [corr.]		56° 53′	22° 39′	

These observations are good, the Moon lingering about 90. [Hæ obſeruationes bonæ ☾ circa 90 commorante.]

	Azimuth	Altitude [Altit.]	Declination [Declinatio]	The Sun on the equator [☉ in æquat.]
6 53 0	5° 4′	56° 49½′	23° 9′	78° 4′
6 47 40 corrected [corr.]		57° 7⅔′	22° 40′	

7 4 20	*The horns of the Moon were passing through the meridian.* [*Tranſibant cornua ☾ per meridianum*]	
7 5 20	*The eastern limb passed through the meridian. The altitude of the upper was* [*Tranſiuit orient. limb. per mer. Fuit altit. ſuper.*]	
	by the revolving quadrant [*per Volub.*]	57° 13½′
	by the steel instrument [*per Chalyb.*]	57° 14′
	of the lower, by the revolving quadrant [*inferioris per Volub.*]	56° 43⅓′
	by the steel instrument [*per Chalyb.*]	56° 44′
	Declination of the upper [*Decl. ſuper.*]	23° 9½′ *or* [*vel*] ⅔
	of the lower [*infer.*]	22° 40½′
	Set the declination in the meridian [*Pone declin. in meridiano*]	22° 53½′
	as the steel quadrant has it. [*vt habet quadrans Chalyb.*]	

	Azimuth of the Sun [*Azim. ☉*]	*Altitude of the Sun* [*Altit. ☉*]	*Equatorial distance* [*Diſt. æquator.*]
7 12 0	80° 52′	16° 31′	73° 28′
7 6⅔ *corrected* [*corr.*]			
7 13 30	80° 32′	16° 43′	72° 52′
7 16 0	79° 58′	17° 2′	72° 14′
7 17 30	79° 38′	17° 17′	71° 50′
7 12 40 *corrected* [*corr.*]			

At the following noon the Sun was seen at an altitude, by the steel instrument, of [*☉ in meridie ſequente viſus eſt in altitudine per Chalyb.*]	42° 40′ 50″
by the revolving quadrant [*per Volub.*]	42° 40′

Resp. 7° 56⅙′ and 7° 58′ ♍. Our Ephemerides have the place of the Sun at 7° 57′ ♍, as if midway between the two places. [*Reſp. 7 56⅙ & 7 58 ♍. Ephemerides noſtræ habent locum ☉ in 7 57 ♍, quaſi medium inter vtrumque locum.*]

Since, therefore, the place of the Sun is as if midway between the observation, both altitudes of the quadrants will accordingly be limited in the Ephemerides, so that the difference is imperceptible, especially in the steel instrument; and this also in the observations of the Moon made earlier, about the 7th hour, when it was crossing the meridian, so that the altitude by both quadrants was then in truth: [*Quoniam igitur*

locus ⊙ quaſi medius eſt inter obſeruationem, in Ephemeridibus limitabitur itaque vtraque altitudo quadrantum, vt inſenſibile ſit diſcrimen præſertim in Chalyb., idque etiam in ☾ obſeruationibus antea factis circa horam 7^{am} *cum meridianum tranſiret, ita vt fuerit tunc reuera per vtrumque quadrantem*]

altitude of the upper horn [*altitudo ſuper. cornu*]	57° 13′ 45″
of the lower [*infer.*]	56° 43′ 45″
Therefore the altitude of the centre [*Ergo altit. centri*]	56° 58¾′

A trial can also be made on the stars. [*Poteſt etiam in ſtellis fieri periculum.*]

[1] Compare Progymnasmata p. 123 (Opera vol. II p. 135). [Cf. Progymn. p. 123 (Opera T. II p. 135).] [2] From codex V. [E codice V.]

For the correction of the clock from the azimuth of the Sun, while the Moon was passing through the meridian on 21 August. [Pro correctione horologij ex Azimuth ⊙, ☾ tranſeunte per meridianum die 21 Auguſti.]

7^h exactly is presupposed, both corrected and equated; for this time the declination of the Sun from our own Tables is 8° 41½′. The right ascension from the same tables is 159° 26′, and this from the given place of the Sun, 7° 44¾′ ♍. On the clock 7^h 12^m, azimuth of the Sun from the meridian 80° 52′. In the triangle ABC is given: [Præſupponitur H. 7 exacte tam correcta quam æquata, ad quam declin. ⊙ ex Tabulis proprijs eſt 8 41½. Aſcenſio vero recta ex ijsdem tabulis 159 26, eaque ex loco ⊙ dato 7 44¾ ♍. In horol. H. 7 M. 12 Azim. ⊙ a merid. 80 52 In triangulo ABC datur:]

Diagram. A semicircle on a straight base, set in the left column to the left of the lines "eaque ex loco ⊙ … ABC datur:". A stands at the top of the arc and B on the arc to the upper right. From A a curved line runs down, bending slightly left, to the base a little left of its middle. From B a curved line runs down to the left, meeting the line from A near C, and continues a short way below it. A straight line runs from the left side of the arc down to the right to the base near its middle, where a point is marked. C stands just right of the meeting of the two curves, inside the figure. Three letters are printed; no other labels.

- A (top of the arc): A
- B (on the arc, upper right): B
- C (inside, left of centre, at the meeting of the curves from A and B): C

BA	34° 5′ 30″	Elevation of the equator [Eleuatio æquatoris]
CA	81° 18′ 30″	Complement of the declination of the Sun [Compl. declinat. ⊙]
CAB	99° 8′ 0″	Complement of the azimuth to the semicircle [Compl. Azim. ad ſemicircul.]

Therefore ABC is 73° 20′. If this is subtracted from the right ascension of the Sun, it leaves the right ascension of the midheaven, 86° 6′. Converted into

time, the same gives 4^h 53⅓^m. Subtracted from 12^h, this leaves a remainder of 7^h 6½^m, namely the corrected time, which on the clock was 7^h 12^m. And so that is to be corrected by 6½^m. The equatorial distance, however, gives about 6^m. When this calculation was tested on the large globe, it is shown that, with the Sun duly set at this place, the right ascension of the midheaven is 86° 3′, which had been computed as 86° 6′. [Ergo ABC 73 20, qui ſi ſubtrahatur ab Aſcenſione R. ⊙, relinquit Aſcenſionem rectam M. C. 86 6. Idem autem in tempus conuerſus dat H. 4 M. 53⅓. Hoc vero ab H. 12 ſubductum reſiduum facit H. 7 M. 6½, tempus ſcilicet correctum, quod in horologio fuit H. 7 M. 12. Ideoque illud M. 6½ corrigendum venit. Æquatorea autem diſtantia habet M. 6 fere. Calculi huius experimentatione in globo magno facta, oſtenditur ex hoc loco ⊙ debite impoſito Aſcenſio recta M.C. 86° 3′, quæ ſupputata fuit 86 6.]

Earlier, when the clock showed 6^h 18½^m, the clock corrected [Antea horologio H. 6 M. 18½ monſtrante, horologium correctum]

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from the azimuth of the Sun [ex Azim. ⊙]	6^h 12^m 15^s [H. 6 12′ 15″]
from the equatorial distance [ex diſt. æquat.]	6^h 12^m 20^s

For the apparent place of the Moon at the time of the transit through the meridian, on 21 August. [Pro apparente loco ☾ ad tempus tranſitus per meridianum Die 21 Auguſti.]

At 6^h 59^m 0^s, the time corrected from the azimuth of the Sun and the equatorial distance, the centre of the Moon was passing through the meridian. [H. 6 59′ 0″ tempore ex Azimuth ⊙ & diſtantia æquatorea correcto, tranſibat centrum ☾ per merid.]

Place of the Sun [Locus $\odot^{li^s}$]	7° 44⅔′ ♍
Right ascension of the Sun [Aſc. R. ⊙]	159° 26′

To the clock time, namely 5^h 1^m, the supplement of the given time to 12^h or the following noon, there correspond equinoctial times of 75° 15′; subtracted from the right ascension of the Sun, these leave the right ascension of the midheaven, or of the centre of the Moon, 84° 11′. [Tempori horologij, videlicet H. 5 M. 1 ſupplemento dati temporis ad H. 12 ſeu meridiem ſequentem reſpondent tempora æquinoctialia 75° 15′, quæ ſubducta Aſcenſioni rectæ $\odot^{li^s}$ relinquunt Aſcenſionem rectam M. C. ſeu ☾ centri 84 11,]

But the apparent declination of the Moon [Declinatio vero ☾ viſa]	north [B.] 22° 53½′
To these, resp., the longitude of the Moon [Quibus reſp. ☾ Longitudo]	24° 38⅗′ ♊
Latitude [Latitudo]	0° 31½′ south [M.]

From the Prutenic Tables, according to our own emendation of the motions of the Moon, longitude [Ex tabulis Prutenicis ſecundum emendationem motuum ☾ propriam Longitudo]	24° 44′ 50″
Apparent and reduced time from Magini's Ephemerides [Tempus apparens & reductum ex Ephemeridibus Magini]	6^h 55^m [H. 6 M. 55.]
The place of the Moon corresponds [Reſpondet locus ☾]	♊ 24° 43′ 0″
Transit of the Moon through the nonagesimal degree [Tranſitus ☾ per nonageſ. gradum]	6^h 33^m [H. 6 33′]
Difference of the transit through the meridian and 90° [Differ. tranſitus per merid. & 90°,]	26′
Parallax of the Moon in latitude [ἐν πλάτει], in altitude [Parallaxis ☾ ἐν πλάτει 37′ in altit.]	37′
Resp. parallax of longitude, added [Reſp. Parallaxis longit. add.]	3′ 25″
True longitude of the Moon at the transit through the meridian [Vera Longit. ☾ in tranſitu per merid.]	♊ 24° 42′
Motion of ☊, from Copernicus [Motus ☊ Ex Copernico]	♊ 23° 8′
from Alfonso [Ex Alphonſo]	23 20
Difference [Differentia]	12
Motion of ☊ [Motus ☊]	♊ 23° 14′
Argument of latitude of the Moon [Argumentum latitudinis ☾]	1° 28′ 0″
Resp. true latitude of the Moon [Reſp. Latitudo vera ☾]	north [B.] 0° 8′ 3″

For the true declination of the Moon [Pro vera Declinatione ☾]

Diagram. A semicircle on a straight base, set in the right column to the left of the values BA to BC. A stands on the arc at the upper left and B on the arc near the top, a little right of A. From A a curved line runs to the right and down to meet, near C, a second curved line that runs from B down to the base near its right end. A straight line runs from the base at its middle, where a point is marked, up to the right past C to the right side of the semicircle. C stands inside the figure, just left of the meeting of the two curves. Three letters are printed; no other labels.

- A (on the arc, upper left): A
- B (on the arc, near the top, right of A): B
- C (inside, near the right side): C

BA	23° 31′ 30″
CA	89° 51′ 57″
BAC	5° 18′ 0″
BC	66° 26′ 52″

True declination of the Moon [Declinatio vera ☾]	23° 33′ 8″
Apparent declination of the Moon [Declinatio viſa ☾]	22° 53′ 30″
Parallax of altitude [Parallaxis altit.]	39 38

For the parallax of the Moon in the circle of altitude, from the Prutenic Tables [Pro Parallaxi ☾ in circulo altit. ex Tabulis Prutenicis]

True distance of the Moon from the zenith in the meridian circle [Vera diſt. ☾ a vertice in circulo merid.]	32° 28′
Double distance of the Moon from the zenith [Duplex diſt. ☾ a vertice]	64° 56′
Double longitude of the Moon [Duplex longit. ☾]	207° 52′
Equated anomaly [Anomalia coæquata]	193° 13′
Difference of the 1st and 2nd limits [I & II limitis differentia]	1′ 14″
Parallax of the 2nd limit [II limitis parallaxis]	28 46
Parallax of the 3rd limit [III limitis parallaxis]	34 16
Difference of the 3rd and 4th limits [III & IV limitis differ.]	1 52
Corresponding part of the difference of the 2nd limit, subtracted [Pars congruens differentiæ II limitis, ſubt.]	1 10

Corresponding part of the difference of the 3rd and 4th, added [Pars congruens III & IV, differ., add.]	1 45
Proportional minutes of the lesser epicycle [Scrupula proportionalia min. epicycli]	56 30
Difference of the emended parallaxes [Differ. parallaxium emendatarum]	8 25
Proportional minutes of the greater epicycle [Scrup. proport. mai. epic.]	59 8
Corresponding part of the difference of the parallax, added [Pars congruens differentiæ parallax., add.]	8 18
Absolute parallax in the circle of altitude [Parallaxis abſoluta in circulo altit.]	35 54
Parallax from the observation [Parallaxis ex obſeruat.]	39 38
Difference [Differentia]	3 44

25 August, evening [DIE 25 AUGUSTI, VESPERI.]

For the correction of the armillae, which we used in the preceding days for the observed declination of the Moon [Pro Armillarum correctione, quibus ſuperioribus diebus in declinatione ☾ obſeruata vſi ſumus]

	Meridian altitude [Altit. merid.], by the steel instrument [per Chalyb.]	by the revolving quadrant [per Volub.]	Declination [Declin.]
Of the beak of the Swan [Roſtri Cygni]	61° 14 11/12′	61° 15¼′	27° 11½′
			27° 11′
The 5th in the upper [5 in ſuper.]	43° 46½′	43° 47⅔′	9° 42⅔′

	Meridian altitude [Altit. merid.], by the steel instrument [per Chalyb.]	by the revolving quadrant [per Volub.]	Declination [Declin.]
wing of the Vulture [ala Vult.]			9° 43½′
Of the bright star of the Vulture [Lucidæ Vult.]	41° 57¼′	41° 58⅝′	7° 52′
			7° 52⅓′
Of the head [Capitis]	48° 48′	48° 48 1/12′	14° 44′
of the Dolphin [Delphini]			14° 43¼′

2 September[1] [DIE 2 SEPTEMBRIS[1].]

The western limb of the Moon was observed from Jupiter. [Obſeruabatur occid. limbus ☾ a Ioue.]

Hours, minutes [H.M.]	Distance [Diſtantia]	Declination [Declin.]	Altitude by the lesser quadrant [Altit. per Quad. min.]
7^h $27½^m$	3° 33′	21° 0′ upper cor. [ſup. cor.]	7° 50′
		21° 33′ lower [infer.]	
7^h $35½^m$	3° 29′	20° 59′	7° 20′
		21° 31½′	

The western limb of the Moon was distant from the sixth num. in the shoulder of ♐. [Occid. limb. ☾ diſtabat a ſexta num. in hum. ♐]

Hours, minutes [H.M.]	Distance [Diſtantia]	Declination [Declin.]	Altitude by the lesser quadrant [Altit. per Quad. min.]
7^h $45⅓^m$	28° 45′	21° 36′ lower [inf.]	
		21° 2′ upper [ſup.]	
7^h 51^m		21° 2½′	6° 5′
		21° 30′	
7^h $56⅓^m$	28° 43′		5° 30′
8^h $0¼^m$	28° 37′	21° 2½′	5° 10′
		21° 29½′	

The bright star of the Vulture was observed for correcting the clock. [Obſeruabatur Lucida Vulturis pro horologio corrigendo.]

8 5¾	The Vulture, east [Vultur. or.]	2 6

3 September [DIE 3 SEPTEMBRIS.]

Here the Moon was near apogee and quadrature. [Luna hic fuit circa apogæum & □^{am}.]

5^h $53½^m$ [H. 5 53½′]	Transit of the western [Tranſitus occid.]
5^h 44^m 20^s corrected [5 44 20″ corr.]	limb through the meridian [limbi per Merid.]
Altitude of the upper, by the steel instrument [Altit. ſuper. per Chalyb.]	10° 50′
of the lower [infer.]	10° 16⅚′
of the upper, by the revolving quadrant [ſuper. per Volub.]	10° 49½′
of the lower [infer.]	10° 17′

N.B. Both quadrants and the armillae were corrected exactly on the same day. [N.B. Vterque quadrans & Armillæ eodem die ad amuſsim corrigebantur.]

Hours, minutes [H. M.]	Declination, upper/lower [Decl. ſup./inf.]	Azimuth of the western limb of the Moon [Azim. occ. limbi ☾]	Altitude, upper/lower [Altit. ſup./inf.]
6^h $6½^m$	23° 25′		
	23° 50½′		
6^h $18½^m$	23° 24′		
	23° 50′		

According to the computation the Moon was near the nonagesimal degree. [Luna iuxta ſupput. fuit circa nonag. grad.]

Hours, minutes [H. M.]	Declination, upper/lower [Decl. ſup./inf.]	Azimuth of the western limb of the Moon [Azim. occ. limbi ☾]	Altitude, upper/lower [Altit. ſup./inf.]
6^h 20^m		5° 0′	10° 34′
			10° 10′
6^h 28^m 35^s	23° 25⅓′	7° 16′	10° 27½′
	23° 51′		10° 0′

Between this observation and the following one the Moon was near the 90th degree, as far as sight goes. [Inter hanc & ſequentem obſeruationem fuit ☾ circa 90 gradum quantum ad viſum.]

	Declination [Decl.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper/lower [Altit. ſup./inf.]	Distance of Jupiter from the western limb of the Moon [Diſt. ♃ ab occ. limb. ☾]
6 34⅔		8° 32′	10° 21′	
			9° 53′	
6 39 0	23° 27′ about [fere]	9° 25′	10° 15½′	
	23° 53′		9° 47′	
6 51 55				8° 5′*

	Declination [Decl.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper/lower [Altit. ſup./inf.]	Distance of Jupiter from the western limb of the Moon [Diſt. ♃ ab occ. limb. ☾]
	* uncertain because of the daylight [* incerta propter diej lucem]			
6 52 30		12° 20′	9° 55⅚′	
6 56⅔				8° 5′
6 45 0 corrected [corr.]				
6 57⅓	23° 28′	13° 19′	9° 47⅔′	
	23° 55′			
7 3½				8° 7¼′
7 4⅓	23° 28′			
	23° 57′			
7 19 0	23° 26′			8° 11′ about [fere]
	23° 58⅙′ at the outermost extremities [in vltimis extremitatibus]			

Note: Jupiter and the Moon had almost the same altitude. [*Nota.* ♃ *&* ☾ *habuere eandem quaſi altitudinem.*]

7 29	*The bright star of the Vulture was* [*Fuit lucida Vulturis*]	
7 15½ *corrected* [*corr.*]	*east* [*orient.*]	12 10
7 30½	*The same bright star of the Vulture* [*Eadem luc. Vult.*]	11 46
7 32	*The same as before* [*Eadem vt prius*]	11 22

[1] You will find the observations for correcting the zodiacal armillae below, among the observations of the fixed stars. [Obſervationes pro Armillis Zodiacalibus corrigendis infra inter obſervationes ſtellarum fixarum invenies.]

From this the clock, which had been corrected at noon, can be verified. [*Hinc poteſt verificari horologium, quod in meridie erat correctum.*]

7 37	Distance of the western limb from Jupiter [Diſt. occid. limbi a ♃]	8° 16⅔′
7 43⅙	*The same distance* [*Eadem diſtantia*]	8° 19′
	The Vulture, east [*Vultur orient.*]	8 38
7 47⅓	*The Vulture, east* [*Vultur or.*]	7 45
7 33 10 corrected [corr.]	*Declination of the Moon, upper* [*Declin. ☾ ſup.*]	23° 28′
	lower [*inf.*]	23° 58′
7 52⅔	*The same distance of Jupiter and the Moon* [*Eadem diſt. ♃ & ☾*]	8° 25′

4 September [DIE 4 SEPTEMBRIS.]

In the evening the Moon was observed near the beginning of the winter tropic. [Veſperi obſeruabatur ☾ circa initium Tropici hyberni.]

Hours, minutes [*H.M.*]	*Western limb of the Moon, azimuth east* [☾ *occ. limb. Azim. or.*]	*Altitude* [*Altitudo*]	*Declination* [*Declinatio*]
6^h $13\frac{1}{6}^m$	5° 37′	9° 5½′ *upper cor.* [*ſup.cor.*]	24° 50′
		8° 36½′ *lower* [*inf.*]	25° 17′
6^h 18^m 55^s	4° 25′	9° 10⅓′	24° 50′
		8° 41′	25° 17′
6^h 23^m 2^s	3° 35′	9° 12½′	24° 49¾′
		8° 43⅓′	25° 17′
6^h 34^m 0^s	*Declination as before* [*Declin. vt prius*]		24° 51′
			25° 17¾′

Hours, minutes [*H.M.*]		
6^h 39^m 22^s	*The western limb of the Moon passed* [*Tranſiuit occid. limb.* ☾]	
6^h $37\frac{1}{3}^m$ *corrected* [*corr.*]	*through the meridian, and had* [*per meridianum, habuitque*]	
	an altitude, at each [*altitudinem iuxta vtrumque*]	
	horn, by the revolving quadrant, upper [*cornu per Volub. ſuper.*]	9° 17⅔′
	lower [*infer.*]	8° 46⅚′
	by the steel instrument, upper [*per Chalyb. ſuper.*]	9° 15′ *about* [*fere*]
	lower [*infer.*]	8° 45⅙′
	Declination of one [*Declin. vnius*]	24° 50′
	of the other [*alterius*]	25° 19′

According to the computation it was near the nonagesimal degree from the ascendant at 6^h 33^m. [Fuit circa nonageſ. gradum ab Aſcendente iuxta ſupputationem H. 6 M. 33.]

Afterwards the distance of the Moon from Jupiter was observed. [*Poſtea obſeruabatur diſt.* ☾ *a* ♃.]

6 49½	*The western limb* [*Diſtabat occid. limbus*]	
6 47½ *corrected* [*corr.*]	*of the Moon was distant from Jupiter* [☾ *a* ♃]	19° 55′
	Good declination, upper [*Bona declin. ſup.*]	24° 50⅙′
	lower [*infer.*]	25° 20′
6 52½	*The same distance of Jupiter* [*Eadem diſt.* ♃]	19° 57⅙′ *doubtful* [*dubia*]
	Declination [*Declinatio*]	24° 50⅚′
		25° 19½′
6 56⅔	*The same distance* [*Eadem diſt.*]	19° 57½′
6 59	*The same distance* [*Eadem diſt.*]	19° 58′

	Declination of the Moon [*Declinatio* ☾]	24° 50⅔′
		25° 20′
7 2	*The same distance of the Moon* [*Eadem diſt.* ☾]	19° 59′

For the clock [*Pro horologio*]

7 4′ 3″	*The bright star of the Vulture was east* [*Fuit luc. Vult. or.*]	15 11½
6 59 30 corrected [corr.]		
7 21 55	The bright star of the Vulture, east [Lucida Vult. orient.]	11 5
7 23 0	The same equatorial [Eadem diſt.]	
7 17 45 corrected [corr.]	distance [æquat.]	10° 37′
	Lower horn of ♍, *by the revolving quadrant* [*Infer. cornu* ♍ *per Volub.*]	18 9⅚
	by the steel instrument [*per Chalyb.*]	18 8
	Declination of the same [*Declin. eiusdem*]	15° 57¼′
		15° 58′

From this a trial can be made in the observed altitude of the Moon, for correcting the armilla. [*Hinc poteſt periculum fieri in altit.* ☾ *obſeruata pro Armilla corrigenda.*]

In the year 1584, in the month of August. [Anno 1584 Menſe Auguſti.]

Meridian altitude of the lower horn of ♍ with two instruments [Altit. merid. infer. cornu ♍ duobus inſtrumentis]	18° 7′ 25″
Add for 8 years [Adde pro 8 annis]	1 23
Meridian altitude this year [Altit. merid. hoc anno]	18° 8′ 48″

Calculation for the apparent places of the Moon from the observations of the two preceding days, when the Moon was apogean, near the first quadrature. 3 September. [Calculus pro apparentibus ☾ locis ex præcedentium duarum dierum obſeruationibus cum ☾ eſset Apogæa circa □ primam. Die 3 Septembris.]

I. For the apparent right ascension of Jupiter, from which the Moon was observed. [I. Pro aſcenſione recta viſa ♃, a quo ☾ obſeruata fuit.]

$7^h\ 44^m$ [H. 7 44′]: distance of Jupiter from the 6th in the [Diſt. ♃ a 6 in]		
shoulder of ♐ [humero ♐]	25° 20½′	
Apparent declination of Jupiter [Declin. viſa ♃]	south [M.]	21° 49′
Apparent declination of the one in the [Declin. viſa eius in]		
shoulder of ♐ [hum. ♐]	south [M.]	26° 36′

Diagram. A spherical triangle set in the right column, to the left of the values BA to "Aſc. recta ♃". A nearly straight, slightly arched line forms the

top. From its two ends two curved sides run down and converge to a point at the foot, where A is printed below. A slightly curved line crosses the figure from the left side to the right side about a third of the way down; B is printed outside the left side at its left end, C outside the right side at its right end. Three letters are printed; no other labels.

- A (below the point at the foot): A
- B (outside the left side, at the left end of the cross line): B
- C (outside the right side, at the right end of the cross line): C

BA	63° 24′
CA	68° 11′
BC	25° 20½′
BAC	27° 20′ 35″
Right ascension [Aſc. recta] of the one in the [eius quæ in] shoulder [hum.]	277° 33′ 20″
Right ascension of Jupiter [Aſc. recta ♃]	250° 12′ 45″
6^h 45^m [H. 6 45′]: distance of the western limb of the Moon from Jupiter [Diſt. occ. limb. ☾ a ♃]	8° 5′
Semidiameter of the Moon [Semidiameter ☾]	15
Distance of the centre of the Moon [Diſt. centri ☾]	8° 20′
Declination, south [M.], of the centre of the Moon [Declin. M. centri ☾]	23° 41′
Declination of Jupiter [Declin. ♃]	21° 50′
BA	68° 10′
CA	66° 19′
BC	8° 20′
BAC	8° 48′ 48″
Right ascension of Jupiter [Aſcenſio recta ♃]	250° 12′ 30″
Right ascension of the centre of the Moon [Aſc. recta centri ☾]	259° 1⅓′

Resp. apparent longitude [Reſp. Viſa Longit.]	♐ 19° 57′ 23″
latitude [Latit.]	south [M.] 0° 32′ 33″
Add for the parallax of longitude [Adde pro parallaxi long.]	4 7
True longitude [Vera Longit.]	♐ 20° 1½′

For the equation of time. [Pro temporis æquatione.]

Our simple Sun [Simplex noſter ☉]	5^s 22° 51′ 29″ [ſig. 22° 51′ 29″]
Subtractive prosthaphaeresis [Proſtaph. ablativa]	1 59 12
True place of the Sun [Verus locus ☉]	♍ 20° 52′ 17″
Right ascension [Aſcenſio recta]	171° 37′ 8″
Equation of time [Æquatio temporis]	12 30

Time equated and reduced: $7^{h}\ 12^{m}\ 30^{s}$. [Tempus æquatum & reductum H. 7 M. 12 S. 30.]

II. For the true place of the Moon from the tables. [II. Pro vero ☾ loco ex tabulis.]

Simple longitude of the Moon [Simplex longit. ☾]	$1^{s}\ 28°\ 25'\ 15''$
Simple anomaly of the Moon [Anomalia ☾ ſimplex]	0 10 15 36
Simple longitude of the Moon, corrected [Simplex long. ☾ correct.]	1 28 19 55
Corrected anomaly of the Moon [Anomalia ☾ correcta]	0 9 25 6
Double longitude of the Moon [Duplex long. ☾]	2 56 39 50
Prosthaphaeresis of the 2nd epicycle, added [Proſtaph. epicycli II, add.]	0 35 29
Proportional minutes [Scrupula proport.]	59 57
Equated anomaly of the Moon [Anomalia ☾ coæquata]	0 10 0 36
Prosthaphaeresis of the 1st epicycle of Copernicus [Proſtaph. I. epicycli Copern.]	0 47 25
Corrected prosthaphaeresis [Proſtaph. correcta]	0 47 15
Excess [Exceßus]	0 23 2
Corresponding part [Pars congruens]	0 23 1
Absolute prosthaphaeresis, subtracted [Proſtaph. abſoluta ſubt.]	1 10 16
Longitude of the Moon from the Sun [Longit. ☾ a ☉]	2 27 9 39
Our simple of the Sun [Noſter ſimplex $☉^{lis}$]	2 52 51 29
True longitude of the Moon [Longitudo ☾ vera]	♐ 20° 1′ 8″
Observed true longitude [Longit. obſeruata vera]	♐ 20° 1½′

III. For the parallax of the Moon in the meridian altitude. [III. Pro parallaxi ☾ in altit. meridiana.]

$5^{h}\ 44½^{m}$ [H. 5 44½]: true longitude of the Moon [Vera longitudo ☾]	19° 31½′ ♐
From Alfonso X [Alphonſo] and Copernicus [Copernico], [Ex Alphonſo & Copernico]	
the motion of the Head of the Dragon, limited [motus Capitis ☊ limit.]	22° 30′ ♊
Argument of latitude of the Moon [Argumentum latit. ☾]	$5^{s}\ 27°\ 1'\ 30''$
True latitude of the Moon [Latitudo vera ☾]	0° 16¼′
True declination of the Moon [Declin. vera ☾]	22° 50′ 15″
Meridian altitude of the Moon [Altit. ☾ merid.]	10° 33′ 30″
Subtract for refraction [Subtrahe pro refract.]	10
True observed altitude [Vera altitudo obſeruata]	10° 23′ 30″
Therefore the declination without refraction [Ergo declin. abſque refract.]	23° 42′ 0″
and the parallax [et parallaxis]	51 45

Computation for the appearance of the Moon, for 4 September, from the preceding observations. [Pro apparentia ☾ ſupputatio ad diem 4 Septembris ex obſeruationibus antecedentibus.]

I. For Jupiter, observed on the same evening. [I. Pro ♃ eadem Veſpera obſeruato.]

7^h 33^m [H. 7 33′]: distance of Jupiter from the lower horn of ♑ [Diſt. ♃ ab inf. cornu ♑]	46° 44′

Observed declination of Jupiter [Declin. ♃ obſeruata]	21° 50′ south [M.]
Apparent declination of the lower horn of ♑ [Decl. inf. cornu ♑ viſa]	15° 56′ 45″ south [M.]
BA	74° 3¼′
CA	68° 10′
BC	46° 44′
BAC	49° 12′
Right ascension of the lower horn [Aſc. recta infer. cornu]	299° 31′ 30″
Therefore the right ascension of Jupiter [Ergo Aſc. R. ♃]	250° 19½′
6^h $47½^m$ [H. 6 47½]: distance of the centre of the Moon from Jupiter [Diſt. centri ☾ a ♃]	20° 10′
Apparent declination of the centre [Declin. viſa centri]	25° 5′ south [M.]
Declination of Jupiter [Declin. ♃]	21° 52′
BA	68° 8′
CA	64° 55′
BC	20° 10′
BAC	21° 43⅚′
Right ascension of Jupiter [Aſc. recta ♃]	250° 19′ 0″
Right ascension of the Moon [Aſc. recta ☾]	272° 2′ 50″
Resp. longitude [Reſp. Longitudo]	1° 51¼′ ♑
latitude [Latitudo]	1° 34¼′ south [M.]

II. For the true place of the Moon at the same time, from the Prutenic Tables. [II. Pro vero loco ☾ ad idem tempus ex Tabulis Prutenicis.]

Time equated and reduced: 7^h 15^m. [Tempus æquatum & reductum H. 7 M. 15.]

Longitude of the Moon from the Sun [Longit. ☾ a ☉]	1^s 38° 22′ 50″
Our simple Sun [Noſter ſimplex ☉]	2 53 50 12
True place of the Moon [Verus locus ☾]	2° 13′ 2″ ♑
Observed [Obſeruatus]	1° 51′ 15″ ♑
Difference [Differentia]	21 47

No account is taken of the parallax of longitude to be added to the apparent longitude; it could not, however, be large, the Moon having passed the nonagesimal by at least 14^m of time. [Non habetur ratio parallaxeos longitudinis addendæ longitudini viſæ, quæ tamen magna eße non poßet, ☾ ſaltem 14^M temporis nonageſimum tranſuecta.]

III. For the observed parallax of the Moon in the meridian altitude. [III. Pro parallaxi ☾ᵉ obſeruatæ in Alt. Merid.]

True place of the Moon from the observation [Locus verus ☾ ex obſeruatione]	1° 47′ ♑
True latitude of the Moon [Vera latitudo ☾]	0° 51′ south [M.]

For the true declination of the Moon [Pro vera declinatione ☾]

		True declination of the Moon [Vera Declinatio ☾]
BA	23° 31′ 30″	
CA	89° 9′ 0″	
CBA	1° 47′ 0″	
CA	65° 38′ 10″	24° 21′ 50″ south [M.]

Meridian altitude of the Moon [Altit. ☾ meridiana]	9° 1′ 10″
Elevation of the equator [Eleuatio Æquatoris]	34° 5′ 30″
Apparent declination of the Moon [Declinatio viſa ☾]	25° 4′ 20″
Add for refraction [Pro refractione adde]	10 30
Declination with the refraction excluded [Decl. excluſa refract.]	25° 14′ 50″
	24 21 50
Observed parallax [Greek: Παράλλαξις (parallaxis, "parallax")] of the Moon [Παράλλαξις ☾ obſeruata]	0 53 0

Observations that it was possible to obtain in the eclipse of the Moon [Obſeruationes quas habere licuit in Eclipſi ☾]

8 December [DIE 8 DECEMBRIS]

Occurring in the evening. [Veſpera contingente.]

Since on this day, as also on the rest of the preceding three days, the hemisphere everywhere within our horizon had been allotted a very dark, foggy and snowy condition of sky and air, crowded with clouds, so much so that it was possible neither to see the Sun by day nor the stars or the Moon by night, still less to observe them, we set the clock, at least at our own discretion, to the dawn or daybreak of the preceding day, namely $6\frac{1}{2}^{h}$ in the morning [H. 6½ matutinam]; and, with Vulcan kindled in the underground furnace, we let it run continuously, the weight being raised without delay and, where it was needed, by the substitution of a portable one. [Cum hoc die, quemadmodum & reliquo præcedente triduo, hemiſphærium vndequaque intra noſtrum finitorem cœli aërisque admodum obſcuram, nebuloſam, niuoſam & nubibus confertam conſtitutionem ſortitum eßet, adeo vt nec Solem interdiu nec Stellas aut Lunam noctu videre, nedum obſeruare licuerit, Horologium ad diluculum ſeu exortum antecedentis diej, vtpote H. 6½ matutinam ſaltem pro arbitrio direximus, & accenſo in fornace ſubterranea Vulcano, continuo moueri permißimus, pondere ſine mora & per ſubſtitutionem portatilis, vbi opus fuit, releuato.]

$6^h\ 48^m$ [H. 6 48′]	Equatorial distance of the western [Diſtantia æquatoria occidentalis] limb of the Moon from the meridian [limbi ☾ a Meridie] towards the east [ad ortum]	76° 37′
6 48½	Altitude of the upper limb [Altit. ſuper. limbi] by the revolving quadrant [per Volub.]	26° 55′

And this was the first observation of all that could be had, the Moon showing through the clouds to some extent. [Atque hæc obſeruatio prima omnium fuit quæ haberi potuit, ☾ quodammodo per nubes transparente.]

$6^h\ 51½^m$ [H. 6 51½]	Altitude of the upper limb [Altit. ſuper. limbi]	27° 13½′
	Azimuth of the western limb [Azimuth occid. limbi]	92° 22′

Here the Moon shone a little more brightly, and nothing yet seemed to be missing from it, so far as it was possible to make out its roundness through the clouds. [Hic ☾ clarius ſplendebat paululum, neque adhuc ej quicquam defuiße viſum eſt, quatenus per nubes cernere licuit eius rotunditatem.]

$8^h\ 48⅓^m$ [H. 8 48⅓]	Altitude of the upper limb [Altit. ſuper. limbi]	42° 32′
	Azimuth, west [Azim. occident.]	67° 45′
8 50′ 25″	Distance of the eastern limb [Diſt. orient. limbi] on the equator from the meridian [in æquatore a Meridie]	48° 28′

In these two observations the lower part of the Moon was held so entangled in thick clouds that it could not be perfectly made out whether any part of it, or how much, was suffering in the shadow. [In his binis obſeruationibus inferior pars ☾æ denſis nubibus ita intricata tenebatur, vt perfecte diſcerni nequiuerit, an aliqua eius pars aut quanta in vmbra laborarit.]

These, then, at least serve for correcting the clock. [Saltem itaque pro horologio corrigendo hæc faciunt.]

$8^h\ 58⅔^m$ [H. 8 58⅔]	Equatorial distance [Diſtantia æquatoria]	
9 0⅓ corrected [corr.]	east [or.]	46° 20′

Diagram. A reproduced hand drawing of the Moon, set at the head of the right column, with the sentence "Talis viſa eſt ☾ …" printed to its right. A freehand circle; its right-hand side, from about the upper right round to the foot, is traced with a heavy, thickened stroke, and a faint second arc runs just outside the outline at the lower left. Inside the circle, left of centre, a horizontal

line runs to the right and ends in a dot or arrow-point; a short vertical stroke stands above it. Below and to the right of the line stand four short lines of handwriting inside the circle, and outside the circle to the right a further group of handwritten marks in about four lines. The handwriting is not transcribed; every handwritten line is flagged.

- short vertical stroke above the horizontal line: [?]
- inside the circle, right of the end of the line: handwriting [?]
- inside the circle, second line: handwriting [?]
- inside the circle, third line: handwriting [?]
- inside the circle, fourth line: handwriting [?]
- outside the circle, to the right (about four lines): handwriting [?]

The Moon appeared like this: that is, a little oblong in the lower preceding part. [Talis viſa eſt ☾, paululum videlicet oblonga in parte antecedenti inferiori.]

Here, the clouds having been scattered a little and broken up, the Moon was seen somewhat more clearly on every side of it; and although to Martinus [Martino] it could appear no otherwise than round, I[1] nevertheless noticed that it fell short of exact roundness about the lower western limb, so that it had then passed through the shadow entirely. [Hic diſcußis paululum ac disruptis nubibus ☾ aliquanto clarius ab omni ſui parte viſa, etſi Martino non aliter quam rotunda videri potuit, animaduerti tamen ego[1] exactæ rotunditati circa limbum inferiorem occidentalem defuiße, ita vt penitus vmbram tunc tranſijßet.]

9^h 2⅔^m [H.9 2⅔]	Equatorial distance of the eastern [Diſt. æquat. orient.]	
9 4½ corrected [corr.]	limb [limbi]	45° 21′
9 5	Altitude of the upper limb [Altit. ſup. limbi]	44° 40′
9 7 30 corrected [corr.]	Azimuth of the western limb [Azim. occ. limbi]	63° 32′
9 9	Equatorial distance of the eastern limb [Diſt. æquat. orient. limbi]	43° 58′
9 14⅓	It appeared round. [Viſa eſt rotunda.]	
	Altitude of the upper limb of the Moon [Altitudo ſuper. limbi ☾]	45° 44′
	Azimuth of the western limb [Azim. occid. limbi]	61° 15′
	Distance of the eastern limb from the meridian [Diſt. orient. limbi a Merid.]	
	on the equator [in æquat.]	42° 43′

Here the Moon appeared quite round. [Hic ſatis rotunda viſa eſt ☾.]

9 43½	Declination of the upper limb [Declinatio ſuper. limbi]	24° 9′
	of the lower limb [infer. limbi]	23° 37′

Afterwards, near the meridian, we observed the Moon showing through the clouds a little more clearly than before. [Poſtea circa Merid. ☾ obſeruauimus paulo clarius quam prius per nubes transparentem.]

12 2	Declination of the upper limb [Declin. ſuper. limbi]	24° 20′
	lower [infer.]	23° 47½′
12 11½	Transit of the western limb of the Moon [Tranſitus occid. limbi ☾]	
	through the meridian, having an altitude [per Merid. habentis Altitud.]	
	at the upper limb [in ſuper. limb.]	
	by the revolving quadrant [per Volub.]	58° 25⅚′
	by the steel instrument [per Chalyb.]	58° 26′
	lower limb, by the revolving quadrant [infer. limb. per Volub.]	57° 51½′
	by the steel instrument [per Chalyb.]	57° 51¾′
12 14⅓	Transit of the eastern limb. [Tranſitus or. limbi.]	

And you will be able to use these observations, made near the meridian, most conveniently, both for examining the clock more fully and for working out the parallaxes of the Moon. For the Moon was near the perigee of the greater epicycle and very little [Atque his obſeruationibus iuxta Merid. habitis commodißime vti poteris, tam pro horologio plenius examinando, quam parallaxibus ☾ enucleandis. Fuit enim ☾ circa perigæum epicycli maioris & parum admodum]

[1] Perhaps Longomontanus. [Forſitan Longomontanus.]

past 90, while it was close to the summer tropic in the last parts of ♊. Finally, it had a very small latitude, so that this too could not stand in the way of a more scrupulous investigation of the parallaxes. [90 tranſuecta, dum tropico æſtiuo vicina fuit in vltimis partibus ♊. Denique Latitudinem perexiguam obtinuit, vt & hæc ſcrupuloſiori parallaxium indagationi obeße nequierit.]

At the following noon, namely 9 December, the clock was found to run ahead of true noon by some minutes, 7 or 8; and this only by the rays of the Sun showing through broken clouds, behind which, however, the body of the Sun passed covered; nor was any opportunity granted on this day of examining the clock otherwise. [Sequente Meridie videlicet 9 Decembris Horologium aliquot Minutis 7 vel 8 verum Meridiem antevertere deprehenſum eſt, idque ſaltem ad transparentiam radiorum ☉$^{\text{lar}}$ium per nubes diſcontinuas, inter quas tamen corpus ſolare obtectum præterijt, nec vlla opportunitas examinandi aliter horologium hoc die conceßa eſt.]

Observation of the eclipse of the Moon already mentioned at Sorø [Soræ][1] in Zealand [Sielandia], by D. Tycho himself, with the smaller portable quadrant. [Obſeruatio prædictæ Eclipſis ☾ Soræ[1] in Sielandia ab ipſo D. Tychone per Quadr. portat. minorem.]

When the Moon was, as it were, halfway into the shadow, its altitude was 34¾°. [Cum ☾ quaſi media eßet in vmbra, Altitudo eius P. 34¾.]

When the last end of the eclipse occurred, the upper limb of the Moon had an altitude [Quando vltimus finis deliquij erat, habuit ☾ ſuperior limbus Altitudinem]

The first time [Primo]	41° 20′
The second [Secundo]	41° 50′
The third [Tertio]	42° 25′

It appeared through clouds, for no stars could be seen. [Per nubes apparuit, nam nullæ ſtellæ conſpiciebantur.]

If you were to establish that at the last time of the eclipse the uppermost circumference of the Moon had an altitude of 42°, it could not be extended further. It can, however, be as nearly as possible 41° 30′, or at most 41 45, according as it agrees best. Put 42 0. [Si conſtitueris in vltimo deliquij tempore ſupremam circumferentiam ☾ habuiße Altitudinem P. 42, vlterius produci non poterat. Poteſt tamen eße quam proxime P. 41 30 vel ad ſummum 41 45, prout maxime concordarit. Pone 42 0.]

Correction of the clock from the observation of the altitudes of the Moon at Uraniborg. [Correctio Horologij ex obſeruatione Altitudinum ☾ Vraniburgi.]

$9^h\ 5^m$ [H. 5′]	True longitude of the Moon, computed [Vera Longit. ☾ ſupput.]	27° 50′ ♊		
	True latitude [Vera Latitudo]	0° 56′ north [B.]		
	Observed altitude [Altitudo obſeruata]	45° 0′ nearly [fere]		
	Parallax of altitude from the observation in the meridian [Parallaxis altit. ex obſ. in Merid.]	47′		
	Parallax of longitude [Parallaxis Longit.]	25 0		
	of latitude of the Moon [Latit. ☾]	40 0		
	Apparent longitude [Viſa Longitudo]	28° 15′ ♊		
	Latitude [Latitudo]	0° 16′ north [B.]		
	Place of the Sun [Locus ☉]	27° 12′ ♐	Resp. right ascension [Reſp. Aſc. R.]	266° 57′
	Apparent right ascension of the Moon, upper [Aſc. R. viſa ☾ ſuper.]	88° 4′		
	Apparent declination of the Moon in the upper [Declin. ☾ viſa in ſuper.]	24° 2′		

Therefore from the observed altitude 44° 40′ and azimuth 63° 32′ the corrected time is derived as $9^h\ 7½^m$, which on the clock was $9^h\ 5^m$. [Ergo ex obſeruata Altitud. 44 40 & Azimuth 63 32 elicitur tempus emendatum H. 9 7½, quod in horologio fuit 9 5′.]

At Sorø in Zealand[2], however, from the altitude of the upper limb, 42½°, the rest remaining as before, the time is gathered, as for the end of the observed eclipse, as $8^h\ 50^m$. [Soræ autem in Sielandia[2] ex altitudine ſuper. limbi 42½

manentibus reliquis vt prius colligitur tempus tanquam ad finem obſeruati deliquij H. 8 50′.]

But since some defect of the Moon at least, which could truly be discerned, was observed here at Uraniborg at 9^h $0⅓^m$, and this no greater than 1/26 part of the whole body of the Moon, so far as could be grasped by the eye's sight, and at most equivalent by proportion to 1⅓′ in the diameter of the Moon, taken as 34′, it is easy to reckon from this, by the hourly motion of the Moon (33′), that the last end of the eclipse occurred here at 9^h $2½^m$, at which the computed altitude of the upper limb of the Moon came out as 44° 6′. [Quoniam autem aliquis ſaltem defectus ☾ qui vere diſcerni potuit, hic Vraniburgi obſeruatus ſit H. 9 0⅓, idemque non maior 1/26 P. totius corporis ☾ quatenus oculari viſu concipi potuit & ad ſummum per proportionem æquivalet 1⅓′ in diametro ☾ aßumpta 34′, ratiocinari hinc facile eſt per horarium motum ☾ (33′) finem vltimum deliquij hic contigiße H. 9 2½, ad quem altitudo ſuperioris limbi ☾ ſupputata extitit 44° 6′.]

(Difference of time between Uraniborg and Sorø: $6⅓^m$, to be added. Put the time of the middle of the eclipse, limited and reduced to our meridian, as 7^h 48^m.)[3] [(Differentia temporis inter Vraniburgum & Soram M. 6⅓ add. Tempus deliquij medij limitatum & reductum ad noſtrum meridianum pone 7^H 48′)[3].]

[1] In Danish Sorø, in Zealand, towards the west. Tycho's sons were pupils of the school of Sorø. [Danice Sorø, in Selandia verſus occaſum. Filii Tychonis diſcipuli ſcholæ Soranæ erant.] [2] Written in the margin: »Elevation of the pole at Sorø 55¾«. [Adſcriptum eſt in margine: »Eleuatio poli Soræ 55¾«.] [3] Added afterwards in codex V. alone. [In ſolo codice V. poſtea adſcripta.]

Observations of Saturn [OBSERUATIONES SATURNI.]

3 February [DIE 3 FEBRUARIJ.]

h m [H. M.]	Distance between Saturn and Aldebaran [Diſt. inter ♄ & Aldeb.]	Declination of Saturn, north [Decl. ♄ B.]	Between Saturn and the lower head of ♊ [Inter ♄ & infer. cap. ♊]
6^h $44⅙^m$	32° 39⅔′	22° 56′ with both [vtroq.]	
6^h $55⅚^m$	32° 40′	22° 56′	
		22° 56½′	
7^h $4⅓^m$			13° 13½′
7^h 13^m			13° 13⅓′
7^h $17⅔^m$		22° 56½′	13° 13⅓′
		22° 56¼′	
		Put the distance [Pone diſt.]	13° 13⅓′

7^h 6^m [7 6]: The bright foot of Orion was crossing the meridian, having an altitude of 25° 22½′. From this you can also verify the clock. [Tranſibat

lucidus pes Orionis per Merid., habens altitudinem 25 22½. Hinc potes etiam verificare horologium.]

7^h 15¾^m [7 15¾]: The left shoulder of Orion in the meridian, having an altitude of 40° 0′. Saturn was very high and near the meridian. It was exceptionally clear and calm. [Sinister humerus Orionis in Meridie habens Altitudinem 40 0. ♄ fuit admodum altus & prope meridianum. Fuit apprime serenum & tranquillum.]

8^h 39^m [8 39]: The Greater Dog, west, 0 11. The meridian altitude of Saturn by the revolving quadrant 57° 2⅚′, by the steel instrument 57° 1′, doubtful, because it had passed the meridian. [Canis maior occid. 0 11. Altitudo Meridiana ♄ per Volub. 57 2⅚, per Chalyb. 57 1 dubia, quia merid. transierat.]

Put the declination of Saturn as 22° 56½′, or 57 at most. [Pone declin. ♄ 22 56½ vel 57 ad summum.]

6 February [DIE 6 FEBRUARIJ.]

Saturn was observed about the meridian in the following manner. [Obseruabatur ♄ circa meridianum in modum sequentem.]

h m [H. M.]	Distance between Saturn and Aldebaran [Dist. inter ♄ & Aldeb.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Altit. ♄]	Equatorial distance of the bright foot of Orion [Dist. æq. Luc. pedis Orion.]
7^h 43¾^m	32° 31½′	22° 55⅙′	56° 10′	
		22° 55′		
7^h 55^m	32° 32′	22° 55¼′		
8^h 0^m	32° 32½′			16° 55′
Vice versa, between Saturn and cor ♌. [Viceversa inter ♄ & cor ♌.]				
8^h 4½^m	47° 54¾′	22° 55⅔′	56° 46′	18° 5′
		22° 55′		
8^h 8^m	47° 54′			
8^h 11½^m	47° 54⅓′			19° 54′

8^h 24^m [8 24]	Saturn was crossing the meridian, having an altitude [Transibat ♄ per Merid. habens Altitud.]	
	by the steel instrument [per Chalyb.]	57° 2½′
	by the revolving quadrant [per Volub.]	57° 3′

12 February [DIE 12 FEBRUARIJ.]

*Saturn was crossing the meridian, having an altitude of 37° 2′ by the revolving quadrant.[1] [♄ transibat per meridianum habens altitudinem p.37 2 per Volub.*1.]

17 February [DIE 17 FEBRUARIJ.]

h m [H. M.]	Distance between Aldebaran and Saturn [Diſt. inter Aldeb. & ♄]	Declination of Saturn [Declin. ♄]	Altitude [Altit.]	The bright shoulder of Orion, west [Luc. hum. Orion. occ.]
$7^h\ 27^m$	32° 15⅓′	22° 59′	56° 45′	8 5
		22° 59⅓′		
$7^h\ 35½^m$	32° 15′			10 15
$7^h\ 38⅓^m$	32° 14⅔′	22° 59′	57° 0′	
		22° 59¼′		

$7^h\ 48^m$ [7 48]	Meridian altitude of Saturn [Altit. ♄ Merid.]	
	by the steel instrument [per Chalyb.]	57° 3¼′
	by the revolving quadrant [per Volub.]	57° 4′

At that time the Greater Dog was 0° 6′ east. [Tunc erat Canis maior 0° 6′ orient.]

Vice versa, Saturn from cor ♌ [Viceverſa ♄ a corde ♌]		The Greater Dog, west [Can. mai. occ.]
7 58⅓	48° 11⅙′	2 29
8 3½	48° 11′	3 40
8 6	48° 10½′ among clouds [inter nubes]	4 17

The observations this evening, of Mars as much as of Saturn, were taken among thinner clouds, with the Moon shining brightly besides; they were nevertheless gathered with all the diligence possible, so that, once the more exact ones are selected and the rest corrected according to the limitation, one may safely rely on each of them. [Obſeruationes hac veſpera tam in ♂ quam ♄ inter rariores nubes acceptæ ſunt, ☾ inſuper reſplendente, ſunt tamen diligentia qua fieri poterat conquiſitæ, ita vt exactioribus ſelectis, cæteriſque iuxta limitationem correctis, tuto ſingulis fidere liceat.]

20 February [*DIE 20 FEBRUARIJ.*]

Saturn was crossing the meridian [*♄ per Merid. tranſibat*]

$7^h\ 26¼^m$ [*H. 7 M. 26¼*]	*Altitude* [*Altitudo*]	
	by the revolving quadrant [*per Volub.*]	*57° 5½′*
	by the steel instrument [*per Chalyb.*]	*57° 4⅔′*
	The Greater Dog, west [Canis maior occid.]	0 5½

Afterwards Saturn was observed from Aldebaran in this manner. [Poſtea obſeruabatur ♄ ab Aldeb. in hunc modum.]

h m [H. M.]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	Declination of Saturn [Declin. ♄]	The Greater Dog, west [Can. maior occid.]
$7^h\ 46\frac{1}{3}^m$	32° 14′	22° 59′	22° 59⅓′ 15
$7^h\ 50\frac{1}{6}^m$	32° 12½′		6 16
$7^h\ 55\frac{1}{6}^m$	32° 12¼′		
$7^h\ 58^m$	32° 12′	22° 59½′	23° 0′ 8 18
Vice versa, from cor ♌ [Viceverſa a corde ♌]			
$8^h\ 9\frac{1}{2}^m$	48° 15′		
$8^h\ 12\frac{1}{6}^m$	48° 13′	22° 59⅔′	23° 0¼′ 12 4
$8^h\ 15\frac{1}{6}^m$	48° 13½′		12 45
$8^h\ 20^m$	48° 13½′		13 53

[1] On the conjunction of Saturn with the Moon, cf. p. 190 above. [De conjunctione Saturni cum luna cf. ſupra p. 190.]

29 December, evening [DIE 29 DECEMBRIS, VESPERI.]

To examine the new sextant, with which Saturn was afterwards observed acronychal, the distance between the bright star of ♈ and Aldebaran was taken [Pro Sextante nouo examinando, quo poſtea ♄ acronychius obſeruatus eſt, capiebatur diſtantia inter lucidam ♈ & Aldeboram]:

The bright star of ♈ [lucidam ♈]	35° 33¼′
and Aldebaran [& Aldeboram]	35° 33⅓′
	35° 33′

Saturn was first observed acronychal, namely three days before the true opposition with the Sun. [Primum obſeruabatur ♄ acronychius triduo ſcilicet ante veram ☍ cum ☉.]

For correcting the clock. [Pro horologio corrigendo.]

$8^h\ 51\frac{3}{5}^m$ [H. 8 51⅗]: transit of Aldebaran through the meridian.[1] [tranſitus Aldeb. per merid.[1]]

h m [H. M.]	Distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	Decli-nation, north [Decl. B.]	Alti-tude of Saturn [Altit. ♄]	The eye of ♉, east [Ocul. ♉ or.]
$6^h\ 16\frac{1}{6}^m$	50° 5½′	21° 35′	18° 7′	

h m [H. M.]	Distance of Saturn from Aldebaran [Dift. ♄ ab Aldeb.]	Decli-nation, north [Decl. B.]	Alti-tude of Saturn [Altit. ♄]	The eye of ♉, east [Ocul. ♉ or.]
		with both [vtroque]		
6^h $23\frac{1}{2}^m$	50° $5\frac{5}{6}'$		19° 21′	
6^h $34\frac{5}{6}^m$	50° $6\frac{1}{3}'$	21° 34′ 50″	20° 41′	32 0
6^h 43^m 35^s corrected [corr.]		21° 34′ 45″		
Saturn was afterwards observed from the bright foot of ♊ as follows. [♄ obſeruabatur poſtea a lucido pede ♊ vt ſequitur.]				
6^h $45\frac{1}{3}^m$	21° $39\frac{2}{3}'$			29 15
6^h $54\frac{1}{2}^m$ corrected [corr.]				
6^h $50\frac{1}{2}^m$	21° $39\frac{1}{6}'$	21° $34\frac{1}{6}'$	23° 53′	
		21° 34′		
Afterwards Saturn was observed from Aldebaran as before, approaching the meridian. [Poſtea obſeruabatur ♄ ab Aldeb. vt prius, appropinquans merid.]				
10^h 44^m	50° $5\frac{1}{6}'$	21° $31\frac{5}{6}'$	52° 21′	Aldebaran, west [Aldeb. occ.]
11^h 0^m corrected [corr.]		21° $32\frac{1}{3}'$		32 7
11^h $14\frac{1}{6}^m$	50° $5\frac{2}{3}'$			
11^h $19\frac{2}{3}^m$	50° 6′			
Vice versa, Saturn was observed from cor ♌ as follows. 10^h 12^m [H. 10 12′]: transit of the bright shoulder of Orion. [Viceverſa obſeruabatur ♄ a corde ♌ vt ſequitur. H. 10 12′ tranſitus luc. hum. Orionis.]				The bright shoulder of Orion, west [Luc. hum. Orion. occ.]
11^h $27\frac{2}{3}^m$	30° 13′			
11^h $33\frac{1}{6}^m$	30° $14\frac{1}{6}'$	21° $31\frac{2}{3}'$		24 34
11^h 50^m corrected [corr.]		21° $31\frac{1}{3}'$		
11^h $40\frac{1}{3}^m$	30° 13′			

And in all these observations from cor ♌, it was raised so far that it was free of all refraction. [Atque in his omnibus obſeruationibus a corde ♌ illud in tantum eleuatum fuit, vt refractione omni careret.]

12 $4\frac{2}{3}$	Saturn crossed the meridian, having an altitude [Tranſiuit ♄ per merid. habens altitudinem]	
	by the steel instrument [per Chalyb.]	55° $36\frac{1}{4}'$ better [melior]
	by the revolving quadrant [per Volub.]	55° $37\frac{1}{3}'$

This evening, while observing, it was for the most part clear and the air calm, although toward the south, about the horizon, the sky was at times somewhat

obscured by thinner clouds. [Hac veſpera inter obſeruandum vt plurimum fuit ſerenum & aër tranquillus, licet ad auſtrum circa horizontem cœlum rarioribus nubibus nonnihil fuit obſcuratum interdum.]

Calculation for finding the place of Saturn from the immediately preceding observations. [Calculus pro loco ♄ ex proximis præcedentibus obſeruationibus inueniendo.]

Right ascensions and declinations of the stars, reduced, from which Saturn was observed in distances. [Aſcenſiones Rectæ & Declinationes ſtellarum reductæ, ex quibus in diſtantijs obſeruatus fuit ♄.]

Right ascension of Aldebaran [Aldeboræ Aſc. R.]	63° 9⅙′	Declination [Decl.]	15° 37⅓′
The bright foot of ♊ [Luc. pedis ♊]	93° 31′ 30″		16° 40′
cor ♌ [Cordis ♌]	146° 39¼′		13° 55′ 45″
Put the declination of Saturn everywhere [Pone Declin. ♄ vbique]			21° 31′ 15″
6^h 55^m [H. 6 M. 55]: distance of Saturn from the bright foot of ♊ [Diſt. ♄ a luc. pede ♊]			21° 39½′

Diagram. A spherical figure in the right column: four arcs run down from an apex A; a cross arc runs from D on the left to F on the right; a short segment joins C, below and left of the middle, to B on the cross arc; a lower bounding arc closes the figure, with vertical lines dropping to it. Beside B stands the sign of Saturn (♄).

- A (apex, top): A
- D (left end of the cross arc): D
- B (on the cross arc, right of centre): B, with ♄ beside it
- F (right end of the cross arc): F
- C (below the cross arc, left of B): C

BA	68 28¾
CA	73 20
BC	21 39½
BAC	22 21⅔

Therefore the right ascension of Jupiter [♃] from the bright foot of ♊: 115° 53⅙′. [Ergo Aſc. R. ♃ a luc. pede ♊ 115 53⅙]

11^h 14^m [Hora 11 M. 14]: distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]

BA	68 28¾		50° 5′ 40″

	DA	74 22⅔	Therefore the right ascension [Ergo Aſc. R.]	
	DB	50 5⅔	of Saturn from Aldebaran [♄ ab Aldeb.]	
	DAB	52 43½		115° 52′ 50″
11h 50m [H. 11 M. 50]	BA	68 28¾	Therefore the right ascension [Ergo Aſc. R.]	
	FA	76 4¼	of Saturn from cor [♄ a corde]	
	FB	30 13	♌	
	FAB	30 46 10		115° 53′ 5″

The right ascension of Saturn is therefore put, without any perceptible error, at 11h 30m [H. 11 M. 30] as 115° 53′ 0″; the declination, however, 21° 31¼′. [Ponatur itaque Aſc. R. ♄ abſque omni ſenſibili errore H. 11 M. 30 115° 53′ 0″ Declin. autem 21° 31¼′.]

		Pruten.	Alphonsine [Alphonſin.]
Resp. longitude [Reſp. Long.]	23° 57⅚′ ♋	23° 57¾′	26° 46¾′
Latitude [Lat.]	0° 8′ 0″ north [B.]	0° 51′ south [M.]	0° 6′ north [B.]

N.B. The right ascension may be [N. B. Poteſt eſſe Aſc. recta]	*115° 53⅙′*
therefore the longitude [ergo long.]	*23° 58′*

[1] By computation. [Per ſupputationem.]

Observations of Jupiter [OBSERUATIONES IOUIS.]

30 January, morning [DIE 30 JANUARIJ, MANE.]

h m [H. M.]	Distance between Jupiter and cor ♏ [Diſt. inter ♃ & cor ♏]	Declination of Jupiter [Decl. ♃]	Upper of the forehead of ♏, west [Sup. front. ♏ occ.]
6h 0m	11° 51′	21° 55⅙′ with one pinnule [vno pinn.]	
cor ♏ was then approaching the meridian, so refraction was no obstacle. [Cor ♏ tunc appropinquabat Merid., vnde refractio non oberat.]			

h m [H. M.]	Distance between Jupiter and cor ♏ [Dist. inter ♃ & cor ♏]	Declination of Jupiter [Decl. ♃]	Upper of the forehead of ♏, west [Sup. front. ♏ occ.]
6^h $5\frac{2}{3}^m$	11° 50¼′	21° 55′ with one pinnule [vno pinn.]	2 25+
6^h 13^m	11° 49½′	21° 55½′	4 6
6^h $14\frac{5}{6}^m$ corrected [corr.]			

h m [H. M.]	Distance between Jupiter and cor ♏ [Dist. inter ♃ & cor. ♏]	Declination of Jupiter [Declin. ♃]	Azimuth of Jupiter, east [Azim. ♃ or.]	Altitude of Jupiter [Altit. ♃]
6^h 16^m	11° 49$\frac{1}{10}$′	21° 55$\frac{5}{6}$′	11° 45′	11° 27′
		21° 56⅙′		
6^h 19^m	11° 51′	21° 56′	10° 55′	11° 35′
	doubtful [dubia]	21° 56½′		
6^h 23^m	11° 48′		9° 55′	11° 40′

18 February [DIE 18 FEBRUARIJ.]

Jupiter was observed in the morning. [Mane obſeruabatur ♃.]

h m [H. M.]	Distance between Jupiter and cor ♏ [Dist. inter ♃ & cor ♏]	Declination of Jupiter, Mer. [Declin. ♃ Mer.]	Alti-tude of Jupiter [Alt. ♃]	Altitude of cor ♏ about the meridian [Alt. cordis ♏ circa mer.]
5^h $3\frac{2}{3}^m$	14° 9′	22° 8′	10° 1′	8° 35′
5^h 14^m	14° 6⅔′		10° 26′	
5^h $19\frac{1}{6}^m$	14° 6¾′		10° 39′	Meridian altitude [Alt. mer.]
5^h $29\frac{1}{6}^m$				8° 45⅓′
5^h 30^m 40^s [5 30 40″]	14° 6½′	22° 8¾′		
		22° 9⅙′		
Vice versa from the Vulture, for because of the brightness of the Moon it was not granted to observe Jupiter from any others. [Viceverſa a Vulture, nam propter ſplendorem ☾ a nullis alijs ♃ obſeruari concedebatur.]				
5^h 36^m 40^s	46° 46¼′			
5^h $42\frac{3}{4}^m$	46° 45¾′	The bright star of the Vulture was [Luc. Vult. erat]		47° 20′
5^h $47\frac{3}{4}^m$	46° 45½′	Altitude of Jupiter [Altit. ♃]		11° 30′

In these last observations Jupiter was about 10° [circiter 10 grad.] from the meridian. [Erat in his poſtremis obſeruationibus ♃ a Meridie circiter 10 grad.]

6 26⅓	Jupiter in the meridian, altitude by the revolving quadrant [♃ in merid., alt. per Vol.]	11° 56′
	by the steel instrument [per Chal.]	11° 55½′

19 February [*DIE 19 FEBRUARIJ.*]

Jupiter was observed in the morning. [Mane obſeruabatur ♃.]

h m [H. M.]	Distance between Jupiter and cor ♏ [Diſt. inter ♃ & cor ♏]	Declination of Jupiter [Decl. ♃]	*Altitude of cor* ♏ [*Altit. cord.* ♏]	*For verifying the clock: the bright star of the Vulture, east* [*Pro horol. verificando Luc. Vult. or.*]
$5^h\ 42^m$	14° 14′	22° 10′		
		10° 9½′		
$5^h\ 50½^m$	14° 12¼′		8° 20′	41 11
$5^h\ 54^m$	14° 13′		8° 7′	40 7
$5^h\ 57^m$	14° 13′	22° 10½′	3° 3′	39 48

$5^h\ 42^m$	*Altitude of Jupiter* [*Altitudo ♃*]	*11° 40′*
$5^h\ 50½^m$		*11° 50′*
$6^h\ 9^m$	*Jupiter crossed the meridian, having its greatest altitude* [*Tranſiuit ♃ per meridianum habens Altitudinem maximam*]	
	by the revolving quadrant [*per Volub.*]	*11° 55⅓′*
	by the steel instrument [*per Chalyb.*]	*11° 55⅙′*[*1]

21 February [DIE 21 FEBRUARIJ.]

Jupiter was observed from cor ♏ in this manner. [Obſeruabatur ♃ a corde ♏ hoc modo.]

h m [H. M.]	Diſtance [Diſtantia]	Declination of Jupiter [Decl. ♃]		The bright star of the Vulture, east [Luc. Vult. orient.]
$5^h\ 20^m$	14° 25⅔′			43 14
$5^h\ 22⅔^m$	14° 23½′	22° 11½′		
		22° 12⅔′		
$5^h\ 24½^m$	14° 23⅓′		Altitude of cor ♏ [Alt. cord. ♏]	
$5^h\ 28⅓^m$	14° 24′	22° 11′	8° 18′	41 5

h m [H. M.]	Distance [Diſtantia]	Declination of Jupiter [Decl. ♃]		The bright star of the Vulture, east [Luc. Vult. orient.]
		22° 10½′	Jupiter was about the meridian. [Erat ♃ circa merid.]	
Afterwards Jupiter was taken vice versa from the bright star of the Vulture, as follows. [*Poſtea ♃ viceverſa accipiebatur a Lucida Vulturis vt ſequitur.*]				
5h 31⅓m	*46° 31′*	*For correcting the clock: the bright star of the Vulture, east* [*Pro horologio emendando Lucida Vulturis orient.*]		
5h 34⅓m	*46° 31¾′*			
				39 32½

5h 47½m	*Jupiter was passing through the meridian; altitude* [*Ibat ♃ per Merid. Alt.*]	
	by the steel instrument [*per Chalyb.*]	*11° 54⅓′*
	by the revolving quadrant [*per Volub.*]	*11° 55′*

22 February [DIE 22 FEBRUARIJ.]

Jupiter was observed from cor ♏ in this manner. [Obſeruabatur ♃ a corde ♏ hoc modo.]

h m [H. M.]	Corrected time [Tempus correctum]	Distance of Jupiter from cor ♏ [Diſt. ♃ a corde ♏]	Declination [Declin.]	The bright star of the Vulture, east [Luc. Vult. orient.]
5h 15½m	5h 54¼m	14° 40½′	22° 11½′	39 48
			22° 11′	
5h 17½m	5h 56⅓m	14° 41′		
5h 19⅓m	5h 58¼m	14° 41½′		38 48
From this, examine the times. [Hinc examina tempora]				

5 29½	*6 8½*	*Jupiter crossed the meridian, having an altitude* [*tranſiuit ♃ per Meridianum habens Altitudinem*]	
		by the steel instrument [*per Chalyb.*]	*11° 54⅙′*
		by the revolving quadrant [*per Volub.*]	*11° 54′*

(N.B. The distance was beyond doubt wrongly counted, as can be seen from the preceding; perhaps it will be 14° 31′.)[2] [(N. B. Diſtantia procul dubio erronee numerata eſt, quod ex præcedentibus videre eſt, forſan erit 14° 31′)[2].]

[1] Afterwards Jupiter was observed from Venus. Cf. below, among the observations of Venus. [Poſtea obſervabatur Iupiter a Venere. Cf. infra inter obſervationes Veneris.] [2] This and the corrected times were added afterwards in another hand (which seems to be that of Longomontanus [Longomontani]) and in other ink. [Hæc et tempora correcta alia manu (quæ videtur eße Longomontani) et alio atramento poſtea addita ſunt.]

16 May [DIE 16 MAIJ.]

In the evening Jupiter was first observed acronychal. The clock is to be corrected by the Vulture. [Veſperi obſeruabatur primum ♃ acronychus. Corrigendum eſt Horol. ad Vulturem.]

h m [H. M.]	Distance of Jupiter from cor ♏ [Diſt. ♃ a corde ♏]	Declination of Jupiter, south [Decl. ♃ M.]	Altitude of Jupiter [Altit. ♃]	The bright star of the Vulture, west [Luc. Vult. occ.]
$12^h\ 10\frac{1}{3}^m$	12° 31′	22° 0′	11° 48′	
$12^h\ 9^m$ corrected [corr.]				
$12^h\ 18\frac{2}{3}^m$	12° 34½′			44 32 0
There was refraction here in the distance from cor ♏, for it was about 8° 9′ from the meridian. [Refractio fuit hic in diſtantia a Corde ♏ erat enim illa remota a meridiano circa 8° 9′.]				
$12^h\ 24\frac{1}{2}^m$	12° 28′	22° 1′ with both [vtroq.]		43 7
$12^h\ 31\frac{1}{6}^m$	12° 29½′		About the meridian [Circa merid.]	41 19
$12^h\ 30^m$ corrected [corr.]				
$12^h\ 36\frac{1}{6}^m$	12° 29′			

$12^h\ 43\frac{1}{2}^m$	Meridian altitude of Jupiter [Altit. ♃ Merid.]	
	by the steel instrument [per Chalyb.]	12° 4′
	by the revolving quadrant [per Volub.]	12° 3½′

The brightness of the Moon, which was very near, was a constant hindrance this evening. [Splendor ☾ admodum vicinæ hac veſpera aßidue impedimento

fuit.] Between the western limb of the Moon and Jupiter, through the middle, about 2°. [Inter occidentalem limbum ☾ & ♃ per medium 2° fere.] The centre of the Moon, moreover, was at the same altitude as Jupiter, as far as sight goes, but a little lower [depreßus], at 12^h $50\frac{5}{6}{}^m$ [H. 12 M. 50⅚]. [Erat autem centrum ☾ in eadem Altitudine cum ♃, quantum ad viſum, ſed paululum depreßus H. 12 M. 50⅚.]

Vice versa from the bright star of the Vulture. [Viceverſa a Lucida Vulturis.]

1 0⅙	Dis- tance [Diſt.]	48° 2′	The bright star of the Vulture, east [Luc. Vult. or.]	34 3
1 3⅔		48° 3′	In these observations Jupiter was a little removed from the meridian, so that, looking at the Vulture more obliquely, it also admitted from it an insinuation of refractions into the distance, like those that occurred from cor ♏. [Erat in hiſce obſeruationibus ♃ paululum remotus a Meridiano, ita vt Vulturem obliquius reſpiciens etiam ab hoc Refractionum inſinuationem in diſtantia admiſerit, ad inſtar earum quæ a Corde ♏ contigerunt.]	
1 5⅚		48° 1½′		
1 7		48° 1′		

Calculation for finding the place of Jupiter from the preceding observations. [Calculus pro inueniendo loco ♃ ex præcedentibus obſeruationibus.]

12^h 30^m [H. 12 M. 30]: distance of Jupiter from cor ♏ [Diſt. ♃ a corde ♏]	12° 29½′
For refraction add [Pro refractione adde]	2
True distance [Diſtantia vera]	12° 31½′
Declination, south [Decl. M.], from the meridian altitude [ex alt. merid.]	22° 1¾′
Add for refraction at altitude 12° [Adde pro refr. in alt. 12°]	5
True declination [Declinatio vera]	22° 6¾′
Declination of cor ♏ [Declin. cordis ♏]	25° 23½′
Right ascension of the same [Aſc. R. eiuſdem]	241° 10′ 30″
Right ascension of Jupiter [Aſc. R. ♃]	254° 23½′
1^h 0^m [H. 1 M. 0]: distance from the bright star of the Vulture [Diſt. a Luc. Vult.]	48° 2′
For refraction add [Pro refractione adde]	1½
Declination of the bright star of the Vulture [Declin. Lucid. Vult.]	2° 52½′
Right ascension of the same [Aſc. R. eiuſdem]	292° 42′ 0″
Right ascension of Jupiter [Aſc. R. ♃]	254° 22¼′
12^h 45^m [H. 12 M. 45]: limited right ascension of Jupiter [Aſc. R. ♃ limitata]	254° 22⅚′
Declination of Jupiter, south [Declin. M. ♃]	22° 6¾′
Resp. longitude [Reſp. Longitudo]	15° 33⅓′ ♐
Latitude [Latitudo]	0° 37¾′ north [B.]

18 May [DIE 18 MAIJ.]

Jupiter was observed in the evening about the meridian, the clock having been corrected by the Vulture, which was to cross the meridian at 3^h $7\frac{1}{6}{}^m$ [H. 3

M. 7⅙] after midnight. [Obſeruabatur ♃ Veſperi circa Meridianum, correcto Horologio a Vulture, qui per Meridianum tranſiturus erat H. 3 M. 7⅙ poſt mediam noctem.]

h m [H. M.]	Distance from cor ♏ [Diſt. a Corde ♏]	Declination, south [Decl. M.]	Altitude [Altit.]	Equatorial distance of the Vulture, east [Diſt. æq. Vult. or.]
11^h 31½^m	12° 21′	21° 59′	11° 8½′	
11^h 38^m	12° 21′			51° 29′
11^h 42¾^m	12° 20⅓′		11° 38½′	
About these observations cor ♏ was about the meridian, at its greatest elevation above the horizon, so there could be no great refraction in the distance. [Fuit circa has obſeruationes Cor ♏ circa Merid. in maxima ſua eleuatione ſupra Horizontem, vnde haud magna refractio eße potuit in diſtantia.]				
Vice versa from the Vulture [Viceverſa a Vulture]				
11^h 52⅓^m	48° 13′ nearly [fere]	21° 59′		
		21° 59⅙′		
11^h 59⅚^m	48° 12⅚′	Jupiter was approaching the meridian about these observations. [Appropinquabat ♃ Merid. circa has obſeruationes.]		
12^h 2⅔^m	48° 13′			

12^h 26½^m	Meridian altitude of Jupiter [Altit. ♃ Merid.]	
	by the steel instrument [per Chalyb.]	12° 4′ 40″
	by the revolving quadrant [per Volub.]	12° 4½′
12^h 34⅓^m	The bright star of the Vulture, east, was then [Erat tunc Luc. Vult. or.]	37 24
12^h 37^m 26^s [12 37′ 26″] corrected [correct.]	Therefore the clock was running three minutes slower than it should. [Ergo horologium tribus minutis tardius iuſto mouebatur.]	

This evening it was fairly clear and the air calm, except that rather sparse chasmata, running about in their usual way, at times somewhat darkened the clear sky by getting in the way. [Erat hac veſpera ſatis ſerenum & aër tranquillus, niſi quod chaſmata rariuſcula diſcurrendo ſolito more, limpidum cœlum interdum ſua obiectione nonnihil obfuſcabant.]

Investigation of the appearance of Jupiter from the immediately preceding observations. [Indagatio apparentiæ ♃ ex proxime præcedentibus obſeruationibus.]

$11^h\ 38^m$ [H. 11 M. 38]	Right ascension of Jupiter from cor ♏ [Aſc. R. ♃ a Corde ♏]	254° 9½′
12 4	from the Vulture [a Vulture]	254° 9¾′
11 50	Corrected right ascension [Aſc. R. emendata]	254° 9⅔′
	Declination, south [Declinatio M.]	22° 6′
	Resp. longitude [Reſp. Longitudo]	15° 21⅙′ ♐
	Latitude [Latitudo]	0° 37¼′ north [B.]

Nothing was added here for the refractions of the distance: for the air was clear, and the lower stars observed were taken about the meridian. [Nihil hic pro refractionibus diſtantiæ additum eſt: nam defecatus aër fuit & ſidera decliuiora obſeruata circa Merid. accepta ſunt.]

22 May [DIE 22 MAIJ.]

In the morning Jupiter was observed, having passed the meridian, and among clouds, in this manner. [Mane obſeruabatur ♃ Meridianum transgreßus & inter nubes hoc modo.]

h m [H. M.]	Distance from the northern scale-pan of ♎ [Diſt. a Bor. lance ♎]	Southern declination [Declin. Auſtrina]	Equatorial distance of the Vulture, east [Diſt. æquat. Vult. or.]
$1^h\ 34^m$	32° 5½′	21° 56⅝′	21° 57⅓′
$1^h\ 39½^m$	32° 5′		
These observations were made among passing clouds. [Fuere hæ obſeruationes inter tranſcurrentes nubes.]			
Vice versa from the Vulture. [Viceverſa a Vulture.]			
$1^h\ 46^m$	48° 32¾′	21° 56⅝′	21° 57′ 17° 8′

h m [H. M.]	Distance from the northern scale-pan of ♎ [Dist. a Bor. lance ♎]	Southern declination [Declin. Australina]	Equatorial distance of the Vulture, east [Dist. æquat. Vult. or.]
1^h $53\frac{5}{6}^m$	48° 32½′	Here Jupiter was about 20° [circa 20 gradum] from the meridian, so the altitude would be about 10° [circiter 10], so that it can be known how much is due to refraction. [Fuit hic ♃ remotus a Meridiano circa 20 gradum, vnde Altitudo circiter 10 eßet, vt quantum refractioni debeatur sciri poßit.]	

Calculation for the place of Jupiter from the preceding observations. [Calculus pro loco ♃ ex antecedentibus obseruationibus.]

1^h 34^m [1ᴴ34′]	Right ascension [Asc. recta]	
	from the northern scale-pan [a borea lance]	253° 41′ 22″
1 46	from the Vulture [a Vulture]	253° 41′ 20″
1 40	Limited right ascension of Jupiter [Asc. R. ♃ limitata]	253° 41⅓′
	Declination, Mer. [Declinatio Mer.]	22° 3′
	Resp. longitude [Resp. Longitudo]	14° 54¾′ ♐
	Latitude [Latitudo]	0° 37⅓′ north [B.]

The same day, the 22nd, evening [Eodem Die 22 Vesperi.]

Jupiter was observed in the usual way about the meridian. [Obseruabatur ♃ more consueto circa Meridianum.]

Transit of the bright star of the Vulture through the meridian: 2^h 51^m [H. 2 M. 51] after midnight. [Lucidæ Vult. Transf. per Merid. H. 2 M. 51 post mediam noctem.]

h m [H. M.]	Distance from the middle one in the forehead of ♏ [Dist. a media in fronte ♏]	Declination, south [Decl. M.]	Altitude of Jupiter [Alt. ♃]	The bright star of the Vulture, east [Luc. Vult. or.]
11^h $21\frac{1}{3}^m$	18° 5⅙′	21° 57′	11° 36′	
		21° 56⅓′		
11^h $27\frac{1}{2}^m$	18° 5½′			48 19
11^h $37\frac{3}{4}^m$ corrected [corr.]		Here the clock is corrected. [Hic corrigitur horologium.]		

h m [H. M.]	Distance from the middle one in the forehead of ♏. [Diſt. a media in fronte ♏.]	Declination, south [Decl. M.]	Altitude of Jupiter [Alt. ♃]	The bright star of the Vulture, east [Luc. Vult. or.]
11^h $43\frac{1}{6}^m$	18° 5⅔′			46 41
Jupiter was with this star as if in equilibrium with respect to the horizon, so that no refraction could be caused in the distance from this. [Fuit ♃ cum hac ſtella quaſi in Horizontis æquilibrio, adeo vt nullam Refractionem hinc in diſtantia cauſari poßet.]				
Vice versa from the Vulture [Viceverſa a Vulture]				
11^h $50\frac{1}{2}^m$	48° 38⅙′	21° 56½′ 21° 56⅝′		44 52
11^h $56\frac{2}{3}^m$	48° 38′			
11^h $59\frac{1}{2}^m$	48° 38½′			42 38
12^h $13\frac{1}{3}^m$	Transit of Jupiter [Tranſitus ♃]			
	through the meridian. [per Meridianum.]			39 22

Altitude by the quadrant [Altitudo per Quadrantem]	
steel [Chalyb.]	12° 8⅙′
revolving [Volub.]	12° 9½′

This evening it was very clear and the state of the air calm. [Fuit hac veſpera bene ſerenum & tranquillus aëris ſtatus.]

Calculation for the place of Jupiter from the preceding observations. [Calculus pro loco ♃ ex antecedentibus obſeruationibus.]

11^h 38^m [H. 11 38]	Right ascension of Jupiter from the middle one of the forehead of ♏. [Aſc. R. ♃ a media frontis ♏.]	
		253° 33½′
11 51	adding 5⁄6′ for refraction [addendo 5⁄6′ pro refractione]	
	in the distance, corrected right ascension [in diſtantia Aſc. R. emendata]	
		253° 33′ 0″
	Declination of Jupiter, south [Declin. ♃ M.]	22° 1½′
	Resp. longitude [Reſp. Longitudo]	14° 46⅝′ ♐
	Latitude [Latitudo]	0° 37′ 54″ north [B.]

28 May, evening [DIE 28 MAIJ, VESPERI.]

Observation of Jupiter after the opposition with the mean Sun. [Obſeruatio ♃ poſt ☍ cum medio ☉.]

h m [H. M.]	Distance from the middle one in the forehead of ♏ [Diſt. a media in fronte ♏]	Declination of Jupiter [Declinatio ♃]	Equatorial distance of the Vulture, east [Diſt. æq. Vult. or.]
$11^h\ 57^m$	17° 20⅙′ among small clouds [inter nubeculas]	21° 52′	21° 52′
$12^h\ 4½^m$	17° 19′ + [17 19 +]		47° 40′
$12^h\ 8⅙^m$	17° 20′	It was not very clear this evening. [Non fuit bene ſerenum hac veſpera.]	46° 47′
$11^h\ 23^m$ corrected [corr.]			
Vice versa from the Vulture [Viceverſa a Vulture]			
$12^h\ 19^m$	49° 12′		
$12^h\ 21⅓^m$	49° 11½′ + [49 11½ +]		43° 23′
$11^h\ 38^m$ corrected [corr.]			
$12^h\ 24½^m$	49° 12½′		
$11^h\ 42^m$ corrected [corr.]			

$12^h\ 35^m$	Meridian altitude of Jupiter [Altit. meridiana ♃]	
	by the revolving quadrant [per Volub.]	12° 12⅔′
	by the steel instrument [per Chalyb.]	12° 13′

Calculation of Jupiter from the preceding observations. [Calculus ♃ ex obſeruationibus præcedentibus.]

$12^h\ 8⅙^m$ [H. 12 8⅙]	Right ascension from the star of ♏ [Aſc. R. a ſtella ♏]	252° 44⅓′
12 24½	from the Vulture [a Vulture]	252° 46½′

12 16⅓	Corrected right ascension [Emendata Aſc. R.]	252° 45′ 25″
	Declination, south [Declin. M.]	21° 57′ 30″
	Resp. longitude [Reſp. Longitudo]	14° 2⅚′ ♐

Latitude [Latitudo]	0° 36¾′ north [B.]

30 MAY [DIE 30 MAIJ.]

In the evening Jupiter was observed about the meridian in the usual way. [Veſpera obſeruabatur ♃ circa Meridianum conſueto more.]

h m [H. M.]	Distance of Jupiter from the middle one in the forehead of ♏ [Diſt. ♃ a media in fronte ♏]	Declination of Jupiter [Declin. ♃]	Time in æqua from the bright star of the Vulture, east [Tempus in æqua a Luc. Vult. or.]
11h 34m	17° 6′ almost [17 6 fere]	21° 51½′ 21° 51′	41 45
11h 41⅓m	Transit of Jupiter through the meridian, [Tranſitus ♃ per Meridianum,]		

Altitude by the steel instrument [Altit. per Chalyb.]	12° 15′ nearly [12 15 ferme]
by the revolving quadrant [per Volub.]	12° 14′

h m [H. M.]	Distance of Jupiter from the middle one in the forehead of ♏ [Diſt. ♃ a media in fronte ♏]	Declination of Jupiter [Declin. ♃]	Time in æqua from the bright star of the Vulture, east [Tempus in æqua a Luc. Vult. or.]
11h 46m	17° 5⅓′		
11h 48m	17° 5⅔′		
Vice versa from the Vulture [Viceverſa a Vulture]			
11h 51⅓m	49° 26′	This evening the air was calm and less clear, especially about the horizon toward the south [Erat hac veſpera aër tranquillus ac minus defecatus, præſertim circa Horizontem ad auſtrum]	
11h 53⅓m	49° 26′		
11h 55⅓m	49° 25¾′		

31 MAY [DIE 31 MAIJ.]

Jupiter was observed about the meridian in this way. [Obſeruabatur ♃ circa meridianum hoc modo.]

h m [H. M.]	Distance of Jupiter from the middle one in the forehead of ♏ [Diſt. ♃ a media in fronte ♏]	Declination, south [Declin. M.]	
$11^h\ 4\frac{1}{6}^m$	16° 58⅙′	21° 50′	21° 50′
$11^h\ 11\frac{1}{2}^m$	16° 58⅔′		
$11^h\ 14\frac{2}{3}^m$	16° 58½′		
Vice versa from the Vulture [Viceverſa a Vulture]			
$11^h\ 19^m$	49° 32′	21° 50′	21° 50¼′
$11^h\ 22\frac{1}{6}^m$	49° 32′		
$11^h\ 24\frac{1}{3}^m$	49° 32′		
$11^h\ 37\frac{1}{3}^m$	Transit of Jupiter through the meridian. [Tranſitus ♃ per Meridianum.]		

Its altitude [Altitudo eius]	
by the steel instrument [per Chalyb.]	12° 15⅓′
by the revolving quadrant [per Volub.]	12° 15⅙′

Then the Vulture, east, was in the equator 40 25. [Tunc erat Vultur or. in æquat. 40 25]

This evening it was not very clear, nor was the air clear; nevertheless the observations were gathered carefully enough that they may be relied on, at least once account is taken of the refractions in the declination and elsewhere where it is needed. [Fuit hac veſpera non admodum ſerenum aut aër defæcatus, obſeruationes tamen ſatis diligenter conquiſitæ ſunt, vt ijs confidere liceat, habita ſaltem ratione refractionum in declinatione & alibi vbi opus fuerit.]

From the above observations of 30 May. [Ex obſeruationibus ſuperioribus Diei 30 Maij.]

	Right ascension from the middle one of the forehead of ♏ [Aſc. R. a media frontis ♏]	252° 29⅙′
	from the Vulture [a Vulture]	252° 28′
$11^h\ 17\frac{1}{3}^m$ [H. 11 M. 17⅓]	Corrected [Emendata]	
	right ascension of Jupiter [Aſc. R. ♃]	252° 28′ 35″
	True declination, south [Declin. vera M.]	21° 56′
	Resp. longitude [Reſp. Longitudo]	13° 47′ 3″ ♐
	Latitude [Latitudo]	0° 36′ 17″ north [B.]

Calculation of Jupiter for 31 May. [Calculus ♃ ad Diem 31 Maij.]

	Right ascension from the middle one of the forehead of ♏ [Aſc. R. a media frontis ♏]	252° 21′
	from the Vulture [a Vulture]	252° 20′ 15″
11h 7½m [H. 11 M. 7½]	Corrected [Emendata]	
	right ascension of Jupiter [Aſc. R. ♃]	252° 20½′
	Declination [Declin.]	21° 55′
	Resp. longitude [Reſp. Longitudo]	13° 39′ 27″ ♐
	Latitude [Latitudo]	0° 36⅓′ north [B.]

Collection of the appearances [Greek: φαινομένων (phainomenōn, "of the appearances, of the phenomena")] of Jupiter from our acronychal observations of this year, together with a note of the Copernican and Alphonsine calculation and the difference. [Collectio φαινομένων ♃ ex obſeruationibus noſtris acronychijs huius anni vna cum Copernicæi & Alphonſinorum calculi annotatione ac differentia.]

May [Maij]	h m [H. M.]	Longitude ♐ [Long. ♐]	Latitude, north [Lat. B.]	Copernican longitude [Cop. Long.]	Difference, plus [Diff. plus]	Copernican latitude [Cop. Lat.]	Difference, plus [Diff. plus]	Alphonsine [Alphonſ.]	Difference, minus [Diff. minus]	Alphonsine [Alphonſ.]	Difference, plus [Diff. plus]
16	12h 45m	15° 33⅓′	6° 37¾′	15° 50⅓′	17′	1° 23′	45¼	14 4⅓	1 29	1° 6′	28¼
18	11h 50m	15° 21⅓′	6° 37¼′	15° 36½′	15⅓	1° 23′	45¾	13 50½	1 31	1 6	28¾
22	1h 40m morning [mane]	14° 54¾′	6° 37⅓′								
22	11h 45m evening [Veſp.]	14° 46⅚′	6° 37′ 54″								
28	11h 34m	14° 2⅚′	0° 36′ 45″								
30	11h 17⅓m	13° 47′ 30″	0° 36′ 17″								
31	11h 7½m	13° 39′ 27″	0° 36′ 20″								

Assuming a daily motion of Jupiter of 7ᴹ18ˢ, as it is found from 22 May to 28 from the observations, the Copernican calculation in the ephemerides agreeing closely with it, the moment of the opposition of Jupiter with the mean motion of the Sun was investigated from either side, on 26 May at 7h 19⅓m [H. 7 M. 19⅓] precisely, and that in 14° 19′ ♐, with the Sun opposite in 14° 19′ 0″ ♊, the apogee of the eccentric approaching. [Suppoſito motu diurno ♃ 7ᴹ18ˢ prout inuenitur a 22 die Maij in 28 ex obſeruationibus, Copernicæo calculo in Ephemeridibus ei proxime conſentiente, inueſtigatum eſt hinc inde

momentum ☍ ♃ cum medio ☉lis motu Die 26 Maij H. 7 M. 19⅓ præciſe, idque in 14°19′♐, ☉le e regione in 14°19′0″♊ apogæo Eccentrici appropinquante.]

29 July [DIE 29 JULIJ.]

In the evening Jupiter, stationary after the opposition with the Sun, was observed in the following way. [Veſperi obſeruabatur ♃ ſtationarius poſt ☍ cum ☉ in hunc ſequentem modum.]

The clock was corrected at 10^h. [Horologium correctum eſt H. 10.]

h m [H. M.]	Distance from the left knee of Ophiuchus [Diſt. a ſiniſt. genu Oph.]	Declination of Jupiter, south [Declin. ♃ M.]	Alti-tude [Al-ti-tudo]
$10^h\ 4^m$	26° 51¼′	21° 23′	21° 23⅔° 0½′
$10^h\ 11^m$	26° 54′	This star in Ophiuchus was a little higher above the horizon than Jupiter, but not so much, however, that any refraction would be caused in the distance. [Erat hæc ſtella in Ophiucho paululum eleuatior ♃ ſupra Horizontem. Verum non ita tamen multum, vt refractionis quidquam cauſaretur in diſtantia.]	
$10^h\ 14½^m$	26° 53⅓′		
Vice versa from the sixth in the shoulder of ♐. [Viceverſa a ſexta in humero ♐.]			
$10^h\ 19½^m$	27° 36½′	21° 21′	21° 20⅓° 40½′
$10^h\ 30^m\ 30^s$	27° 35¾′		

At this time the star in Sagittarius was at an altitude of about 6 degrees, so if anything is due to refraction, account must be taken of it. [Stella in Sagittario hoc tempore erat in altitudine quaſi 6 graduum, vnde ſi quid refractioni debeatur, eius ratio habenda ſit.]

This evening thick vapours arose about the southern horizon, where Jupiter was being observed. [Extiterunt hac veſpera craßi vapores circa Horizontem Meridionalem, vbi ♃ obſeruabatur.]

4 August [DIE 4 AUGUSTI.]

Jupiter was observed for obtaining its true place, and that when it was almost stationary. [Obſeruabatur ♃ pro eius loco vero habendo, idque cum eßet fere ſtationarius.]

9^h $2½^m$ [H. 9 2½]	Distance of Jupiter from the bright star of the Vulture [Diſt. ♃ a Luc. Vulturis]	52° 48½′
	Declination of Jupiter [Declinatio ♃]	21° 28′

For correcting the clock. [Pro horologio corrigendo.]

9 19⅝	the Vulture, east [Vultur orient.]	9 3½

From these correct the clock also for the preceding observations made on the Moon. [Ex his corrige etiam Horologium ad antecedentes obſeruationes in ☾ factas.]

Afterwards the sky was covered over with clouds, so that no further observations of Jupiter could be made this evening; nor could Jupiter be observed in altitude because of obstructions, which nevertheless must necessarily be had because of the refractions in the distance from the Vulture. And therefore, since Jupiter was almost stationary, its place must be investigated approximately [ἐν πλάτει], and afterwards the altitude for this time. [Poſtea ſubducebatur cœlum nubibus, vt plures hac veſpera obſeruationes ad ♃ fieri nequirent; neque etiam propter impedimenta in altitudine obſeruari ♃ poterat, quæ tamen propter refractiones in diſtantia a Vulture neceßario habenda eſt. Ideoque cum fere ſtationarius fuerit ♃, eius locus ἐν πλάτει inquirendus eſt, & poſtea altitudo ad hoc tempus.]

2 September, evening [DIE 2 SEPTEMBRIS, VESPERI.]

h m [H. M.]	Distance from the sixth in ♐ [Diſt. a ſexta in ♐]	Declination [Decl.]	Altitude by the lesser quadrant [Alt. per min. Quad.]	The Vulture, equatorial distance [Vultur Diſt. æquat.]
8^h $8½^m$		21° 47′	4° 45′	
		21° 47⅔′		east [orient.]
8^h 13^m	25° 26⅓′			0° 5′
8^h $15⅓^m$	25° 28′	among the chasmata [inter chasmata]		west [occid.]
8^h $17⅓^m$	25° 27½′	21° 47½′	4° 0′	1° 5′
		21° 46′		

Afterwards chasmata on every side across the sky prevented further observations. [Poſtea chasmata vndequaque per cœlum vlterius obſeruationes impediebant.]

3 September [DIE 3 SEPTEMBRIS.]

Jupiter was observed from the sixth in the shoulder of ♐. [Obſeruabatur ♃ a ſexta in humero ♐.]

h m [H. M.]	Distance [Diſtantia]	Declination of Jupiter [Declin. ♃]	Altitude of Jupiter by the smallest quadrant [Altit. ♃ per Q. minimum]
7^h $58\frac{1}{3}^m$	25° 20⅙′	21° 49′	
7^h 44^m 0^s corrected [corr.]		with one pinnule [vno pinn.]	
8^h 6⅙^m	25° 21½′		5° 50′
8^h $11\frac{5}{6}^m$	25° 19½′		
8^h $13\frac{5}{6}^m$		21° 47½′	5° 0′
		21° 49′	
8^h $23\frac{1}{2}^m$	25° 20¾′		3° 50′
8^h $26\frac{1}{3}^m$		21° 47⅔′	
		21° 47′	

Then the bright star of the Vulture was west 1 34. [Tunc erat Lucida Vult. occid. 1 34]

8 30⅓	the Vulture, west [Vultur occid.]	2 36
8 14 34 corrected [corr.]	Transit of the bright star of the Vulture through the meridian, 8^h 4⅙^m [Tranſitus Lucidæ Vult. per merid. H. 8 4⅙.]	

This evening it was clear enough and calm.[1] [Erat hac Veſpera ſatis ſerenum & tranquillum[1].]

4 September [DIE 4 SEPTEMBRIS.]

Jupiter was observed from the lower horn of ♍.[2] [Obſeruabatur ♃ ab inferiori cornu ♍[2].]

h m [H. M.]	Distance of Jupiter from the lower horn of ♍ [Diſt. ♃ ab inf. cornu ♍]	Declination of Jupiter [Declin. ♃]	Altitude of Jupiter by the lesser quadrant [Alt. ♃ per min. Q.]	The bright star of the Vulture, east [Luc. Vult. orient.]
7^h 4^m	*3″*	*21° 52′*		15 11½
		21° 52⅓′		
7^h $38\frac{1}{2}^m$	46° 44′	21° 50′	6° 40′	
7^h 33^m corrected [corr.]		with one [vno]		
7^h $45\frac{2}{3}^m$	46° 44½′			
7^h $49\frac{1}{3}^m$		21° 49⅙′	5° 50′	
		21° 49′		
7^h 56^m	46° 43⅓′			
7^h $57\frac{2}{3}^m$				2 6
7^h 51^m 50^s corrected [corr.]				

[1] On the place of Jupiter compare p. 208 above. [De loco Iovis cf. ſupra p. 208.] [2] Also from the Moon; compare p. 208 f. above. [Etiam a luna, cf. ſupra p. 208 ſq.]

7 58½	Repeated equatorial distance [Repetita æquatoria diſtantia]	1° 58′
8 0 15	The bright star of the Vulture passed through the meridian. [Tranſiuit Lucida Vulturis per Meridianum.]	

After dinner. [*Poſt cænam.*]

8 47 0	*the Vulture, west, in the equator* [*Vultur occid. in æquat.*]	*9 35*
8 49 30	*the same, west* [*Eadem occid.*]	*10 16*
8 52 0	*the same distance* [*Eadem diſtant.*]	*10° 50′*

For the examination of the instruments. [Pro inſtrumentorum examinatione.]

Meridian altitude of the preceding one in the tail of ♈ [Altit. merid. præcedentis in cauda ♈]	
by the steel instrument [per Chalyb.]	15° 41′ 0″
by the revolving quadrant [per Volub.]	15° 42′ 0″
Declination, south, by the armillae [Declin. M. per Armillas]	18° 25′
	18° 25½′

Meridian altitude of the following one in the tail of ♈ [Altit. merid. ſequentis in cauda ♈]	
by the steel instrument [per Chalyb.]	16° 12⅙′
by the revolving quadrant [per Volub.]	16° 14⅙′

N.B.[1] Let the quadrants be limited to the lower altitudes, which agree nearly with the mean. [N.B.[1] Limitentur quadrantes ad altitudines inferiores quæ prope cum medio conſentiunt.]

Its declination, south [Declin. eius M.]	17° 53½′
	17° 54′

In the year 1584, in the month of August. [Anno 1584 menſe Auguſto.]

Meridian altitude of the bright star of the tail of ♈ [Altit. Merid. lucidæ caudæ ♈]	16° 11′
add for 8 years [adde pro 8 annis]	2
1592, in the month of August, meridian altitude by reduction [1592 menſe Auguſto alt. merid. per reductionem]	16° 13′ 8″

Nearly the same resulted from the observations of the year 1587. [Idem fere euenit ex obſeruationibus anni 1587.]

OBSERVATIONS OF MARS [OBSERUATIONES MARTIS.]

23 January, evening [DIE 23 JANUARIJ, VESPERI.]

With clear weather and the opportunity for observing restored, for the first time this year after continuous dark days: an observation of Mars. [Reſtituta ſerenitate & obſeruandi opportunitate primum hoc anno poſt continuos obſcuros dies, obſeruatio ♂.]

The time could not be observed on the clock because of a broken cord. [In horologio non poterat obſeruari tempus propter fractum funem.]

Between Mars and the bright star of the jaw of the Whale [Inter ♂ & luc. mandib. Ceti]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars by the revolving quadrant [Altit. ♂ per Volub.]	The bright shoulder of Orion, east [Luc. humer. Orion. or.]
29° 43⅓′	4° 33′	27° 58′	29 21
not exact [non exacte]	4° 34′		
29° 42½′	4° 33⅙′		27 8
	4° 33½′		
29° 41⅚′		26° 19′	25 15
29° 41½′			23 16
29° 42′	4° 33⅔′	23° 35′	19 37
	4° 33¼′		

Mars could not be observed vice versa, because of clouds rising from the west, and also because of the violence of the wind and the obstruction of the pinnacle above the largest subterranean armillae. [Viceverſa non poterat ♂ obſeruari propter exorientes nubes ex occaſu, tum etiam ob vehementiam venti ac impedimentum pinnaculi ſupra Armillas ſubterraneas maximas.]

3 February [DIE 3 FEBRUARIJ.]

Mars was observed on account of Mercury and of itself. [Obſeruabatur ♂ propter ☿ & ſeipſum.]

h m [H. M.]	Distance of Mars from Aldebaran [Diſt. ♂ ab Aldeb.]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Altit. ♂]	Azimuth [Azim.]
$5^h\ 53\frac{1}{3}^m$	45° 9′	7° 40′	33° 40′	

h m [H. M.]	Distance of Mars from Aldebaran [Diſt. ♂ ab Aldeb.]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Altit. ♂]	Azimuth [Azim.]
	doubtful [dubia]	with both [vtroq.]		
6^h $0\frac{1}{6}^m$	45° 8½′	7° 40⅚′	32° 55′	48° 9′
6^h $4\frac{1}{4}^m$	45° 8⅓′	7° 40⅔′	32° 27′	49° 0′

h m [H. M.]	Between Mars and the outermost one of the wing of Pegasus [Inter ♂ & extrem. alæ Pegaſi]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Altit. ♂]	Azimuth [Azim.]
6^h 12^m	20° 0′	7° 41′	31° 38′	51° 5′
6^h $15\frac{5}{6}^m$	20° 0′	7° 41′	31° 10′	52° 5′
		7° 41⅓′		
6^h 19^m	20° 0′		30° 50′	52° 50′

The altitude of the outermost one of the wing of Pegasus about these times 25°. [Altitudo extremæ alæ Pegaſi circa hæc tempora 25°.]

Next, to check the clock, we observed the equatorial distance from the meridian. [Deinde pro verificando Horologio obſeruauimus diſtantiam æquatoriam a Meridiano.]

6 28⅔	The bright foot of Orion [Lucid. pes Orionis]	10 14
6 30	toward the east [verſus ortum]	9 30
6 32	The same distance [Eadem diſtantia]	8° 55′
6 33⅔	toward the east [verſus ortum]	8 30

N.B. The bright foot of Orion through the meridian, according to computation, 7^h $8\frac{1}{6}^m$. [N.B. Lucid. pes Orionis per Merid. iuxta ſupput. H. 7 M. 8⅙.]

For testing the sextant, the distance of Aldebaran and the bright star of ♈ was observed. [Obſeruabatur pro Sextante examinando diſtantia Aldeboræ & Lucidæ ♈]

I	35° 33′
II	35° 33′
III	35° 33′

It is therefore evident that this sextant, which we have used so far this year, gives an excess in such a distance of about one minute, which has to be limited. [Patet itaque quod hic ſextans, quo hucuſque hoc anno vſi ſumus, abundet in tali diſtantia quaſi vno minuto, quod venit limitandum.]

[1] In the margin. [In margine.]

For the place of Mars from the immediately preceding observations. [Pro loco ♂ ex proximis antecedentibus obſeruationibus.]

$6^h\ 0^m$ [H. 6 0′]	Right ascension of Aldebaran [Aſc. R. Aldeboræ]	63° 9⅙′
	Hence right ascension of Mars [Hinc Aſc. R. ♂]	17° 41½′
$6^h\ 12^m$ [H. 6 12′]	Right ascension of the outermost one of the wing of Pegasus [Aſc. R. extr. alæ Peg.]	358° 7′
	Hence right ascension of Mars [Hinc Aſc. R. ♂]	17° 44′ 30″

N.B. In this difference a fault of the instrument is plainly seen, which can be removed by limiting both. [N.B. In hac differentia vitium inſtrumenti aperte videtur, quod limitatione vtriuſque tolli poteſt.]

$6^h\ 6^m$ [H. 6 M. 6]	Limited right ascension [Aſc. recta limitata]	17° 43′ 0″
	Declination, north [Declinatio B.]	7° 40′

	Resp. [Reſp.]	Copernican [Copern.]	Alphonsine [Alph.]
Longitude [Long.]	19° 17⅖′ ♈	18° 51½′	19° 48′
Latitude [Latit.]	0° 6¾′ north [B.]	0° 5½′ north [B.]	0° 5¼′ north [B.]

6 February [DIE 6 FEBRUARIJ.]

h m [H. M.]	Distance of Mars from the outermost one of the wing of Pegasus [Diſt. ♂ ab extr. alæ Peg.]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	Altitude of the outermost one of the wing of Pegasus [Alt. extr. alæ Peg.]
$6^h\ 32¼^m$	21° 39¼′	8° 31½′	29° 20′	
		8° 31⅝′		
$6^h\ 35^m$	21° 40′	8° 32′ with both [vtroq.]		
$6^h\ 39⅔^m$	21° 39¾′	8° 31⅝′		21° 0′
$6^h\ 41^m$	21° 39⅔′	8° 32′		20° 30′
Afterwards, vice versa, Mars from the eye of ♉ [Poſtea viceverſa ♂ ab oculo ♉]				
$6^h\ 43^m$	43° 2′	8° 33′		
$6^h\ 46^m$	43° 3′	8° 32⅔′	27° 37′	
$6^h\ 49½^m$	43° 2⅙′	8° 32½′	27° 7′	
$6^h\ 52^m$	43° 2′	8° 33⅓′	26° 52′	
$6^h\ 54⅔^m$	43° 2⅙′	8° 33½′	26° 27′	

h m [H. M.]	Distance of Mars from the outermost one of the wing of Pegasus [Diſt. ♂ ab extr. alæ Peg.]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	Altitude of the outermost one of the wing of Pegasus [Alt. extr. alæ Peg.]

For checking the clock [Pro verificando horologio]

Transit of the bright foot of Orion through the meridian, according to computation, 6^h 56⅙^m. [Tranſitus Lucidi pedis Orionis per Merid. iuxta ſupput. H.6 M.56⅙.]

(But it had been checked earlier by the Sun, 1^h 50^m.) [(Verificabatur autem prius ad ☉ H. 1 M. 50).]

6 59⅓	The bright foot of Orion, west [Luc. pes Orionis occid.]	1 31
7 0⅝	The same foot, west [Idem pes occident.]	1 55
7 2¾	The bright foot of Orion, west [Luc. pes Orion. occid.]	2 25
7 16⅝	The last star in the belt of Orion was passing through the meridian, having altitude [Vltima ſtella in baltheo Orionis tranſibat per Merid. habens Altitud.]	31° 53½′

For the place of Mars from the preceding observations. [Pro loco ♂ ex præcedentibus obſeruationibus.]

6^h 40^m [H.6 40′]	Distance from the outermost one of the wing of Pegasus [Diſt. ab extr. alæ Peg.]	21° 39′
	Declination, north [Declinatio B.]	8° 32′
	Therefore right ascension of Mars [Ergo Aſc. R. ♂]	19° 42′ 30″
6 46	Distance from the eye of ♉ [Diſt. ab oculo ♉]	43° 1½′
	Therefore right ascension of Mars [Ergo Aſc. R. ♂]	19° 40′ 30″
6 43	Limited right ascension of Mars [Aſc. R. ♂ limitata]	19° 41½′
	Resp. longitude [Reſp. Longitudo]	21° 23¾′ ♈
	Latitude [Latitudo]	0° 10½′ north [B.]

To check the instrument which we have used from the beginning of this year and long before, we again observed three times the distance of Aldebaran and the bright star of ♈, and always found it 35° 33′, just as three days before as well; this, however, exceeds by almost a single minute. From this reckon the rest. [Pro verificando inſtrumento quo ab initio huius anni atque diu antea vſi ſumus, denuo ter obſeruauimus diſtantiam Aldeboræ & Lucidæ ♈, eamque ſemper adinuenimus 35°33′, quemadmodum etiam ante triduum, quod tamen ferme vnico minuto abundat, hinc cætera ratiocinare.]

Afterwards, seeking the same distance of the stars again with the other, new sextant, for the sake of correcting exactly, we found it as follows: 35° 32⅙′.

And this agrees very well with the later observation made with the old sextant, which we have now used for the first time. For the remaining observations, over almost the whole preceding year, were made with the sextant which I call new; and from this examine the rest against each other and limit them as needed. [Poſtea altero Sextante nouo denuo eandem ſtellarum diſtantiam conquirentes exacte emendandi gratia inuenimus vt ſequitur 35° 32⅙′, atque hæc aptißime ſeſe habet quoad poſteriorem obſeruationem factam per Sextantem veterem, quo nunc vſi ſumus primum. Nam reliquæ obſeruationes quaſi per integrum annum antecedentem habitæ ſunt per Sextantem quem voco nouum, & hinc mutuo cætera rimare & limita prout opus fuerit.]

13 February [DIE 13 FEBRUARIJ.]

For correcting the clock we observed: [Pro horologio corrigendo obſeruauimus]

6^h 26⅔^m [H.6 26⅔′]	The bright foot of Orion, east [Luc. pes Orion. orient.]	1 23
6 28¾	The same bright foot, east [Idem luc. pes orient.]	0 57
6 30⅙	west [occid.]	0 22

Afterwards we observed Mars in this way. [Poſtea obſeruauimus ♂ in hunc modum.]

6 32¼	Between Mars and the head of Andromeda [Inter ♂ & caput Androm.]	30° 36′
	Declination of Mars with one pinnule [Declin. ♂ vno pinn.]	10° 26⅚′
	with the other [altero]	10° 27′
6 35½	The same distance, and a better observation [Eadem diſt. & melior obſeruatio]	30° 34⅔′
6 39⅙	Repeated, the same distance [Repetita eadem diſt.]	30° 38′
	Declination [Declin.]	10° 26′
	Then the altitude of Mars was [Fuit tunc Altitudo ♂]	29¼°
6 44½	The same distance [Eadem diſtantia]	30° 36½′

Concerning this one the difference is to be noted, for in the others the brightness of the Moon was a greater hindrance. [Circa hanc differentia annotanda eſt, nam in cæteris ſplendor ☾ maiori impedimento fuit.]

17 February [DIE 17 FEBRUARIJ.]

h m [H. M.]	Distance between Mars and the head of Andromeda [Diſt. inter ♂ & caput Androm.]	Declination of Mars [Decl. ♂]	Altitude [Altit.]	The bright shoulder of Orion [Luc. hum. Orionis]
6^h 43¼^m	32° 6½′	11° 28½′		east [orient.]
		11° 28′		0 36

h m [H. M.]	Distance between Mars and the head of Andromeda [Dist. inter ♂ & caput Androm.]	Azimuth	Altitude [Altit.]	The bright shoulder of Orion [Luc. hum. Orionis]
$6^h\ 52^m$	32° 8′	67° 0′	28° 20′	west [occid.]
	better [melior]			
$6^h\ 56⅔^m$	32° 8⅙′			0 34
$6^h\ 59½^m$	32° 8′	68° 45′	27° 20′	

These distances were observed with the new, more correct sextant. [Hæ distantiæ per nouum Sextantem correctiorem obseruatæ sunt.]

Vice versa [Viceversa]

7 6½	Between Aldebaran and Mars [Inter Aldeboram & ♂]	35° 26⅚′
	Declination of Mars [Declinatio ♂]	11° 29′
		11° 29½′
	Altitude 25° 30′, azimuth [Altitudo25 30,Azimuth]	70° 15′
7 14⅔	Between Aldebaran and Mars [Inter Aldeb. & ♂]	35° 27′
	The bright shoulder of Orion, west [Luc. hum. Orion. occid.]	5 0
7 21	The same distance [Eadem distantia]	35° 26⅓′
	The bright shoulder of Orion, west [Luc. hum. Orion. occid.]	6 40

The observations this evening, of Mars as well as of Saturn, were taken among rather sparse clouds, with the Moon shining besides. Yet they were obtained with all the diligence possible, so that, once the more exact ones are selected and the rest corrected according to the limitation, each one may safely be relied on. [Obseruationes hac vespera tam in ♂ quam ♄ inter rariores nubes acceptæ sunt, ☾ insuper resplendente; sunt tamen diligentia qua fieri poterat conquisitæ, ita vt exactioribus selectis, cæterisque iuxta limitationem correctis, tuto singulis fidere liceat.]

18 February [DIE 18 FEBRUARIJ.]

In the evening Mars was observed in this way. [Vesperi obseruabatur ♂ hoc modo.]

h m [H. M.]	Distance between the head of Andromeda and Mars [Dist. inter caput Androm. & ♂]	Declination [Declin.]	Altitude [Altit.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
$6^h\ 43^m\ 30^s$ [43 30″]	[632° 32¼′	11° 45′	28° 50′	0 35
		11° 44½′		
				west [occid.]
$6^h\ 53½^m$	32° 32⅔′		27° 31′	1 58
		Azimuth of Mars [Azim. ♂]	69° 0′	

Vice versa [Viceverſa]

h m [H. M.]	Distance of Mars from Aldebaran [Diſt. ♂ ab. Aldeb.]	Declination [Declin.]	Altitude [Altit.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
$6^h\ 56^m$	24° 46¾′			
$6^h\ 58¾^m$	24° 46¾′		26° 56′	3 18
		Azimuth of Mars [Azim. ♂]	70° 10′	
$7^h\ 3⅓^m$	24° 46½′	11° 45½′		4 25
		11° 45′		

20 February [DIE 20 FEBRUARIJ.]

In the evening Mars was observed in this way. [Veſperi obſeruabatur ♂ hoc modo.]

h m [H. M.]	Distance of Mars from the head of Andromeda [Diſt. ♂ a cap. Andr.]	Declination of Mars [Decl. ♂]	Altitude / Azimuth [Alt. / Azim.]	The bright shoulder of Orion, west [Luc.hum. Orion. occ.]
$6^h\ 39⅚^m$	33° 23½′	12° 14½′	28° 47′	1 45
		12° 14¾′	67° 45′	
$6^h\ 45⅙^m$	33° 22⅔′	12° 14⅙′	28° 2½′	3 3
		12° 15′	69° 0′	
$6^h\ 48¾^m$	33° 22¾′		27° 37′	3 56
			69° 55′	
Vice versa from Aldebaran [Viceverſa ab Aldebora.]				
$6^h\ 54^m$	33° 24′	12° 16′		5 18
		12° 15½′		
$6^h\ 59½^m$	33° 23½′	12° 17½′		6 46
		12° 15½′		
$7^h\ 3⅙^m$	33° 24⅙′	12° 17½′		
		12° 16⅚′		

Afterwards the distance of Mars from the bright star of ♈ was observed, which ran from it almost straight toward the pole star, though not exactly; from this, test the declination and the latitude. [*Poſtea obſeruabatur diſtantia ♂ a Lucida ♈, quæ quaſi ab eo verſus ſtellam polarem ibat in directum, non tamen præciſe, vnde declinationem & latitudinem proba.*]

h m [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a Lucid. ♈]	Declination [Declin.]	The bright shoulder of Orion, west [Luc. hum. Or. occ.]	The Greater Dog, west [Canis maior occ.]
$7^h\ 9^m$	9° *38¼′*	*12° 17′*	*9 10*	
		12° 17⅔′		
$7^h\ 32⅙^m$	9° 38′			1 36
$7^h\ 34¼^m$	9° 38⅓′			2 8
$7^h\ 37⅓^m$	9° 37⅔′			2 58

The last day of February [DIE VLTIMO FEBRUARIJ.]

Mars was observed in this way. [Obſeruabatur ♂ in hunc modum.]

h m [H. M.]	Distance from the bright star of ♈ [Diſt. a luc. ♈]	Declination [Decl.]	Altitude of Mars by the lesser quadrant [Alt. ♂ per min. Quadr.]
$7^h\ 48⅓^m$	10° 56½′	14° 28¼′	21° 0′
		14° 28½′	
$7^h\ 52^m$	10° 54′		
$7^h\ 53⅚^m$	10° 57′	14° 28⅔′	20° 10′
		14° 28⅓′	

h m [H. M.]	Between Aldebaran and Mars [Inter Aldeb. & ♂]	Declination [Decl.]	Altitude of Mars by the lesser quadrant [Alt. ♂ per min. Quadr.]
$8^h\ 2½^m$	27° 18′	14° 28⅙′	19°
		14° 29′	
$8^h\ 5½^m$	27° 17½′	14° 29½′	18¾°
		14° 29⅓′	

Mars was almost level with the bright star of ♈ with respect to the horizon, yet a little lower. [Erat ♂ fere in æquilibrio horizontis cum lucida ♈ paulo tamen humilior]

Computation of the place of Mars from the preceding observations. [Supputatio loci ♂ ex anteced. obſeruationibus.]

8^h [H. 8]	Distance of Mars from the bright star of ♈ [Diſtantia ♂ a lucida ♈]	10° 56′
	from Aldebaran [ab Aldeb.]	27° 18′
	Declination of Mars [Declinatio ♂]	14° 28′
	To these corresponds the right ascension [His reſpondet Aſcenſ. R.]	34° 53⅔′
	Resp. longitude [Reſp. Longitudo]	7° 25⅓′ ♉
	Latitude [Latitudo]	0° 29⅓′ north [B.]

OBSERVATIONS OF VENUS [OBSERUATIONES VENERIS.]

30 January, morning [DIE 30 JANUARIJ, MANE.]

For observing the clock [Pro horologio obſeruando]

h m [H. M.]	Azimuth of Jupiter, east [Azim. ♃ orient.]	Altitude of Jupiter [Altitudo ♃]
$6^h\ 26^m$	9° 9′	11° 44½′
$6^h\ 30½^m$	8° 0′	11° 50′

h m [H. M.]	Distance of Venus from Antares [Diſt. ♀ ab Antare]	Altitude of Venus [Alt. ♀]	Declination of Venus [Declin. ♀]	
$6^h\ 26^m$	32° 2′	10¾°	18° 47′	18° 46′
$6^h\ 30½^m$	32° 3⅔′			18° 46′
$6^h\ 33^m$	32° 5½′		18° 45½′	18° 46′

Cor ♏, appeared very faintly in the last observation because of the dawn; you can take, as the mean of these, the distance of Venus and cor ♏ as 32° 3½′. [Cor ♏ in vltima obſeruatione admodum tenuiter apparuit propter auroram, potes in medio harum accipere diſtantiam ♀ & Cordis ♏ 32 3½.]

h m [H. M.]	Azimuth of Jupiter [Azim. ♃]	Altitude of Jupiter [Alt. ♃]	Between Venus and Jupiter [Inter ♀ & ♃]	Declination of Venus [Declin. ♀]
$6^h\ 35½^m$	6° 40′	11° 56′	20° 30′	18° 47′
		Altitude of Venus [Altit. ♀]	11° 35′	18° 47⅓′
$6^h\ 37^m$			20° 30½′	
$6^h\ 40^m$	5° 25′	12° 1½′	20° 31′	18° 48′
				18° 47⅓′

Such was the position of Venus, Jupiter, the Moon. [Talis erat poſitus ♀ ♃ ☾.]

Diagram. A reproduced freehand sketch in the left column, below the line "Talis erat poſitus ♀ ♃ ☾." Upper left, a hand-drawn sign of Venus with a star (an asterisk) just to its right; a dashed line runs from that star across to a second star at the upper right, beside a hand-drawn sign read as Jupiter. From the Venus star a wavy line runs down to the right, and from the Jupiter star a straight line runs down to the left, toward a crescent Moon at the bottom centre; the straight line stops short of the crescent. Two words are set in type, low in the figure: "ortus" at the left and "occaſus" at the right.

- Upper left: ♀ (hand-drawn), with a star beside it
- Upper right: a star, with a hand-drawn sign read as ♃
- Bottom centre: ☾ (a crescent)

- Left, in type: east [ortus]
- Right, in type: west [occaſus]

With the clock corrected, we afterwards observed the Sun from Venus. [Horologio correcto poſtea ☉ a ♀ obſeruabamus.]

h m [H. M.]	Between the Sun and Venus [Inter ☉ & ♀]	Altitude of the Sun [Altit. ☉]	Azimuth of the Sun from the meridian toward the east [Azim. ☉ a Mer. verſ. or.]
$7^h\ 46^m$ corrected [7 46 corr.]	45° 7′ doubtful [45 7 dubia]	2° 35′	58° 45′
$7^h\ 51\frac{1}{6}^m$	45° 3′	2° 58′	58° 8′
$7^h\ 52\frac{1}{3}^m$	45° 4½′	3° 1′	57° 51′
$7^h\ 54^m$	45° 4′	3° 12′	57° 32′
$7^h\ 56\frac{1}{2}^m$	45° 4¼′	3° 24′	57° 8′
$8^h\ 0^m$	The equatorial distance was observed [Obſeruabatur diſt. æquat.]		
$8^h\ 8^m$ corrected [8 8 corr.]	Venus toward the east from the meridian [♀ verſus ort. a Meridie]	12° 5′	
	Then the declination of Venus was [Tunc erat Declin. ♀]	18° 44¼′, with one [vno.]	

	Again between the Sun and Venus [Rurſus inter ☉ & ♀]	Apparent declination of the Sun [Decl. ☉ viſa]	Altitude of the Sun [Alt. ☉]	Azimuth of the Sun [Azim. ☉]
8 5	45° 7½′		4° 15′	55° 30′
8 8	45° 8⅙′		4° 34′	54° 55′
8 10⅙	45° 9′		4° 45′	54° 35′
8 12	45° 9′	14° 44⅙′ 14° 43′	4° 58′	54° 10′
8 16	45° 8⅓′		5° 25′	53° 20′
8 18	45° 7′		5° 35′	53° 0′
8 22	45° 9′		6° 12½′	51° 50′
8 27	45° 7½′		6° 27½′	51° 14′
8 31	45° 8′		6° 44′	50° 35′

You can use, without any perceptible error, around the middle time of these last ones, the distance of Venus and the Sun, 45° 8′ [part. 45° 8′], exactly. [Potes vti absque omni ſenſibili errore circa medium tempus harum vltimarum diſtantia ♀ & ☉ part. 45° 8′ præciſe.]

8 33	Observed with the largest armillae [Obſeruabatur per Armill. max.]	
	Declination of the Sun, with one pinnule [Decl. ☉ vno pin.]	14° 47′
	with the other [alt.]	14° 48′

	Distance [Dist.]	Altitude of the Sun [Alt. ☉]	Azimuth of the Sun [Azim. ☉]
8 37⅔	45° 9⅓′	7° 20′	49° 27½′
8 40	45° 9′	7° 34′	49° 0′

8 55 Venus passed through the meridian, having an altitude by the revolving quadrant of 15° 18′, a good one. The Sun was removed from the meridian toward the east 46 9 by the very pinnule of the equator. [8 55 Transiuit ♀ per Meridianum habens Altitudinem per Volubilem 15 18, bona. ☉ remouebatur a Meridie versus ortum 46 9 per ipsum pinnacidium æquatoris.]

So the declination of Venus at that time was 18° 47½′. You can apply this to the earlier observations. [Fuit itaque declinatio ♀ tunc 18 47½. Hanc potes prioribus obseruatis applicare.]

Afterwards the Sun was again observed from Venus in this way. [Postea rursus obseruabatur ☉ a ♀ hoc modo.]

h m [H. M.]	Distance [Dist.]	Altitude of the Sun [Alt. ☉]	Azimuth
$9^h\ 0^m$ corrected [9 0 corr.]	45° 9⅚′	9° 51′	43° 55′
$9^h\ 4^m$	45° 9′	10° 8′	43° 18′
$9^h\ 5^m$	45° 10½′	10° 19′	42° 50′

Here you have good observations, for the fixed stars as well as for Venus, Jupiter and the Moon. For it was exceptionally clear and calm, and the air was clarified and purified by the frost, with only a gentle north wind blowing, inclined toward the east. It was exceptionally clear until almost noon; then clouds arose. [Habes hic bonas obseruationes tam pro stellis fixis quam ♀ ♃ atque ☾; erat enim apprime serenum atque tranquillum defæcataque & gelu depurata aura, flante leniter saltem boreali vento ad ortum inclinato. Erat apprime serenum vsque fere ad Meridiem, tunc nubes oboriebantur.]

18 February [DIE 18 FEBRUARIJ.]

Venus was observed near its greatest morning departure from the Sun, in the manner that follows. [Obseruabatur ♀ circa maximam eius a ☉ digreßionem matutinam in modum qui sequitur.]

h m [H. M.]	Distance of Venus from Jupiter [Dist. ♀ a ♃]	Declination of Venus, south [Decl. ♀ M.]	Altitude of Venus [Altit. ♀]	Azimuth from the meridian toward the east [Azim. a Mer. vers. ort.]
$6^h\ 3^m$	35° 6⅓′	18° 45½′ 18° 45⅔′	6° 55′	40° 42′
$6^h\ 10⅔^m$	35° 7′		7° 37′	39° 5′
$6^h\ 15⅚^m$	35° 7′	as above [vt supra]	8° 2′	38° 10′
$6^h\ 24⅓^m$	35° 7⅓′	18° 46½′	Jupiter was here around [♃ hic erat circa]	

h m [H. M.]	Distance of Venus from Jupiter [Diſt. ♀ a ♃]	Declination of Venus, south [Decl. ♀ M.]	Altitude of Venus [Altit. ♀]	Azimuth from the meridian toward the east [Azim. a Mer. verſ. ort.]
		18° 46′	the meridian, nearly [Meridian. fere]	
6h 34m	35° 8′		9° 30½′	33° 50′
6h 42m		18° 47⅓′		
		18° 46⅔′		

All these observations were made with the new, more accurate sextant. Afterwards, as the Sun rose, Venus was so obscured by its rays that it could not be observed in this usual way. [Hæ omnes obſeruationes factæ ſunt per Sextantem nouum correctiorem. Poſtea exoriente ☉le ♀ e radijs eius adeo offuſcata eſt, vt ab hoc more conſueto obſeruari haud potuerit.]

8 36: the Sun was east on the equator 52° 0′, and so the clock had then run 4m faster than it should since the preceding noon; the correction was left aside until the coming noon. [8 36 Erat ☉ orient. in Æquatore 52 0 ideoque tunc horologium 4 M. celerius iuſto promotum eſt, ab antecedente Meridie, omißa correctio eſt in Meridiem futurum.]

19 February [DIE 19 FEBRUARIJ.]

Venus was observed from Jupiter in the manner that follows. N.B.: Venus near its greatest morning departure from the Sun. [Obſeruabatur ♀ a ♃ in hunc qui ſequitur modum. N. B. ♀ prope maximam digreßionem a ☉ matutinam.]

h m [H. M.]	Distance of Venus from Jupiter [Diſt. ♀ a ♃]	Declination of Venus, south [Decl. ♀ M.]	Altitude of Venus [Alt. ♀]	Azimuth [Azim.]
6h 5½m	36° 0¾′			
6h 8⅙m	36° 1′			
6h 12⅙m	36° 2½′	18° 43′		
		18° 42⅔′		
6h 17½m	36° 2′	18° 42⅚′ with both [vtroque]	9° 20′	34° 30′
6h 20½m	36° 2⅔′	18° 43′ with both [vtroque]	9° 30½′	33° 45′
6h 27m 10s [6 27 10″]			10° 9′	32° 13′

Jupiter could no longer be seen because of the dawn. [Iupiter non potuit amplius videri propter auroram.]

Afterwards we observed Venus from the Sun in this manner. [Poſtea obſeruauimus ♀ a ☉ in hunc modum.]

h m [H. M.]	Distance from the Sun [Dist. a ☉]	Declination of Venus [Declin. ♀]	Altitude of Venus [Alt. ♀]	Azimuth of Venus [Azim. ♀]
$6^h\ 42\frac{5}{6}^m$	46° 38⅚′		11° 15′	28° 25′
$6^h\ 46\frac{1}{2}^m$	46° 39′		11° 25′	27° 45′
$6^h\ 49\frac{5}{6}^m$	46° 41′			
$6^h\ 54^m$	46° 41⅔′		Altitude of the Sun [Alt. ☉]	Azimuth of the Sun [Azim. ☉]
$6^h\ 58\frac{1}{3}^m$	46° 43¼′		3° 15′	71° 10′
$7^h\ 1\frac{1}{2}^m$	46° 42′		3° 35′	70° 31½′
$7^h\ 8^m$	46° 41⅚′	18° 42½′	4° 26′	69° 9′
$7^h\ 14\frac{5}{6}^m$	46° 42½′		5° 21′	67° 40′
$7^h\ 20^m$	46° 40′		5° 59′	66° 35′

Venus could no longer be seen. [♀ amplius videri non poterat.]

h m [H. M.]	Declination of the Sun [Declin. ☉]	Altitude of the Sun [Alt. ☉]	Azimuth of the Sun [Azim. ☉]	The Sun east [☉ orient.]
$7^h\ 35\frac{5}{6}^m$				63 0
$7^h\ 40\frac{1}{3}^m$	7° 46′	8° 33¾′	62° 7′	61 54
	7° 45′			
$7^h\ 44^m$	7° 46⅔′	9° 1′	61° 16′	60 53
	7° 47′			
$7^h\ 47^m$				60 10

21 February [*DIE 21 FEBRUARIJ.*]

Venus was observed from Jupiter in this manner. [*Obſeruabatur ♀ a ♃ in hunc modum.*]

h m [H. M.]	Between Venus and Jupiter [Inter ♀ & ♃]	Declination of Venus [Declin. ♀]	Altitude of the Sun [Alt. ☉]	Azimuth of Venus [Azim. ♀]
$5^h\ 57^m$	37° 50¾′	18° 32′		
		18° 33′		
$6^h\ 0\frac{1}{2}^m$	37° 50⅔′	18° 32⅙′	9° 15′	35° 15′
		18° 32½′		
$6^h\ 4\frac{1}{2}^m$	37° 49′	18° 31⅚′	9° 35′	34° 30′
	doubtful [dubia]	18° 32⅓′		

Trust rather the first two, for the last was ambiguous because of the Sun, already rising, and the excessive daylight. [*Fide potius primis duabus, nam vltima propter Solem iamiam exorientem nimiumque diei lumen ambigua fuit.*]

N.B. Jupiter and Venus had almost the same altitude above the horizon, of 10°, more or less. And so the refraction, creeping into both, alters the true distance imperceptibly. So use the observations, but limited: take 37 50½. Here you can compare the distances of the preceding day. [*N. B. ♃ & ♀ habuerunt quaſi eandem altitudinem ſupra Horizontem, graduum plus minus 10. Ideoque refractio in vtraſque irrepens diſtantiam veram inſenſibiliter variat. Vtere itaque obſeruatis ſed limitata, accipe 37 50½.* Potes hic conferre antecedentis diei diſtantias.]

6^h 8^m the Sun began to rise with its upper limb. [*H. 6 M. 8 incepit ⊙ oriri ſupremo limbo.*]

6 12⅚ the Sun was seen half risen. [*6 12⅚ medius ⊙ ortus videbatur.*]

6 15⅙ the whole Sun was seen to have risen. [*6 15⅙ Totus ⊙ ortus viſus eſt.*]

It was exceptionally clear and calm. [*Erat apprime ſerenum & tranquillum.*]

Afterwards we observed the Sun from Venus as follows. [*Poſtea ⊙ a ♀ obſeruauimus vt ſequitur.*]

h m [H. M.]	Between the Sun and Venus [Inter ⊙ & ♀]	Altitude of the Sun [Altit. ⊙]	Azimuth of Venus [Azim. ♀]	Declination of Venus [Declin. ♀]
6^h 23^m	46° 39¼′	1° 12′	75° 55′	
6^h $25⅚^m$	46° 37′	1° 32½′	75° 20′	
6^h $28⅓^m$	46° 36½′	1° 52′	74° 50′	18° 31⅔′
				18° 31⅔′
6^h $33⅓^m$	46° 38½′	2° 30′	73° 47′	
6^h 37^m	46° 40′	3° 0′	73° 0′	
6^h 41^m	46° 40′	3° 30′	72° 10′	18° 33′
				18° 31½′
				Equatorial distance of the Sun [Diſt. ⊙ æquat.]
				before noon [antemerid.]
6^h $49⅓^m$	46° 42′	4° 35′	70° 22′	70° 55′
6^h $52½^m$	46° 39½′	5° 0′	69° 35′	

h m [H. M.]	Between the Sun and Venus [Inter ⊙ & ♀]	Altitude of the Sun [Altit. ⊙]	Azimuth of Venus [Azim. ♀]	Equatorial distance of the Sun, before noon [Diſt. ⊙ æquat. antemerid.]
7^h 0^m	46° 41⅔′	6° 0′	68° 5′	68° 15⅚′
7^h $3⅔^m$	46° 42⅙′	6° 28′	67° 17′	
7^h 7^m		6° 55′	66° 38½′	66° 35¾′
7^h $27⅓^m$	46° 41⅚′	9° 29½′	62° 8′	61° 19½′

Venus was seen here through both slits. You can transfer the declination of Venus here from yesterday's observations. [♀ videbatur hic per vtramque rimulam. Declinationem ♀ potes huc ex heſternis obſeruationibus transferre.]

Around these last observations Venus and the Sun were at almost one and the same altitude, so the refraction has no effect on the distance. [Circa has vltimas obſeruationes erant ♀ & ⊙ in vna quaſi altitudine, quare refractio in diſt. nihil importat.]

h m [H. M.]	Distance [Diſtantia]	Altitude of the Sun [Altit. ⊙]	Azimuth of the Sun [Azim. ⊙]	The Sun east [⊙ orient.]
7^h $32⅚^m$		10° 12′	60° 47′	69 58⅔
7^h $41⅓^m$	46° 43′	11° 15′	58° 54′	57 42½

Here too Venus was seen through both slits. [♀ etiam hic per vtramque rimulam videbatur.]

h m [H. M.]	Distance [Diſtantia]	Altitude of the Sun [Altit. ☉]	Azimuth of the Sun [Azim. ☉]	The Sun east [☉ orient.]
7^h $47\frac{1}{6}^m$	46° 40⅚′	11° 58′	57° 34′	56 18
7^h $53\frac{1}{3}^m$	46° 39⅓′* * through both slits [*per vtramque rimulam]	12° 39½′	56° 10′	
7^h $58\frac{1}{2}^m$		13° 15¼′	55° 1½′	
7^h $41\frac{1}{3}^m$	Declination of the Sun [Declin. ☉]	7° 0′	7° 0⅔′	
7^h $47\frac{1}{6}^m$		7° 0⅙′	7° 0′	
8^h 5^m	Then the Sun was east [Tunc erat ☉ orientalis]			51 43
8^h $6\frac{1}{2}^m$	the Sun east [☉ orientalis]			51 24
8^h 8^m	the Sun east [☉ orientalis]			51 0

N.B. Since noon of the preceding day the clock had run 28^m slower than it should. [N. B. Motum eſt horologium a Meridie præcedentis diei 28 M. tardius iuſto.]

For the place of Venus on 30 January, morning[1] [Pro loco ♀ ad Diem 30 JANUARIJ, MANE[1].]

$8\frac{1}{4}^h$ [H. 8¼]	Distance of Venus from the centre of the Sun [Diſt. ♀ a centro ☉]	45° 8′
	Apparent declination of the Sun [Decl. ☉ viſa]	14° 43½′ south [M.]
	Declination of Venus [Decl. ♀]	18° 47½′ south [M.]
	Therefore the difference of ascension [Diff. igitur Aſcenſ.] computed by triangles [per Triang. ſupp.]	47° 4⅓′

Altitude of the Sun 5° 9′, of Venus 15° 0′. [Alt. ☉ 5° 9′, ♀ 15° 0′.]

Refraction of the Sun [Refractio ☉]	14′ 30″	
Parallax of the Sun [Parall. ☉]	3 0	
Remaining refraction [Refr. relicta]	11 30	
True right ascension of the Sun [Vera Aſc. R. ☉]		322° 24′ 20″
Refraction of ascension, subtracted [Refr. Aſcenſ. ſubt.]		2 40
Therefore the apparent right ascension of the Sun [Ergo viſa Aſc. R. ☉]		322° 21′ 40″
		47 4 20
Right ascension of Venus [Aſc. R. ♀]		275° 17′ 20″
Resp. longitude [Reſp. Longitudo]		5° 1′ 30″ ♑
Latitude [Latitudo]		4° 38⅓′ north [B.]

Parallax in the circle Alt. 15° [Parall. in circul. Alt. 15°]		4′ 50″
Refraction [Refractio]		3 0
		1 50

21 February, morning[1] [DIE 21 FEBRUARIJ, MANE[1].]

6^h 25^m [H. 6 M. 25]	Distance of Venus from Jupiter [Diſt. ♀ a ♃]	37° 50½′
	Declination of Venus [Declin. ♀]	18° 32′ south [M.]
	Declination of Jupiter [Declin. ♃]	22° 11′ south [M.]
	Right ascension of Jupiter computed from [Aſc. R. ♃ ſupput. a] the Vulture and cor ♏ [Vult. & corde ♏]	256° 30′
	Angular difference of ascension [Ang. diff. Aſc.]	40° 7′ 30″
	Right ascension of Venus [Aſc. R. ♀]	296° 37′ 30″
	Resp. longitude [Reſp. Longitudo]	25° 10⅗′ ♑
	Latitude [Latitudo]	2° 41⅙′ north [B.]

Altitude of Venus 9¼°. [Alt. ♀ 9¼°.]

Parallax of Venus [Parall. ♀]	4′ 25″	
Refraction [Refractio]	5 50	
	1 25	
Resp. in longitude [Reſp. in Long.]	15 added [15 add.]	
in latitude [in Lat.]	1⅓ subtracted [1⅓ ſubt.]	
True longitude [Vera Longitudo]		25° 10⅚′ ♑
Latitude [Latitudo]		2° 40′ north [B.]

OBSERVATIONS OF MERCURY [OBSERUATIONES MERCURIJ.]

3 February [DIE 3 FEBRUARIJ.]

At 8¼^h the clock was checked against the Sun, A. M. [H. 8¼ verificabatur horologium ad ☉ A. M.]

There follows the observation of Mercury near its greatest evening separation from the Sun. [Sequitur obſeruatio ☿ iuxta maximam remotionem a ☉$^{l^e}$ veſpertinam.]

Its distance was observed first [I] from Mars, afterwards from the fixed stars. For correcting the clock the bright shoulder of Orion was observed: [Obſeruabatur eius diſtantia I a ♂, poſtea a fixis. Pro corrigendo horologio Lucidus humerus Orionis obſeruabatur]

5^h $28\frac{1}{3}^m$ [H. 5 28⅓′]	34 27	east, and [orient., &]
5^h $30\frac{3}{4}^m$	33 55	

The transit of the bright shoulder through the meridian, computed: 7^h $46\frac{1}{4}^m$. [Tranſitus lucidi humeri per Merid. ſupputatus H. 7 46¼.]

h m [H. M.]	Distance between Mercury and Mars [Diſt. inter ☿ & ♂]	Declination of Mercury, south [Decl. ☿ M.]	Altitude of Mercury [Altit. ☿]	Azimuth [Azim.]
5^h $37\frac{1}{6}^m$	36° 52½′	6° 9′ 6° 10½′	7° 20′	67° 40′
5^h $41\frac{5}{6}^m$	36° 52⅙′	6° 10′	6° 35′	69° 0′
5^h 45^m	36° 52′	6° 10′	6° 12′	69° 35′
5^h $47\frac{2}{3}^m$	36° 52½′		5° 40′	70° 5′

Use the distance of Mars and Mercury around the middle of these observations, namely 5^h 40^m: 36° 52′. [Vtere diſt. ♂ & ☿ circa medium harum obſeruationum videlicet H. 5 M. 40 36 52.]

[1] From codex V. [E codice V.]

The angle of inclination of Mars and Mercury with respect to the horizon was about 50°, in this manner, as you see: ABC 50. [Angulus inclinationis ♂ & ☿ reſpectu Horizontis erat quaſi 50 grad. in hunc modum vt vides ABC 50.]

Diagram. A hand-drawn right triangle set beside the opening lines of the left column: a vertical side, a horizontal base running to the right from its foot, and a slanting side from the top of the vertical down to the right end of the base. A star-mark stands at the upper vertex and a second star-mark on the slanting side, above and to the left of the lower right vertex. The base line runs a little past the lower right vertex.

- A (upper vertex, at the first star-mark): A
- b (lower right vertex): b
- c (lower left vertex, left of the foot of the vertical side): c
- The second star-mark, on the slanting side, carries no label.

From the preceding observations. [Ex antecedentibus obſeruationibus.]

5^h 40^m [H. 5 M. 40]	Mercury was distant from Mars [Diſtabat ☿ a ♂]	36° 51½′
	Altitude of Mercury 7°, add for refraction [Alt. ☿ 7°, adde pro refract.]	7 30
	Distance of Mercury free of refraction [Diſt. ☿ libera a refract.]	36° 59′
	Observed declination of Mercury [Declin. ☿ obſeruata]	6° 10′ south [M.]
	Add for refraction [Adde pro refract.]	6
	True declination, or free of refraction [Vera decl. ſeu libera a refr.]	6° 16′

	Right ascension of Mars [Aſcenſio recta ♂]	17° 42¼′
	Therefore the right ascension of Mercury [Ergo Aſcenſ. recta ☿]	343° 21½′

	Resp. [Reſp.]	Copernican [Copern.]	Alphonsine [Alphonſ.]
Longitude [Longit.]	12° 15¾′ ♓	12° 26½′	12° 50′
Latitude [Latit.]	0° 46½′ north [B.]	0° 58′ north [B.]	0° 51′ north [B.]

Repetition of the calculation for Mercury for 3 February[1] [Repetitio calculi ☿ ad diem 3. Februarij[1].]

5⅔[h] [H. 5⅔]	Distance of Mercury [Diſt. ☿]	36° 52⅓′
	Declination of Mercury [Declinatio ☿]	6° 10′ south [M.]
	Declination of Mars [Declin. ♂]	7° 40′ north [S.]
	Angular difference of ascension [Ang. diff. aſcenſ.]	34° 16′
	Right ascension of Mars [Aſc. R. ♂]	17° 41½′ good [bona]
	Therefore the right ascension of Mercury [Ergo Aſc. R. ☿]	343° 25½′
	Resp. longitude [Reſp. Longitudo]	12° 21′ 46″ ♓
	Latitude [Latitudo]	0° 50′ 33″ north [B.]

Altitude of Mercury 7° [Alt. ☿ 7°]	Resp. refraction [Reſp. Refr.]	8′ 15″
	Parallax [Parall.]	3 15
		5 0
	Resp. in longitude [Reſp. in long.]	3 50
	in latitude [in lat.]	3 10
	True longitude of Mercury [Vera ☿ Longitudo]	12° 18′ 0″ ♓
	Latitude [Latitudo]	0° 47⅖′ north [B.]

6 February [DIE 6 FEBRUARIJ.]

With the Sun already removed, we observed Mercury and the rest as follows. [☉[le] iam ſublato obſeruauimus ☿ & cætera vt ſequitur.]

h m [H. M.]	Distance of Mercury from Mars [Diſt. ☿ a ♂]	Declination of Mercury [Decl. ☿]	Altitude [Alt.]	Azimuth [Azim.]
5[h] 33[m]	36° 2⅓′	4° 19⅙′	8° 47′	toward the west [verſ. occ.]
	doubtful [dub.]			

h m [H. M.]	Distance of Mercury from Mars [Dist. ☿ a ♂]	Declination of Mercury [Decl. ☿]	Altitude [Alt.]	Azimuth [Azim.]
$5^h\ 37\frac{2}{3}^m$	36° 0½′	4° 19′ 4° 19½′	8° 7′	
$5^h\ 41^m$	36° 1′	4° 19′ 4° 18⅔′	7° 45′	70° 27′
$5^h\ 43\frac{5}{6}^m$	36° 0¼′	4° 19½′ 4° 18⅚′	7° 23′	71° 2′
$5^h\ 46\frac{1}{2}^m$	36° 0⅙′	4° 17⅙′ 4° 18′	7° 0′	71° 39′

h m [H. M.]	Distance of Mercury from Mars [Dist. ☿ a ♂]	Declination of Mercury [Decl. ☿]	Altitude [Alt.]	Azimuth [Azim.]
$5^h\ 49\frac{2}{3}^m$	36° 0′	4° 17′ 4° 17¼′	6° 35′	72° 20′
$5^h\ 52\frac{1}{2}^m$	36° 0′	4° 16′ 4° 16⅔′	6° 12½′	72° 56′

Afterwards we observed Mercury from the bright star of ♈ as follows. [Postea obseruauimus ☿ a Lucida ♈ vt sequitur.]

h m [H. M.]	Distance [Dist.]	Declination of Mercury [Declin. ☿]	Altitude [Alt.]	Azimuth [Azim.]
$5^h\ 56^m$	47° 2′	4° 15½′ 4° 16′ 0″	5° 50′	73° 40′
$5^h\ 59^m$	47° 1⅓′	4° 14′ with both [vtroq.]	5° 20′	74° 25′
$6^h\ 2^m$	47° 1½′	4° 14⅓′	4° 57½′	74° 55′
$6^h\ 6^m$	47° 0′	4° 14′	4° 25′	75° 47′
$6^h\ 9\frac{2}{3}^m$	46° 58⅓′	4° 11½′	3° 56½′	76° 35′
$6^h\ 14^m$	46° 57¼′	4° 11′	3° 21′	77° 30′
$6^h\ 16\frac{1}{2}^m$	46° 55⅓′	4° 10′	3° 4′	78° 2′
$6^h\ 21^m$	46° 53⅔′	4° 8½′	2° 27′	79° 0′
$6^h\ 24\frac{1}{2}^m$	46° 51½′	4° 5½′	2° 0′	79° 50′
$6^h\ 28\frac{2}{3}^m$	46° 47½′	4° 3′	1° 20′	

Afterwards, because of its approach to the horizon, Mercury could no longer be observed well; but so that its observations obtained from Mars might stand more correctly and be open to examination, we observed the following on Mars. [Postea ☿ propter appropinquationem ad Horizontem non poterat bene amplius obseruari, sed vt obseruationes eius a ♂ conquisitæ rectius constarent & examinationi paterent, sequentia in ♂ obseruauimus.]

Diagram. A hand-drawn sketch in the right column. Two roughly horizontal lines cross the figure, one near the top and one near the foot. A vertical line at the right rises past the upper horizontal line, where "Zenith" is written. A second line, nearly vertical and leaning slightly, crosses both horizontal lines

left of the vertical. A diagonal line runs from the upper horizontal line at the left down to the point where the lower horizontal line meets the vertical. Three star-marks stand on these lines: one on the leaning line just below the upper horizontal; one on the diagonal in its upper part; one where the diagonal crosses the leaning line.

- Zenith (top right, written along the upper end of the vertical line): Zenith
- luc. ♈ (left of the star-mark on the leaning line, below the upper horizontal): the bright star of ♈ [luc. ♈]
- ♂ (left of the star-mark on the diagonal): Mars
- ☿ (left of the star-mark at the crossing of the diagonal and the leaning line): Mercury

This, as it appears, was how Mercury was placed relative to the star Mars and the fixed star in ♈, with respect to the horizon and the vertical. From this, reason out the amount of the refraction. [Talis vt apparet erat poſitus ☿ ad ♂ ſtellam & fixam in ♈ reſpectu horizontis & verticalis. Hinc rationare refractionis quantitatem.]

For the place of Mercury from the preceding observations [Pro loco ☿ ex præcedentibus obſeruationibus.]

$5^h\ 44^m$ [H. 5 44′]	Mercury was distant from Mars [Diſtabat ☿ a ♂]	36° 0′
	Altitude of Mercury 8°, add for refraction [Alt. ☿ 8°, adde pro refr.]	5
	True distance [Vera diſtantia]	36° 5′
	Declination [Declinatio]	4° 19½′

[1] From codex V. [E codice V.]

	Add for refraction [Adde pro refract.]	4
	True declination of Mercury [Declin. ☿ vera]	4° 23½′
	Right ascension of Mars [Aſcenſio R. ♂]	19° 41′
	Therefore the right ascension of Mercury [Ergo Aſcenſ. R. ☿]	345° 53′ 45″
$6^h\ 0^m$ [H. 6 0′]	Observed declination of Mercury [Decl. ☿ obſeruata]	4° 16′
	Add for refraction [Adde pro refr.]	7
	True declination, south [Decl. vera M.]	4° 23′
	Right ascension of the bright star of ♈ [Aſc. R. Lucidæ ♈]	26° 6⅓′
	Right ascension of Mercury [Aſc. R. ☿]	345° 51′ 40″
$5^h\ 52^m$ [H. 5 M. 52]	Limited right ascension of Mercury [Aſc. R. ☿ limitata]	345° 52⅔′
	True declination [Declinatio vera]	4° 23¼′ south [M.]

	Resp. [Reſp.]	Copernican calculation [Calc. Cop.]	Alphonsine [Alphonſ.]
Longitude [Longit.]	15° 18⅓′ ♓	15° 6′ 45″	16° 43′
Latitude [Latit.]	1° 32⅔′ north [B.]	1° 30′ 0″ north [B.]	1° 20′ north [B.]

$5\frac{5}{6}^{h}$ 1 [H. $5\frac{5}{6}^{1}$]	Distance of Mercury from Mars [Diſt. ☿ a ♂]	…
	Declination of Mercury [Declin. ☿]	4° 16⅔′ south [M.] alt. 4° 16′ 12″
	Declination of Mars [Declin. ♂]	8° 31½′
	Angular difference of ascension [Ang. diff. aſcenſ.]	33° 43⅔′
	Right ascension of Mars [Aſc. R. ♂]	19° 39′ 30″
	Therefore the right ascension of Mercury [Ergo Aſc. R. ☿]	345° 55′ 50″
5^{h} 56^{m} [H. 5 M. 56]	Distance of Mercury from the bright star of ♈ [Diſt. ☿ a luc. ♈]	47° 2′
	Declination of Mercury [Declin. ☿]	4° 16′
Altitude of Mercury [Altit. ☿]	Declination of the bright star of ♈ [Declin. luc. ♈]	21° 30′
$5\frac{5}{6}$	Angular difference of ascension [Ang. diff. aſcenſ.]	40° 11′ 5″
	Right ascension of the bright star of ♈ [Aſc. R. luc. ♈]	26° 5′ 40″
	Therefore the right ascension of Mercury [Ergo Aſc. R. ☿]	345° 54′ 35″

5^{h} 54^{m}: if you set the limited right ascension of Mercury at 345° 55⅓′, the declination at 4° 16⅓′ south [M.], the altitude at 6°, you err imperceptibly in the apparent place of Mercury. [H. 5 M. 54 ſi poſueris ☿ limitatam Aſc. R. 345° 55⅓′, declin. M. 4° 16⅓′, altit. 6°, inſenſibiliter aberras in viſo loco ☿.]

Resp. longitude [Reſp. Longitudo]	15° 23½′ ♓
Latitude [Latitudo]	1° 38⅙′ north [B.]

Refraction of Mercury [☿ refract.]	9′ 0″	Resp. in longitude [Reſp. in long.]	4′ 15″
Parallax [parall.]	3 30	in latitude [in lat.]	3 30
	5 30		

Therefore the true longitude of Mercury [Ergo vera ☿ Longitudo]	15° 19¼′ ♓

Latitude [Latitudo]	1° 34 2/[numeral: ?]′ north [B.]

9 February [DIE 9 FEBRUARIJ]

Mercury was observed in the following manner. [obſeruabatur ☿ in modum ſequentem.]

6^h $29\frac{5}{6}^m$ [H. 6 M. 29⅚]	Distance of Mercury from the bright star of ♈ [Diſt. ☿ a luc. ♈]	45° 5′
	Declination of Mercury [Declin. ☿]	2° 52′

The altitude of Mercury was about 3°. [Altitudo ☿ erat quaſi 3 part.]

Mercury could not be observed any further this evening because of clouds coming up near the horizon; but a little before, when the altitude of Mercury was 5° 42′, azimuth 76, its declination was 2° 52′. But at this last time, when the distance was being taken, the declination could not be obtained. So reconcile these with one another. [*Amplius hac veſpera non potuit obſeruari ☿ propter nubes interuenientes iuxta horizontem, ſed paulo ante quando altitudo ☿ erat 5° 42′, Azim. 76 fuit ipſius declinatio p. 2 M. 52. Verum hoc tempore vltimo cum diſtantia accipiebatur, declinatio capi non poterat. Concilia itaque hæc inuicem.*]

OBSERVATIONS OF THE FIXED STARS [OBSERUATIONES STELLARUM FIXARUM.]

20 February, evening [DIE 20 FEBRUARIJ, VESPERI.]

Minimum meridian altitude of the bright star of Lyra [*Altit. merid. min. Lyræ luc.*] *by the revolving quadrant* [*per Vol.*]	*4° 31⅙′*

It was very clear there. [*Erat illic admodum ſerenum.*]

7^h 21½^m: the Greater Dog was then east. [*H.7 21½ Fuit tunc Canis maior orient.*]

1 5

Minimum meridian altitude of the breast of the Swan [Altit. merid. min. pectoris Cygni] (it was outside the chasmata) [(erat extra chasmata)] by the revolving quadrant [per Vol.]	5° 2⅚′
Minimum meridian altitude of the bright star in the tail of the Swan [Altit. merid. min. luc. in cauda Cygni] (it was a little wrapped in chasmata) [(erat parum involuta chasmatis)] by the steel instrument [per Chalyb.]	9° 51′

by the revolving quadrant [per Volub.]	9° 50½′
The declination of that star which is in a straight line with the tail of the Greater Bear and the tail of ♌ was well observed[2] [Declinatio eius ſtellæ, quæ eſt in recta linea cum cauda Vrſæ maioris & cauda ♌, bene obſeruata eſt[2]]	40° 31⅔′
	40° 31¾′
Between the same star, which is in a straight line with the tail of the Greater Bear and the tail of ♌, and Arcturus [Inter eandem ſtellam, quæ eſt in linea recta cum cauda Vrſæ mai. & cauda ♌, & Arcturum]	25° 39′
	25° 38½′

Arcturus was at an altitude of over 15°, with the Radius. [Arcturus erat in altitudine vltra 15° per Radium.]

The same star was observed vice versa [Eadem ſtella viceverſa obſeruabatur]	
at a distance [in diſtantia]	45° 36½′
from cor ♌ [a corde ♌]	45° 36⅔′
Declination of the uppermost in the head [Declinatio ſupremæ in capite]	
of the Greater Dog, which [Canis maioris quæ]	11° 37½′
is no. 2 [eſt num. 2]	11° 37′
	11° 38′
Distance between the same, in the head, [Diſtantia inter eandem in capite]	
and the right foot [& dextrum pedem]	16° 34′
of Orion [Orionis]	16° 34½′

[1] From codex V. [E codice V.] [2] α of the Hunting Dogs [α Canum venaticorum.]

21 February, evening [DIE 21 FEBRUARIJ, VESPERI.]

6^h 39⅓^m [H. 6 M. 39⅓]: minimum meridian altitude of the bright star [Altit. min. merid. lucidæ]	
in the head of the Dragon [in capite Draconis]	
by the revolving quadrant [per Volub.]	17° 30⅓′
by the steel instrument [per Chalyb.]	17° 30¾′
The bright shoulder of Orion was then [Tunc erat lucidus humerus]	
west [Orionis occident.]	3 20

Arcturus was observed in this way. [Arcturus obſeruabatur hoc modo.]

h m [H. M.]	Declination [Declinatio]	Altitude [Altitudo]	Azimuth from the east toward the north [Azimuth ab ortu verſus ſeptentrionem]
$6^h\ 47\frac{2}{3}^m$	21° 34′	2° 19′	126° 21′
$6^h\ 57\frac{1}{6}^m$	21° 34½′ with one pinnule [vno pinn.]	3° 25′	
$7^h\ 3\frac{5}{6}^m$	21° 34′	4° 10′	
	21° 33′		

7 12 Minimum altitude of Lyra [Alt. min. Lyræ] by the revolving quadrant [per Volub.]	4° 31⅙′

Declination and altitude of Arcturus, for refraction. [Declin. & Alt. Arcturi pro refractione.]

Declination [Declinatio]		Altitude [Altit.]	Azimuth [Azimuth.]
21° 30′	with one pinnule [vno pinn.]	6° 3′	120° 0′
21° 26½′	21° 27½′	7° 34½′	117° 34′
21° 26⅔′	with one pinnule [vno pinn.]	8° 35′	115° 47′
21° 26′		10° 22′	113° 3′
21° 22′	21° 23′ between clouds [inter nubes]	12° 41½′	109° 25′
21° 23½′	21° 22 2/[numeral: ?]′	14° 20′	107° 3′

Meridian altitude by the steel instrument [Altit. merid. per Chalyb.]

Of the upper foot of the Greater Dog [Superioris pedis Canis maior.]	16° 18⅓′
Of the tenth of the Greater Dog [Decimæ Canis maioris]	10° 56½′
11 of the Greater Dog [11 Canis maioris]	11° 28′
7 of the Greater Dog [7 Canis maioris]	15° 9½′
8 of the Greater Dog [8 Canis maioris]	16° 11′
6 of the Greater Dog [6 Canis maioris]	13° 42′
3 of the Greater Dog [3 Canis maioris]	20° 32′
4 of the Greater Dog [4 Canis maioris]	19° 1¼′
5 of the Greater Dog [5 Canis maioris]	17° 33′

Between the 3rd in the Greater Dog, mag. 5, and [Inter 3 in Cane maiore mag. 5 &]

the bright foot of Orion [lucidum pedem Orionis]	25° 32½′
	25° 33′
Between the 4th in the Greater Dog, mag. 3, lesser [Inter 4 in Cane maiore mag. 3 minor.]	
and the bright foot [& lucidum pedem]	
of Orion, once [Orionis, ſemel]	27° 43¾′
Between the 5th in the Greater Dog, magnitude 4, [Inter 5 in Cane maiore, magnit. 4,]	
and the bright foot [& lucidum pedem]	26° 19′
of Orion [Orionis]	26° 19⅔′
Between the tenth, which is in the lower [Inter decimam quæ eſt in inferiori]	
foot of the Greater Dog, and [pede Canis maioris &]	
the bright foot of Orion [lucidum pedem Orionis]	23° 59′

Between the eighth of the Greater Dog and the bright [Inter octauam Canis maior. & lucidum]	
foot of Orion, once [pedem Orion., ſemel]	22° 45′
Between the Bend of Cassiopeia and the 5th in [Inter flexuram Caßiopeæ & 5 in]	
the right arm of Cepheus [dextro brachio Cephei]	29° 7½′
mag. 3, lesser [mag. 3 minor.]	29° 8′

29 February, evening [DIE 29 FEBRUARIJ, VESPERI.]

To test the zodiacal armillae: with the place of the eye of ♉ set at 4° 5′, the longitude of the Lesser Dog comes out 20° 1′ ♋. Uncertain because of clouds. Vice versa, with the place of cor ♌ set at 24° 11′ ♌, the place of the Lesser Dog comes out 20° 10′ ♋, certain enough. [Pro examinandis armillis zodiacalibus, poſito loco oculi ♉ in 4° 5′ prouenit Long. Canis minoris 20 1 ♋. Incerta propter nubes. Viceverſa poſito loco cordis ♌ 24 11 ♌ prouenit locus Canis minoris 20 10 ♋ certa ſatis.]

7 March, evening [DIE 7 MARTIJ, VESPERI.]

We observed the following stars in Coma Berenices. [Obſeruabamus ſtellas in Coma Berenices quæ ſequuntur.]

Between the bright or middle star in the neck [Inter lucidam ſeu mediam in ceruice]	
of ♌ and the one which precedes in the point [♌ & eam quæ præcedit in cuſpide]	
of Berenice, toward the north, [Berenices ad ſeptentrio-]	30° 6⅔′
mag. 3, lesser [nem mag. 3 minor.]	30° 6¼′
Declination of the same preceding star [Declin. eiuſdem præcedentis]	30° 35′
in Berenice, with one pinnule, twice [in Berenice, vno pinn. bis]	30° 36′
Between the middle star of the neck of ♌ and the two [Inter mediam ceruicis ♌ & duas con-]	
adjacent stars following the one just named in the point, [tiguas proxime dictam in cuſpide]	
which could not be told apart separately, [ſequentes, quæ ſeorſim diſcerni]	
but the upper was [non poterant, ſed ſuperior erat]	

nearer by about one minute [vno ferme minuto prox-]	29° 51′
to the middle star of the neck of ♌ [imior mediæ ceruicis ♌]	29° 51½′
Declination of the upper one [Declinatio ſuperioris]	29° 30′
of the same, of Berenice[1] [eiuſdem Berenices[1]]	29° 30⅙′
Declination of the lower one [Declin. inferioris]	29° 25′
with one pinnule, twice [vno pinn. bis]	29° 22′
Between the one following still further in a straight line [Inter ſequentem adhuc in recta linea]	
with the two adjacent ones mentioned, toward [cum duabus dictis contiguis ad]	
merid., in Berenice, mag. 4, greater, [merid. in Beren., mag. 4 maior.,]	
and the middle star of the neck of ♌ [& mediam ceruicis ♌]	30° 9′
	30° 10¾′
Declination of the same [Declinatio eiuſdem]	28° 1′
following star [ſequentis]	28° 2′
Between the more southerly of the two adjacent [Inter auſtraliorem duarum contigua-]	
stars, which incline toward the west, [rum, quæ ad occaſum declinant,]	
mag. 4, and [mag. 4, &]	28° 47½′
the middle star of the neck of ♌ [mediam ceruicis ♌]	28° 49′
Declination of the same [Declinatio eiuſdem]	28° 13′
in Berenice [Berenices]	28° 14′

[1] This seems to be 14 Comae; yet no star visible to the naked eye follows it a few minutes farther south. [Hæc videtur eße 14 Comæ, quam tamen nulla ſtella ſolis oculis conſpicua paucis minutis auſtralior ſequitur.]

Between the other of the said adjacent stars, [Inter alteram contiguarum dictarum,]	
the one that inclines toward the east, and [quæ ad ortum vergit, &]	29° 14½′
the middle star of the neck of ♌ [mediam ceruicis ♌]	29° 15′
Declination of the same [Declinatio eiuſdem]	28° 19′
in Berenice [Berenices]	28° 18½′
Between the one which precedes all the others [Inter eam quæ omnes cæteras præ-]	
toward the south, 4 mag, [cedit ad auſtrum, 4 mag,]	27° 16½′
and the middle star of the neck of ♌ [& mediam ceruicis ♌]	27° 17′
Declination of the same in Berenice [Declin. eiuſdem Berenices]	26° 15′
with one pinnule, twice [vno pinn. bis]	26° 14½′
Between the following one of the lower adjacent stars [Inter ſequentem inferiorum contigua-]	
almost in a straight line with the first [rum in recta linea fere cum prima]	
in the point of Berenice, mag. 4, and [in cuſpide Berenices, mag. 4 &]	
the bright star in [lucidam in]	30° 39½′
the neck of ♌ [ceruice ♌]	30° 40⅔′
Declination of the same [Declinatio eiuſdem]	26° 36′
in Berenice, with one pinnule, twice [Berenices vno pinn. bis]	26° 36⅔′
Between the other of the adjacent stars, [Inter alteram contiguarum præce-]	
preceding a little toward the south, and [dentem ad auſtrum paulum &]	
the bright star of the neck of ♌ [lucidam ceruicis ♌]	30° 20′
Declination of the same [Declinatio eiuſdem]	26° 24⅓′
	26° 25′

Between the lowest in the said straight line, 4 [Inter infimam in dicta recta linea 4]	
mag., and the bright star of the neck of ♌, twice [mag. & luc. ceruicis ♌, bis]	31° 33⅓′
Declination of the same, with one pinnule [Declin. eiuſdem vno pinn.]	24° 48′
	24° 47⅔′
Between the uppermost of the two in the haunch of ♌ and [Inter ſupremam duarum in clune ♌ &]	
the outermost in the extension [extremam in extenſione]	27° 49′
of Coma Berenices [comæ Berenices]	27° 50′
Declination [Declinatio]	29° 53⅔′
	29° 54′
Between the same, in the extension of the Coma, [Inter eandem in extenſione comæ]	
mag. 3, and the bright star [mag. 3, & lucidam]	40° 4½′
of the neck of ♌ [cerucis ♌]	40° 5⅙′
Between the one which closely precedes the said one in the extension, [Inter illam quæ dictam in extenſione]	
mag. 4, [contigue præcedit, mag. 4,]	
and the bright star of the neck of ♌, twice [& luc. ceruicis ♌, bis]	38° 55⅙′
Declination [Declinatio]	29° 42⅔′
	29° 43′
Between the other, which is in a straight line [Inter alteram, quæ eſt in recta linea]	
with the two just observed and [cum duabus modo obſeruatis &]	
the one in the point, having a very small one joined [ea in cuſpide, habentem adiunc-]	
to it toward the west, 4 mag., [tam paruulam ad occaſum, 4 mag.]	
and the bright star of the neck of ♌, twice [& luc. ceruicis ♌ bis]	35° 30¾′
Declination [Declinatio]	29° 49½′
	29° 50⅓′
Between the one which makes an equilateral triangle [Inter eam quæ facit △ æquilaterum]	
with the three last observed [cum poſtremo obſeruatis tribus]	
toward the zenith, and the bright star of the neck of ♌ [ad Zenith & luc. ceruic. ♌]	37° 41⅓′

21 March, evening [DIE 21 MARTIJ, VESPERI.]

Vice versa, these stars of Berenice were observed from the bright star of the Crown, in the same order as before. [Viceverſa obſeruabantur hæ ſtellæ Berenices a lucida Coronæ eo ordine quo prius.]

Between the one which precedes in the point [Inter eam quæ præcedit in cuſpide]	
of Berenice toward the north [Berenices ad ſeptentrio-]	41° 21½′
and the bright star of the Crown [nem & lucidam Coronæ]	41° 22′
Between the bright star of the Crown and the two adjacent [Inter lucidam Coronæ & duas conti-]	
stars following the one just named in the point, [guas proxime dictam in cuſpide]	
but the lower is by about one [ſequentes, ſed inferior vna ferme]	
minute nearer [minuto proximior eſt]	41° 37½′
to the Crown [Coronæ]	41° 38′
Between the one following still further in a straight line [Inter ſequentem adhuc in recta linea]	

with the two adjacent ones mentioned [cum duabus dictis con-]	41° 23½′
and the bright star of the Crown [tiguis & lucidam Coronæ]	41° 25′
Between the more southerly of the two adjacent stars [Inter auſtraliorem duarum contigua-]	
and the bright star of the Crown [rum & lucidam Coronæ]	42° 46⅔′
	42° 48′ better [melior]
Between the other of the adjacent stars [Inter alteram contiguarum]	42° 22′
mentioned and the bright star of the Crown [dictarum & luc. Coronæ]	42° 21¾′
Between the one which precedes all toward [Inter eam quæ omnes præcedit ad]	
the south and the bright star [auſtrum & lucidam]	44° 35½′
of the Crown [Coronæ]	44° 35⅔′
Between the following one of the lower adjacent stars [Inter ſequentem inferiorum contigu-]	
almost in a straight line with the one [arum in recta linea fere cum illa]	
which precedes in the point [quæ præcedit in cuſpide]	
and the bright star of the Crown, twice [& lucidam Coronæ bis]	41° 13′
Between the other, preceding, of the adjacent stars [Inter alteram præcedentem contigu-]	
of Berenice and [arum Berenices &]	41° 39′
the bright star of the Crown [lucidam Coronæ]	41° 38½′
Between the lowest in the straight [Inter infimam in recta]	40° 50⅓′
line and the bright star of the Crown [linea & luc. Coronæ]	40° 50½′
Between the outermost of all in the extension [Inter extremam omnium in exten-]	
of the Hair and the Crown (above, [ſione crinis & Coronam (ſuperius]	
it is given vice versa, but [habetur viceverſa ſed]	31° 29½′
less precisely) [minus præciſe)]	31° 30⅓′
Between the other one mentioned in the extension, [Inter alteram dictam in extenſione]	
closely preceding, [contigue præcedentem]	32° 43′
and the Crown [& Coronam]	32° 43½′
Between the one which is in a straight line with [Inter eam quæ eſt in recta linea cum]	
the two just observed [duabus modo obſeruatis]	36° 1′
and 1 in the point of the Hair [& 1 in cuſpide Crinis]	36° 1⅙′
Between that last one, which makes an equilateral triangle [Inter illam poſtremam, quæ △ æqui-]	
with the three last [laterum facit cum tribus poſtre-]	
observed toward the zenith, [mo obſeruatis ad Zenith,]	34° 12′
mag. 4[1]	34° 12½′

[1] The name of the other star is missing, but it was without doubt the bright star of the Crown. [Nomen ſtellæ alterius deeſt, ſed erat ſine dubio Lucida Coronæ.]

25 August [DIE 25 AUGUSTI.]

Declination of a certain unformed star in a straight [Declinatio informis cuiusdam in rec-]

line with Marcab [ta linea cum Marchab]	18° 8¼′
and the lower wing of the Swan [& infer. ala Cygni]	18° 7½′

28 August, morning [DIE 28 AUGUSTI, MANE.]

For the testing of the instruments. [Pro examinatione inſtrumentorum.]

Meridian altitude of the last star in the back of ♈ [Altit. merid. vltimæ in dorſo ♈]	
by the steel instrument [per Chalyb.]	53° 44¼′
by the revolving quadrant, corrected [per Volub. correctum]	53° 44½′
Declination, north [Declinatio B.]	19° 40′
by the larger armillae [per armillas maiores]	19° 39⅔′

Careful and good, because of the clear sky. [Diligentes & bonæ propter ſerenitatem.]

Altitude of the one in the root of the tail of ♈ [Altit. eius quæ in radice caudæ ♈]	
by the steel instrument [per Chalyb.]	52° 12′

Less certain because of clouds and the dawn. [Minus certa propter nubes & auroram.]

Declination by the armillae [Declinatio per Armillas]	18° 8′
	18° 8⅔′
Altitude of the bright star of the Pleiades [Altit. lucidæ Pleiadum]	
by the steel instrument [per Chalyb.]	56° 51½′
by the revolving quadrant [per Volub.]	56° 51⅚′
Declination by the armillae [Declinatio per Armillas]	22° 47⅔′
	22° 48′

31 August, morning [DIE 31 AUGUSTI, MANE.]

For the testing of the instruments. [Pro examinatione inſtrumentorum.]

Declination of the 2nd in the head of ♈ [Declinatio 2 in capite ♈]	18° 47½′
	18° 48′
Meridian altitude of the same [Altit. merid. eiusdem]	
by the steel instrument [per Chalyb.]	52° 51¾′
by the revolving quadrant [per Volub.]	52° 52′
Meridian altitude of the bright star of ♈ [Altit. merid. lucidæ ♈]	

by the steel instrument [per Chalyb.]	55° 34¾′
by the revolving quadrant [per Volub.]	55° 35′
Declination of the same by the armillae, north [Declinatio eiusdem per Armillas Bor.,]	
observed twice [bis obſeruata]	21° 30⅙′
with both pinnules [vtroque pinnacidio]	21° 30½′
Declination of the eastern one in the base of the triangle of the [Declinatio orientalis in baſi △ infor-]	
three unformed stars above [mium trium ſupra]	25° 31½′
the back of ♈, magnitude 3 [dorſum ♈, magn. 3]	25° 31⅔′
Its meridian altitude [Altit. eius merid.]	
by the steel instrument [per Chalyb.]	59° 36⅓′
by the revolving quadrant [per Volub.]	59° 36½′
Meridian altitude of the one which is [Altit. merid. eius quæ eſt]	
in the root of the tail of ♈ [in radice caudæ ♈]	
by the steel instrument [per Chalyb.]	52° 12¼′
by the revolving quadrant [per Volub.]	52° 12′
Declination of the same [Declin. eiusdem]	18° 8⅓′
by the largest armillae [per Armillas max.]	18° 8½′

Declination of the preceding one in the base of the triangle [Declin. præcedentis in baſi △]	
above the back of ♈ [ſupra dorſum ♈]	25° 16⅓′
magnitude 5, lesser [magnit. 5 minor.]	25° 16¾′
Declination of the 2nd in the base of the triangle, preceding [Declin. 2 in baſi △ præced.]	
toward the west, above [ad occaſum ſupra]	25° 55½′
the back of ♈, mag. 4, lesser [dorſum ♈ mag. 4 minor.]	25° 55¼′
Declination of the one at the apex of the triangle, magnitude 4, [Declin. eius in apice △ magnit. 4,]	
with both pinnules [vtroque pinn.]	27° 30′
Distance between Aldebaran [Diſtantia inter Aldeboram]	
and the bright star of ♈ [& lucidam ♈]	35° 33⅙′
for testing [pro examinando]	35° 33¼′
the sextant [Sextante]	35° 33′

2 September, morning [DIE 2 SEPTEMBRIS, MANE.]

For the testing of the zodiacal armillae. [Pro Armillarum Zodiacalium examinatione.]

With the place of the head of Andromeda set at 8° 40′ [Poſito loco capitis Andromedæ in 8 40]	
♈, the right shoulder [♈ obſeruabatur dexter humerus]	
of Orion was observed at [Orionis in]	22° 58′ ♊
	22 59

The head of Andromeda, however, had passed beyond the meridian a little more than the Moon, when on 20 August it was observed from the Sun with these armillae. [Erat autem caput Andromedæ prætergreßum meridianum paulo plus quam ☾, cum die 20 Auguſti in hiſce Armillis a ☉ obſeruaretur.]

With the place of the bright star of ♈ set at 1° 59′ ♉, the place of the Lesser Dog as observed comes out at 19° 53½′ ♋, twice. The Lesser Dog was at an altitude of more than 15°. [Poſito loco lucidæ ♈ in 1°59′ ♉, prouenit locus Canis minoris obſeruati in 19 53½ ♋ bis. Erat Canis minor in altitudine vltra 15°.]

N.B. The bright star of ♈ was observed here in the same position in the sky as the Moon, by the armillae. [N.B. Obſeruabatur hic lucida ♈ in eodem cœli ſitu, quo ☾ per Armillas.]

With the place of the bright star of ♈ still kept unmoved, the place of Aldebaran as observed comes out at 4° 1′ ♊, twice. [Manente adhuc loco lucidæ ♈ immobili, prouenit locus Aldeboræ obſeruatæ in 4° 1′ ♊ bis.]

With the bright star of ♈ still kept, we observed [Manente adhuc lucida ♈, obſeruaui-]	
the lower head of ♊ [mus inferius caput ♊]	17° 25½′ ♋
	17 26

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21 September, evening [DIE 21 SEPTEMBRIS, VESPERI.]

Declination of the upper of the adjacent preceding [Declin. ſuperioris contiguarum præ-]	
stars in the Arrow [cedentium in Sagitta]	17° 8⅔′
	17° 9¼′
Declination of the lower of the adjacent stars [Declin. infer. contiguarum]	16° 35′
in the Arrow, magnitude 4 [in Sagitta magnit. 4]	16° 35⅓′
Declination of the very small one which is above [Declinatio paruulæ, quæ eſt ſupra]	
the middle one in the Arrow [mediam in Sagitta]	18° 12′
magnitude 6 [magnit. 6]	18° 13′
Between the uppermost of the two adjacent [Inter ſupremam duarum contigua-]	
stars in the Arrow and the head [rum in Sagitta & caput]	
of Ophiuchus [Ophiuchi]	30° 38½′

Between the lower of the adjacent stars in the [Inter inferiorem contiguarum in Sa-]	
Arrow and the head of Ophiuchus [gitta & caput Ophiuchi]	30° 50½′
Between the very small one which is above the middle [Inter paruulam, quæ eſt ſupra medi-]	
one in the Arrow and [am in Sagitta &]	32° 50½′
the head of Ophiuchus [caput Ophiuchi]	32° 51′

The same, vice versa, from the first of the wing of Pegasus [Eædem viceverſa a prima alæ Pegaſi]	
The uppermost of the two adjacent stars [Suprema duarum contiguarum]	
in the Arrow [in Sagitta]	49° 0′
The lower of those two [Inferior illarum duarum]	
adjacent stars in the Arrow [contig. in Sagitta]	48° 50′
The very small one above the middle [Paruula ſupra mediam]	46° 45′
adjacent star in the Arrow [contig. in Sagitta]	46° 46′
Declination of the left shoulder of Antinous [Declin. hum. ſiniſtri Antinoi]	
mag. 4, greater [mag. 4 maior.]	0° 2′ north [B.]
Declination, in the tail of the Serpent, [Declin. caudæ Serpentis]	
of the last star [vltimæ]	3° 46′ north [B.]
Declination of the right shoulder of Antinous [Declin. dext. hum. Antinoi]	2° 24′
mag. 3, lesser [mag. 3 min.]	2° 24½′
Declination of the one which is in the right knee [Declinatio eius, quæ eſt in genu dex-]	
of Antinous, having an altitude [tro Antinoi, habens altitudinem]	
with the Radius of about 13°, [per Radium 13 fere gr.,]	5° 23′
mag. 4, greater, or 3rd [mag. 4 mai. vel 3æ]	5° 22′
Declination of the one which precedes below the knee [Declin. eius quæ infra genu præcedit]	
of Antinous, having an altitude with [Antinoi, habens Altitudinem per]	
the Radius of about 11°, mag. 4, [Radium 11° fere, mag. 4,]	
with both pinnules [vtroq. pinn.]	6° 11′
Declination of the one which is below the right [Declin. eius, quæ eſt infra dextrum]	
shoulder in the side of Antinous, [humerum in latere Antinoi,]	
mag. 4, lesser [mag. 4 minor.]	0° 23½′ south [M.]

Declination of the one which follows this one [Declin. eius, quæ hanc ſequitur]	
a very little toward the south, [paululum ad auſtrum,]	2° 7′ south [M.]
mag. 3	2° 6′

Distances of the unformed stars above the back of ♈ from Scheat of Pegasus [Diſtantiæ informium ſupra dorſum ♈ a Scheat Pegaſi.]

The preceding one in the base of the triangle above [Præcedens in baſi △ ſupra]	
the back of ♈ [dorſum ♈]	47° 42½′
The second in the base of the triangle [Secunda in baſi △]	
which follows [quæ ſequitur]	48° 9′
The bright or more easterly one in the base [Lucida ſiue orientalior in baſi]	49° 39 1/[numeral: ?]′
The one at the apex of the triangle above ♈ [Eius in apice △ ſupra ♈]	48° 42¾′

Vice versa, these preceding unformed stars above ♈ were observed from the northern horn of ♉, in order as before [Viceverſa a Boreo cornu ♉ obſeruabantur hæ ſtellæ præcedentes informes ſupra ♈ ordine vt prius.]

The preceding one in the base of the triangle above ♈ [Præcedens in baſi △ ſupra ♈]	36° 29′
The second in the base of the triangle above ♈ [Secunda in baſi △ ſupra ♈]	35° 44¼′
The bright one in the base, or [Lucida in baſi ſiue]	34° 22⅔′
the more easterly, above ♈ [orientalior ſupra ♈]	34° 23⅙′
The one which is at the apex of the triangle above ♈ [Quæ eſt in apice △ ſupra ♈]	34° 30′

29 DECEMBER, EVENING [DIE 29 DECEMBRIS, VESPERI.]

Meridian altitude of the upper one in the head [Altitudo meridiana ſuperioris in ca-] of Erichthonius by the revolving quadrant [pite Erichtonij per Volub.]	89° 36′
Meridian altitude of the lower of the same [Altit. merid. inferioris earundem] by the revolving quadrant [per Volub.]	88° 12¼′

Appendix to the observations of the year 1592 [APPENDIX AD OBSERUATIONES ANNI 1592.]

Right ascensions, declinations, longitudes and latitudes of certain stars[1] [*STELLARUM QUARUNDAM ASCENSIONES RECTÆ, DECLINATIONES, LONGITUDINES, LATITUDINES*[1].]

For the completed year 88. To reduce the longitude of all of them to the beginning of the year 86, subtract 2⅓′ from each. [Ad Annum 88 completum. Vt reducatur Longitudo omnium ad initium Anni 86 demantur ſingulis 2⅓′.]

Of the stars of ♈ [STELLARUM ♈]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The bright star of ♈ [Lucida ſtella ♈]	3 } ours [noſtra]	26° 3′ 0″	21° 29½′ north [B]	1° 55½′ ♉	9° 57⅓′ north [B]	3
The preceding of the two [Præcedens duarum] in the horn [in cornu]	1	22° 46′ 30″	17° 15′	27° 26¾′ ♈	7° 9′	4
The following one in the horn [Sequens in cornu]	2	23° 0′ 0″	18° 46½′	28° 13′ ♈	8° 29′	4 greater [major.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
In the mouth, the more northerly of two [In rictu duarum bo-]						
[realior]	} old [vet.]	27° 30′ 30″	19° 15½′	2° 24′ ♉	7° 23′	6
The more southerly [Auſtralior]	4	28° 53′ 0″	17° 57½′	3° 10′ ♉	5° 42⅓′	6
In the neck [In ceruice]	5	23° 46⅙′	15° 45⅔′	27° 47′ ♈	5° 24′	5
In the loins [In renibus]	6	33° 56′ 50″	20° 8½′	8° 26′ ♉	6° 7′	6
At the lead-out of the tail [In eductione caudæ]	7	38° 58′ 40″	19° 39½′	12° 46½′ ♉	4° 8⅓′	5
The preceding of the three in the [Præcedens trium in]						
tail [cauda]	8	42° 3′ 20″	18° 6¼′	15° 5′ ♉	1° 46⅓′	4
The middle one [Media]	9	42° 53′ 0″	19° 27½′	16° 14′ ♉	2° 50′	5
The following one [Sequens]	10	44° 25⅓′	19° 39′	17° 40½′ ♉	2° 36′	6
In the thigh [In femore]	11	38° 21′ 30″	16° 22½′	11° 11½′ ♉	1° 12′	6
In the hollow of the knee [In poplite]	12	36° 37′ 50″	15° 43½′	9° 24½′ ♉	1° 6⅔′	6
[Margin: †] In the left knee [In genu ſiniſtro]	13	37° 14′ 30″	13° 21′ 10″	9° 12¾′ ♉	1° 29⅔′ south [A]	6
Preceding the left knee [Præcedens genu ſi-]						
[niſtrum]	14	35° 32′ 0″	13° 30′ 30″	7° 41½′ ♉	0° 39′	6
The very small one in the belly [Paruula in aluo]	15	34° 53′ 0″	18° 13′ 0″	8° 36¼′ ♉	4° 1′ north [B]	6
The one which is below the bright star [Quæ eſt infra lu-]						
of ♈ [cid. ♈]	16	25° 55½′	20° 39′	1° 30½′ ♉	9° 13′	6
Of Taurus ♉ [TAURI ♉]						
In the section, the most northerly [In interſectione ex]						
of four [quatuor maxime]						
[borealis²]	1	47° 3′ 30″	17° 29′ 0″ north [B]	17° 50′ ♉	5° 57′ south [A]	5
The second [Altera]	2	47° 0′ 0″	9° 52½′	17° 20′ ♉	7° 29′	6 greater [maj.]
The third [Tertia]	3	46° 13′ 0″	8° 15¼′	16° 7⅔′ ♉	8° 49⅔′	4
The fourth, most southerly [Quarta maxime au-]						
[ſtrina]	4	45° 41½′	7° 32′	15° 25½′ ♉	9° 22½′	4 lesser [min.]
In the right shoulder [In dextro armo]	5	51° 26½′	9° 49⅔′	21° 35′ ♉	8° 41′	5

[1] From codex G. Compare vol. III p. 409 and vol. X p. XVIII. The sign † set in the margin indicates that a correction of the star's place is to be found among the annotations appended to the "Restitution of the Fixed Stars" (vol. III pp. 412–417). [E codice G. Cf. T. III p. 409 et T. X p. XVIII. Signum † in margine appictum inter annotationes »Stellarum inerrantium Reſtitutioni« adjectas (Tom. III pp. 412—417) correctionem loci ſtellæ reperiri ſignificat.] [2] Corrected from "Suprema in interſectione". [Corr. ex »Suprema in interſectione«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination, north [Declin. B.]	Longi-tude [Longit.]	Latitude [Latit.]	Magni-tude [Mag.]
In the breast [In pectore]	6	54° 28′ 30″	11° 13′ 40″	24° 51′ ♉	8° 3′ south [A]	4
In the right knee [In Genu dextro]	7	58° 18′ 20″	7° 48′ 40″	27° 49′ ♉	12° 13½′	4
In the right hock [In ſuffragine dextra]	8	55° 19′ 40″	4° 47′ 0″	24° 8⅔′ ♉	14° 30½′	4
In the left knee [In genu ſiniſtro]	9	63° 47′ 40″	11° 38′ 20″	3° 59′ ♊	9° 32′	5
In the left hock [In ſuffrag. ſiniſtra]	10	63° 15′ 40″	9° 14′ 20″	3° 0¾′ ♊	11° 48′	5
The first of the Hyades or [Hyadum ſeu Sucu-] Suculae, namely [larum prima, ſci-] in the nostrils[1] [licet in naribus[1]]	11	59° 6′ 20″	14° 34′ 30″	0° 1¾′ ♊	5° 46½′	3
Between this one and the [Inter hanc et Ocu-] northern eye [lum boreum]	12	59° 49′ 20″	16° 30′ 0″	1° 6⅓′ ♊	4° 2′	3
Between the same and [Inter eandem et] the southern eye [oculum auſtralem]	13	61° 18′ 40″	14° 54′ 0″	2° 12′ ♊	5° 53′	4
In the southern eye, [In oculo Auſtrino,] called Palilicium or [Palilicium ſeu Al-] Aldebaran[2] [deboram dicta[2]]	14	63° 6′ 30″	15° 37′ 0″	4° 2¾′ ♊	5° 30⅓′	1
In the northern eye [In oculo boreo]	15	61° 11′ 0″	18° 12′ 30″	2° 43′ ♊	2° 37′	3 greater [maj.]
At the root of the southern [Ad radicem cornu] horn [auſtralis]	16	66° 52⅓′	18° 6′ 0″	8° 1⅗′ ♊	3° 39′ 50″	6

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination, north [Declin. B.]	Longi-tude [Longit.]	Latitude [Latit.]	Magni-tude [Mag.]
In the same horn, the more [In eodem cornu du-]						
southerly of two [arum auſtralior]	17	70° 54′ 0″	19° 49′ 20″	12° 3¼′ ♊	2° 30½′	6
The one further toward the [Quæ magis in bo-]						
north [ream]	18	69° 38⅓′	20° 56′ 20″	10° 53⅚′ ♊	1° 49½′	5 [Margin: †]
At the tip of the same [In extremo eiuſdem]	19	78° 15′ 30″	20° 50′ 10″	19° 1⅔′ ♊	2° 14′	3
At the origin of the northern [In origine cornu ſep-]						
horn [tentrional.]	20	64° 25′	22° 6′ 0″	6° 25′ ♊	0° 40′ north [B]	5
At the end of the right foot [In fine dextri pedis]						
of Erichthonius, touching the [Erichtonij termi-]						
end[3] [num attingens[3]]	21	75° 4⅗′	28° 10′ 30″	16° 49⅓′ ♊	5° 20′	2
In the ear, the more northerly [In aure duarum bo-]						
of two [realior]	22	60° 26′ 20″	21° 49′ 0″	2° 44′ ♊	1° 4′	5
The more southerly [Auſtralior]	23	60° 14′ 30″	21° 17′ 30″	2° 28′ ♊	0° 35′	4
In the neck, the preceding [In collo duarum]						
of two [præcedens]	24	55° 6′ 30″	20° 52′ 40″	27° 41′ ♉	1° 12′	5
The one which follows [Quæ ſequitur]	25	58° 18′ 0″	19° 31′ 30″	0° 18⅓′ ♊	0° 46⅓′ south [A]	6
In the neck, of the quadri- [In ceruice quadri-]						
lateral, the southern of the [lateri præceden-]						
preceding ones [tium auſtrina]	26	56° 27⅓′	25° 20′ 0″	29° 53⅔′ ♉	5° 16 1/12′ north [B]	6
The northern of the same [Eiuſdem lateris bo-]						
side [rea]	27	55° 26′ 45″	27° 50′ 30″	29° 35½′ ♉	7° 55′	5
The southern of the following [Sequentis lateris au-]						
side [ſtralis]	28	59° 27′ 15″	24° 34′ 15″	2° 23⅚′ ♊	3° 56¾′	5

The northern of this side [Hujus lateris borea]	29	58° 48′ 30″	26° 18′ 30″	2° 15¼′ ♊	5° 45½′	5

[1] "Hyadum ſeu" ("of the Hyades or") corrected from "In facie" ("in the face"). [»Hyadum ſeu« corr. ex »In facie«.] [2] Corrected from "Lucidus oculus Palilicium dicta" ("the bright eye, called Palilicium"). [Corr. ex »Lucidus oculus Palilicium dicta«.] [3] Corrected from "In extremo eiuſdem, eſtque dext. pes Heniochi" ("at the tip of the same, and it is the right foot of the Charioteer"). [Corr. ex »In extremo eiuſdem, eſtque dext. pes Heniochi«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The western of the three brighter [Occidentalis lucidi-]						
ones in [orum trium in]			north [B]			
the Pleiades [Pleiadibus]	30	50° 8′ 0″	22° 47′ 40″	23° 39½′ ♉	4° 11′	5
The lowest, and nearest to the [Infima et Occiden-]						
western one [tali proxima]	31	50° 23½′	22° 42′ 30″	24° 2⅙′ ♉[1]	4° 2¼′	6
The middle and bright one of the [Media et lucida ple-]						
Pleiades [iadum]	32	50° 46′ 0″	22° 46′ 0″	24° 14′ ♉	4° 0′	3
The one at the point [Quæ eſt in cuſpide]						
toward the east [ad ortum]	33	51° 12′ 0″	22° 46′ 0″	24° 37′ ♉	3° 55′ north [B]	5
The most southerly, in the hoof [Auſtraliſſima in vn-]						
of the left foot [gula pedis ſiniſtri]	34	50° 57′	4° 43′	19° 47′ ♉	13° 30′ south [A]	6
The little star in the ankle of the [Stellula in talo pedis]						
following foot [ſequentis]	35	60° 22′ 10″	8° 26′ 20″	29° 59⅔′ ♉	12° 2¼′ south [A]	6
The one in the thigh [Quæ eſt in femore]						
of the same [eiuſdem]	36	61° 28′ 0″	12° 4′ 30″	1° 48′ ♊	8° 41′	5
The preceding of the three be- [Præcedens trium in-]						
low the Hyades [fra ſuculas]	37	60° 51′ 0″	13° 44′ 0″	1° 32′ ♊	6° 56½′	5
The following and middle one [Sequens et Media]	38	62° 38⅔′	13° 56′ 0″	3° 17⅔′ ♊	7° 4⅓′	5
The eastern of the [Orientalis earun-]						
same, below Alde- [dem infra Alde-]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
baran [boram]	39	63° 58′ 0″	14° 57′ 40″	4° 45 1/12′ ♊	6° 17⅗′	5
The very small one in the southern [Paruula in auſtrali]						
horn [cornu]	40	73° 41′ 40″	21° 35′ 30″	14° 52¼′ ♊	1° 4⅙′	6
The following one in the same [Sequens in eodem]	41	75° 44′ 50″	21° 31′ 30″	16° 45⅓′ ♊	1° 20¼′	6
The very small one following [Paruula ſequens]						
the four in the [quatuor in inter-]						
section [ſectione]	42·	47° 37′ 0″	7° 53′ 0″	17° 22¾′ ♉	9° 34⅓′	6
The one between 27 and [Quæ eſt inter 27 et]						
26 in the quadrilateral of the neck of ♉ [26 in □$^{te^{ro}}$ colli ♉^{ri}]	43	55° 23½′	26° 25′ 30″	29° 12¼′ ♉	6° 32¾′ north [B]	5
Of Gemini ♊ [GEMINORUM ♊]						
In the lower head of ♊, Pol- [In inf. capite ♊, Pol-]			north [B]			
lux or Hercules[2] [lux vel Hercules[2]]	1	110° 0′ 0″	28° 56′ 20″	17° 32½′ ♋	6° 38⅓′ north [B]	2
In the upper one, Castor [In ſuperiori, Caſtor]						
or Apollo[3] [ſive Apollo[3]]	2	107° 2′ 0″	32° 41′ 30″	14° 30⅔′ ♋	10° 2′	2
In the left elbow [In ſiniſtro cubito]						
of the preceding Twin[4] [præcedentis ♊^{ni}[4]]	3	96° 23′ 0″	34° 22½′	5° 21⅚′ ♋	10° 58⅙′	5
In the left arm [In ſiniſtro brachio]	4	101° 12′ 0″	30° 51′ 0″	9° 44′ ♋	7° 43′	4

[1] Codex V[1] gives 23° 52′, and we find the same by calculation. [23°52′ præbet cod. V[1], atque idem per calculum reperimus.] [2] Corrected from "Inferius caput ♊" ("the lower head of ♊"). [Corr. ex »Inferius caput ♊«.] [3] Corrected from "Superius caput" ("the upper head"). [Corr. ex »Superius caput«.] [4] "cubito" ("elbow") corrected from "manu" ("hand"). [»cubito« corr. ex »manu«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
In the shoulder- [In ſcapu-]			north [B]			
blades of the same [lis eiuſdem]	5	105° 1′ 15″	28° 32′ 40″	13° 13½′ ♋	5° 42½′	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The following one in the right [Sequens in dextro]						
shoulder [humero]	6	107° 35′ 0″	27° 44′ 0″	15° 36⅔′ ♋	5° 10′	5
In the left shoulder [In ſiniſtro humero]						
of the following Twin [ſequentis Gemini]	7	109° 52′ 40″	25° 19′ 30″	17° 56′ ♋	3° 3′	4
In the right side of the pre- [In latere dextro an-]						
ceding one [tecedentis]	8	104° 35′ 0″	25° 47′ 20″	13° 8′ ♋	2° 56′	6
The little star in the left [Stellula in ſiniſtro]						
elbow of the upper Twin [cubito ſuper. ♊ni]	9	105° 54′ 45″	28° 45′	13° 59⅗′ ♋	6° 0⅓′ north [B]	6
The northern and high- [Boreale & ſupre-]						
est knee [mum Genu]	10	94° 38′ 50″	25° 37′ 45″	4° 11⅝′ ♋	2° 11′	3 [Margin: †]
The left knee of the fol- [Siniſtrum genu ſe-]						
lowing one [quentis]	11	99° 54′ 45″	21° 5½′	9° 16′ ♋	2° 6⅓′ south [A]	3
The one in the southern [Quæ in ventre meri-]						
belly [dionali]	12	103° 50′ 45″	22° 40′ 30″	12° 46′ ♋	0° 13⅔′ south [A]	3
In the hollow of the knee of the lower [In poplite inferioris]						
Twin [Gemini]	13	103° 36′ 0″	17° 13′ 0″	13° 3′ ♋	5° 41′	4
In the foot of the preceding [In pede præcedentis]						
Twin, the preceding one [Gem. præcedens]	14	87° 31′ 50″	22° 32′ 30″	27° 43′ ♊	0° 58′	4
In the same foot, the fol- [In eodem pede ſe-]						
lowing one [quens]	15	89° 31′ 0″	22° 38′ 40″	29° 33¼′ ♊	0° 52¼′	3
At the tip of the right foot [In Extremo pede]						
of the preceding [dextro præceden-]						
Twin [tis Gemini]	16	91° 7′ 15″	20° 23′ 15″	1° 4′ ♋	3° 8′ south [A]	4
The bright one [Lucida]						
of the feet of ♊ [pedum ♊]	17	93° 27′ 0″	16° 40′ 15″	3° 20′ ♋	6° 48⅔′	2

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
At the top of the right [In ſummo dextro]						
foot of the following ♊ [pede ſequentis ♊]	18	95° 32′ 40″	13° 15′ 30″	5° 19⅓′ ♋	10° 9′	4 [Margin: †]
In the heel of the foot of the [In calce pedis eius-]						
same [dem]	19	97° 52′ 30″	13° 37′ 40″	7° 46′ ♋	9° 41′	6
The one in the knee of the low- [Quæ in Genu inferi-]						
er Twin [oris Gemini]	20	96° 43′ 0″	22° 10′ 30″	6° 13½′ ♋	1° 12′	6
In the thigh of the upper [In femore ſuperioris]						
Twin [Gemini]	21	99° 18′ 40″	24° 45′ 30″	8° 27½′ ♋	1° 31′ north [B]	6
The one which is immediately be- [Quæ eſt proxime in-]						
low the lower head, [fra caput inferius,]						
in the lowest hand [in infima manu]	22	112° 4′ 0″	27° 45′ 0″	19° 32′ ♋	5° 44′	6
The very small one between [Paruula inter]						
both heads [vtrumque caput]						
of the Twins [♊$^{o^{rum}}$]	23	109° 24′ 0″	29° 47′ 0″	16° 54½′ ♋	7° 24′	5
At the ear of the upper [Ad aurem ſuperioris]						
Twin [Gemini]	24	105° 37′ 0″	32° 30′ 0″	13° 19′ ♋	9° 42′	5
The preceding one at the top [Præcedens ad ſum-]						
of the foot of the [mum pedem ♊^{ni}]						
preceding Twin [præcedentis]	25	84° 46′ 40″	23° 12′ 40″	25° 12′ ♊	0° 13′ south [A]	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Cancer ♋ [CANCRI ♋]						
The nebulous one in the breast [Nebuloſa in pectore]						
which is called [quæ præſepe vo-]			north [B]			
Praesepe [catur]	1	124° 9′ 0″	21° 4′ 15″	1° 36′ ♌	1° 14′ north [B]	nebu- [Nebu-]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of the quadrilateral, of the two [Quadrilateri dua-]						lous [loſa]
preceding [rum præceden-]						
ones, the northern [tium borea]	2	122° 10′ 0″	21° 46′ 45″	29° 39′ ♋	1° 31½′	5 lesser [min.]
The southern of the same [Earundem Auſtrina]	3	122° 0′ 0″	19° 26′ 30″	29° 59⅓′ ♋	0° 47⅔′ south [A]	5
The northern Ass [Aſellus boreus]	4	124° 47′ 40″	22° 54′ 0″	1° 46½′ ♌	3° 9′ north [B]	4
[Margin: †] The southern Ass [Aſellus auſtralis]	5	125° 17′ 0″	19° 37′ 0″	2° 58′ ♌	0° 4′ south [A]	4
In the southern claw [In branchio auſtrino]	6	128° 57′ 0″	13° 24′ 0″	7° 53½′ ♌	5° 8′	3
In the northern [In branchijs bore-]						
claws [alibus]	7	125° 22′ 0″	30° 12′ 0″	0° 34′ ♌	10° 23′ north [B]	5
At the tip of the northern [In Extremo pedis]						
foot [borei]	8	115° 52′ 30″	22° 39′ 30″	23° 45¾′ ♋	1° 15⅔′	5
At the tip of the southern [In Extremo pedis]						
foot [auſtrini]	9	115° 32′ 0″	14° 14′ 30″	24° 54′ ♋	7° 5′ south [A]	5
The one at the root of the tail, [Quæ in radice cau-]						
the brighter [dæ lucidior]	10	117° 7′ 20″	18° 49′ 40″	25° 35½′ ♋	2° 18½′	4
The one immediately following, in [Proxime ſequens in]						
the back [dorſo]	11	119° 55′ 0″	19° 33′ 30″	28° 3′ ♋	1° 4′	6
The northern of the three in [Borealis trium in]						
the southern [branchijs au-]						
claws [ſtralibus]	12	128° 31′ 0″	16° 50′ 0″	6° 37½′ ♌	1° 54¼′	6
The southern in the same [Auſtralis in ijſdem]	13	131° 20′ 40″	12° 17′ 0″	10° 26′ ♌	5° 36′	5 greater [mai.]
Of the two in the beak, [Duarum in roſtro]						
the northern [ſeptentrionalis]	14	129° 37′ 0″	26° 1′ 0″	5° 17′ ♌	7° 14′ north [B]	6
The lower and southern one [Inferior & auſtralis]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
in the beak [in roſtro]	15	131° 20′ 40″	23° 37′ 0″ north [B]	7° 26½′ ♌	5° 20⅙′	6
Of Leo ♌ [LEONIS ♌]						
In the nostrils [In naribus]	1	135° 5⅓′	27° 54′ 20″	9° 31⅓′ ♌	10° 23′ north [B]	4
In the open mouth [In hiatu]	2	136° 59½′	24° 45′ 0″	12° 6½′ ♌	7° 52¼′	4
Of the two in the head, [In capite duarum]						
the northern [borea]	3	142° 15′ 40″	27° 55′ 0″	15° 41′ ♌	12° 21′	4
The southern [Auſtralis]	4	140° 31′ 40″	25° 38′ 0″	14° 55′ ♌	9° 40′	3
The northern of the three in the neck [In collo trium borea]	5	148° 22′ 45″	25° 26′ 20″	21° 47½′ ♌	11° 50′	3
The middle and bright one [Media et lucida]	6	149° 15′ 50″	21° 53′ 45″	23° 48⅔′ ♌	8° 47½′	2
The southern of the three [Auſtralis trium]	7	146° 11′ 15″	18° 45′ 0″	22° 10′ ♌	4° 52′	3
Cor ♌	8	146° 35′ 50″	13° 57′ 0″	24° 8⅓′ ♌	0° 27′	1
Of the two in the breast, [In pectore duarum]						
the southern [auſtrina]	9	146° 29′	12° 0′	24° 40½′ ♌	1° 25½′ south [A]	5
The one slightly preceding [Antecedens parum]						
the one in the heart [eam quæ in corde]	10	143° 56′ 40″	14° 22′ 15″	21° 33⅓′ ♌	0° 0⅓′ north [B]	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latlt.]	Magnitude [Mag.]
The one in the middle of the [Quæ in medio cor-]			north [B]			
body [pore]	11	140° 16⅓′	15° 49′	17° 44⅙′ ♌	0° 16′ north [B]	
In the right fore- [In drace dextra pri-]						
paw [ori]	12	137° 26¾′	13° 5′ 0″	15° 56⅔′ ♌	3° 10′ south [A]	4
The one immediately following, in [Proxime ſequens in]						
the other foot [altero pede]	13	139° 44¾′	11° 43¾′	18° 30⅙′ ♌	3° 47′	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latlt.]	Magnitude [Mag.]
In the left fore- [In drace ſiniſtra pri-]						
paw [ori]	14	144° 37′ 0″	9° 59′ 30″	23° 36 1/12′ ♌	3° 55⅓′	4
In the left armpit [In ſiniſtra axilla]	15	152° 45′ 0″	11° 24′ 0″	0° 38′ ♍	0° 8′ north [B]	4
Of the three in the belly, the pre- [In ventre trium an-]						
ceding one [tecedens]	16	145° 20′ 0″	16° 12′ 0″	22° 14′ ♌	2° 10′	6 [Margin: †]
The following one in the belly [Sequens in ventre]	17	156° 9′ 0″	16° 21′ 40″	1° 56′ ♍	5° 56′	6
The southern one [Quæ auſtralis]	18	156° 52′ 0″	12° 43′ 45″	3° 55′ ♍	2° 49⅓′	6
Of the two in the loins, [In lumbis duarum]						
the one that goes before [quæ præit]	19	160° 1′ 0″	22° 22′ 0″	3° 4′ ♍	12° 53′	5
The one that follows is [Quæ ſequitur eſt]						
the bright one in the loins [lucida in lumbis]	20	163° 0′ 0″	22° 47′ 0″	5° 31′ ♍	14° 20′	2
Of the two in the haunch, [In clune duarum]						
the northern [borealis]	21	163° 37⅙′	15° 29′	♍		
The southern [Auſtrina]	22	163° 8′ 20″	17° 41′ 0″	7° 40′ ♍	9° 41½′	3
In the hind thigh [In poſteriori femore]	23	165° 37′ 0″	12° 48′ 0″	11° 48½′ ♍	6° 7′	3
In the hollow of the hind knee [In poplite poſteriori]	24	164° 56′ 0″	8° 15′ 15″	12° 58′ ♍	1° 40′	4
More southerly than this, as it [Hac auſtralior tan-]						
were in the elbows [quam in cubitis]	25	166° 41¾′	5° 7′ 0″	15° 46⅔′ ♍	0° 32⅚′ south [A]	4
The one in the hind [Quæ in poſteriori-]						
paws [bus dracibus]	26	168° 57′	1° 27′ 30″	19° 16⅚′ ♍	3° 2½′	4
The bright one at the tip [Lucida in extremo]						
of the tail[1] [caudæ [1]]	27	171° 58′ 30″	16° 53′ 0″	15° 53′ ♍	12° 18½′	1
The outermost nail of the [Extrema vngula pe-]						
left foot [dis ſiniſ.]	28	137° 21′ 30″	11° 24′	16° 21⅔′ ♌	4° 48′ south [A]	6
The nail of the other, [Vngula alterius pe-]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latlt.]	Magnitude [Mag.]
preceding foot [dis præcedentis]	29	136° 35′ 30″	10° 40′	15° 51⅓′ ♌	5° 43¼′	5
The one roughly in the middle [Quæ in medio cor-]						
of the body [pore fere]	30	156° 1′ 50″	21° 4⅔′	0° 3¾′ ♍	1° 17¼′ north [B]	6
Of Virgo ♍ [VIRGINIS ♍]						
At the top of the head, [In ſummo capite,]						
of the two, the [duarum præce-]			north [B]			
preceding southern one [dens auſtrina]	1	171° 0′ 0″	10° 32′ 40″	17° 34′ ♍	6° 6⅔′ north [B]	5
The following, more [Sequens ſeptentrio-]						
northerly one [nalior]	2	171° 9′ 0″	8° 51′ 0″	18° 23′ ♍	4° 37′	5
Of the two following ones [Sequentium dua-]						
in the face, the northern [rum in vultu borea]	3	176° 3′ 40″	11° 2′ 40″	21° 57′ ♍	8° 33½′	5
The southern [Auſtralis]	4	174° 56′ 0″	8° 55′ 30″	21° 48′ ♍	6° 10′	5

[1] Written beside it: "This observation is to be repeated when the opportunity arises." [Adſcripta ſunt: »Reiteranda eſt huius obſeruatio per oportunitatem«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
At the tip of the left [In extremo alæ ſini-]						
and southern wing [ſtræ & auſtrinæ]	5	172° 21′ 0″	4° 5′ 45″ north [B]	21° 22′ ♍	0° 43′	3
Of the four in the left [Earum quæ in ſini-]						
wing, [ſtra ala quatuor,]						
the preceding one [præcedens]	6	179° 44′ 0″	1° 39′ 40″	29° 5⅚′ ♍	25′	4
The second, following [Altera ſequens]	7	185° 11′ 30″	0° 49′ 30″	4° 26′ ♎	2° 49⅔′	3

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
[Margin: †] The third [Tertia]	8	189° 30′	1° 30′ south [A]	9° 18½′ ♋	2° 23⅔′ north [B]	6 lesser [min.]
The last of the four, fol- [Vltima quatuor ſe-]						
lowing [quens]	9	192° 8′	3° 19′ south [A]	12° 26¾′ ♌	45¼′	4
In the right side, below [In dextro latere ſub]						
the girdle [cingulo]	10	188° 43′ 30″	5° 40′ 40″ north [B]	5° 45′ ♎	8° 41′	3
Of the three in the right and [In dextra et borea]						
northern wing, the pre- [ala trium præce-]						
ceding one [dens]	11	185° 15′ 40″	12° 34′ 15″	29° 43′ ♍	3° 36⅔′	5
Of the remaining two, [Reliquarum dua-]						
the southern [rum auſtrina]	12	186° 14′ 0″	9° 58′ 15″	1° 41¾′ ♎	11° 37′	6
The northern of these, [Ipſarum borea,]						
which is called Vin- [vocatur vinde-]						
demiator [miator]	13	190° 27′ 0″	13° 12′ 30″	4° 13½′ ♎	6° 15⅔′	3
Spica ♍	14	195° 55′ 0″	8° 57′ 15″ south [A]	18° 6′ ♎	1° 59⅙′ south [A]	1 lesser [min.]
[Margin: †] Below the loincloth and [Sub perizomate et]						
in the right haunch [in clune dextra]	15	197° 9⅓′	1° 32′ north [B]	15° 12⅓′ ♏	10⅙′ north [B]	3
On the left, of the quadri- [In ſiniſtro femoris]						
lateral of the thigh, the pre- [quadrilateri præ-]						
ceding northern one [ced. borea]	16	197° 38′	4° 4′ south [M]	17° 48¼′ ♏	10⅚′ north [B]	

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The southern one [Auſtralis]	17	It cannot be observed; indeed, it is not seen at all [Non eſt obſeruabilis, imo non conſpicitur]				
Of the two following ones, [Sequentium dua-]						
the northern [rum borealis]	18	200° 2′ 50″	6° 35′ south [M]	20° 59⅙′♏45⅔′	north [B]	
The southern [Auſtrina]	19	197° 55′ 15″	7° 58′ 30″ south [M]	19° 33⅗′♐ 19½′	south [M]	
In the left knee [In genu ſiniſtro]	20	203° 37′	7° 18′ south [M]	24° 34′♎2° 24½′	north [B]	
At the back of the right [In poſtremo femore]						
thigh [dextro]	21	209° 36½′	0° 21′ south [M]	27° 38⅔′♐ 2½′	north [B]	
In the train of the robe, the [In ſyrmate quæ]						
middle one [media]	22	208° 36′	3° 57½′ south [A]	27° 58¾′♐ 18½′	north [B]	4
The southern one [Quæ auſtrina]	23	207° 43′ 40″	8° 16′ 50″ south [A]	28° 41′♎2° 57½′	north [B]	4
The northern one [Quæ borea]	24	211° 45½′	0° 20½′ south [A]	29° 41½′♐ 48′	north [B]	4
At the tip of the left and south- [In ſiniſtro et auſtri-]						
ern foot [no pede extremo]	25	209° 14′ 0″	11° 26′ 0″ south [A]	1° 11¾′♏0° 31′	north [B]	4
At the tip of the right and [In dextro et boreo]						
northern foot [pede extremo]	26	215° 22′ 30″	3° 45′ 15″	4° 20′♏9° 49′		4
The one following this [Sequens iſtam]	27	203° 26′ 45″	0° 35′ north [B]	21° 27⅓′♐ 40½′	north [B]	5
The very small one between the 10th [Paruula inter 10ᵐ et]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
and the twelfth [duodecimam]	28	185° 17′ 0″	9° 5′ 0″ north [B]	1° 11′ ♎	10° 26′	6
The one in the neck [Quæ in ceruice eſt]	29	179° 47⅓′	5° 32′	27° 35½′ ♍	59⅓′	6
The very small one following [Paruula ſequens]						
Vindemiator [vindemiatorem]	30	194° 4′ 0″	11° 37′ 30″ north [B]	8° 15′ ♎	16° 14′	6

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The preceding one of the three in [Præcedens trium in]						
a straight line, of the [recta linea alæ]			north [B]			
northern wing [boreæ]	31	194° 12⅓′	7° 40′ 30″	10° 1′ ♎	12° 40⅓′	5
The following or middle one [Sequens ſeu media]						
of the same [earundem]	32	198° 19′ 0″	5° 49′ 30″	14° 36′ ♎	12° 34½′	6
The one that is between [Quæ eſt inter]						
the fourth and the fifth [quartam et quin-]						
[tam]	33	174° 42′ 40″	5° 58′ 30″	22° 46½′ ♍	3° 22½′	6
Of the three in a straight line, [Trium in linea recta]						
the following one [ſequens]	34	205° 14′ 0″	3° 35′ 0″	22° 0¾′ ♎	13° 7⅓′ north [B]	
Of Libra ♎ [LIBRÆ ♎]						
The southern scale-pan of ♎ [Auſtralis lanx ♎]	1	217° 5′ 0″	14° 14′ 40″ south [A]	9° 20¾′ ♏	0° 26′ north [B]	2
The one that is above the [Quæ eſt ſupra Au-]						
southern scale-pan [ſtralem lancem]	2	216° 46½′	12° 34¾′	8° 32′ ♏	1° 55′	5
The northern scale-pan[1] [Borealis lanx [1]]	3	223° 46′ 30″	7° 46′ 45″	13° 38⅚′ ♏	8° 35⅓′	2
Above the southern scale-pan[2] [Supra Auſ. lan [2]]	4	219° 45′	6° 48¾′	9° 30½′ ♏	8° 18⅔′	4
The second from the southern [Secunda ab Au'ſt]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
scale-pan, toward the east [lan. ad ort.]	5	224° 33′	13° 52½′	16° 8⅚′ ♏	2° 58⅓′	6
The first from the southern scale-pan, [Prima ab Auſt. lan.] toward the east [ad ortum]	6	221° 0′	14° 38⅙′	12° 16½′ ♏	1° 14⅙′	5 [Margin: †]
The third from the southern [Tertia ab Auſt.] scale-pan, toward the east [lan. ad or.]	7	228° 10′	13° 19⅔′	19° 22¾′ ♏	4° 28′	3 lesser [minor.]
The one that is below the 7th, [Quæ eſt infra 7^{mam}] toward the east [ad ort.]	8	230° 18′	14° 18½′	21° 38½′ ♏	4° 3¾′	4
The one that is below the 7th, [Quæ eſt infra 7^{mam}] toward the west [ad occ.]	9	227° 29′	15° 20½′	19° 17′ ♏	2° 21′	4
The one that is below the northern [Quæ eſt infra bor.] scale-pan, toward the east [lan. ad ortum]	10	225° 30½′	8° 47′	15° 36′ ♏	8° 7¼′	4 lesser [minor.]
Of Scorpio ♏ [SCORPIJ ♏]						
The uppermost in [Suprema in] the forehead of ♏ [fronte ♏]	1	235° 24′	18° 35′ 30″	27° 25⅔′ ♏	1° 5′ north [B]	2
The middle one in the forehead [Media in fronte]	2	234° 2′	21° 22′	26° 49′ ♏	1° 54⅔′ south [A]	3 greater [mai.]
The lowest of the three bright [Infima trium luci-] ones in the forehead [darum in fronte]	3	233° 35½′	24° 50′	27° 14⅔′ ♏	5° 22½′	3 lesser [min.]
The one that lies further to- [Quæ magis ad Au-] ward the south [ſtrum eſt]	4	233° 6′	27° 54′	27° 33⅙′ ♏	8° 27½′	4
The northernmost of the fore- [Borealißima fron-] head of ♏ [tis ♏]	5	237° 3½′	18° 19′	28° 53½′ ♏	1° 42⅙′ north [B]	4 lesser [min.]
The very small one in a triangle [Paruula in triangulo] with the bright one of the fore- [cum lucida fron-] head and the 5th [tis et 5ta]	6	235° 44′	19° 32½′	27° 57′ ♏	0° 13¾′	5

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]

[1] Written in the margin: "See the first volume" (that is, our Vol. II, p. 262, 37). [In margine adſcriptum eſt: »Vide primum tomum« (i. e. noſter Tom. II p. 262, 37).] [2] It should be "above the northern scale-pan, toward the west". [Debet eße »ſupra borealem lancem ad occaſum«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The one preceding cor, in [Præcedens cor in] the breast [pectore]	7	239° 3′	24° 28′	2° 0¾′ ♐	3° 55′ south [A]	4
The middle one of Scorpio, which [Media Scorpij quæ] is called cor [cor dicitur]	8	241° 8′	25° 24′ 30″	4° 3½′ ♐	4° 27⅔′ south [A]	1
[Margin: †] The one that follows cor toward [Quæ cor ſequitur ad] Eurus [Eurum]	9	242° 37′	27° 14′	5° 43′ ♐	5° 50¼′	4
The preceding one of the two [Præcedens duarum] in the front fe- [in prioribus pedi-] et [bus]	10	236° 53′	26° 49′	0° 36⅙′ ♐	6° 37⅔′	5 lesser [min.]
The others are not seen on our horizon. [Ceteræ in noſtro horizonte non conſpiciuntur.]						
Of Sagittarius ♐ [SAGITTARIJ ♐]						
The southern one of the two in [Auſtralis duarum in] the northern part of the bow [boreali parte arcus]	4	270° 41′ 20″	25° 31′ 0″ south [A]	0° 37⅖′ ♑	2° 0⅙′ south [A]	5
In the upper exten- [In ſuperiori exten-] sion of the bow [ſione arcus]	5	267° 21′	21° 2⅔′			
[Margin: †] In the left shoulder [In humero ſiniſtro]	6	277° 31′ 0″	26° 41′ 15″	6° 40⅔′ ♑	3° 31′	4 greater [mai.]
The one preceding this, in [Antecedens hanc in] the dart [iaculo]	7	275° 2¾′	27° 16′ 0″	4° 29¾′ ♑	3° 49¾′	6 greater [mai.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
In the eye, nebulous, [In oculo nebuloſa]						
double [duplex]	8					
In the head, of the three, the one that [In capite trium quæ]						
goes before [anteit]	9	278° 21′ 20″	21° 33′ 0″ south [A]	7° 46½′ ♑	1° 44½′ north [B]	4 lesser [min.]
The middle one [Media]	10	280° 2′ 30″	22° 13′ 40″	9° 17½′ ♑	0° 58′	
The following one [Sequens]	11	281° 21′ 0″	21° 35′ 20″ south [A]	10° 33′ ♑	1° 20⅔′ north [B][1]	4
In the northern contact, [In boreo contactu]						
the more southern of the three [trium auſtralior]	12	283° 20′	19° 50′			nebulous [nebuloſa]
The middle one [Media]	13	284° 27′ 50″	18° 32′ 30″	13° 44½′ ♑	4° 17′ north [B]	4
The northern one of the three [Borea trium]	14	284° 33′ 0″	16° 39′ 15″	14° 0⅚′ ♑	6° 9½′	5
The middle one of the upper [Media ſuperioris]						
contact [contactus]	15	289° 28′	17° 5′	18° 58½′ ♑	5° 8′ north [B]	6 lesser [min.]
The eastern and last one, [Orientalis & vltima,]						
in the upper con- [in ſuperiori con-]						
tact [tactu]	16	293° 37¾′	16° 28′	22° 42½′ ♑	8° 12′ north [B]	6 lesser [min.]
In the lower contact, [In inferiori contactu]						
toward the east [ad ortum]	17	290° 36¾′	20° 44′	19° 14⅙′ ♑	3° 24⅔′ north [B]	
Of Capricorn ♑ [CAPRICORNI ♑]						
In the preceding horn, [In præcedente cor-]						
the northern one of the three[2] [nu trium borea[2]]	1	298° 46′ 45″	13° 42′ 0″ south [A]	28° 7⅔′ ♑	7° 2½′ north [B]	3
The middle one [Media]	2	299° 21′ 40″	13° 45′ 15″	28° 40½′ ♑	8° 52⅔′	6
The southern one of the three[3] [Auſtralis trium[3]]	3	299° 28′ 30″	15° 58′ 15″	28° 20⅔′ ♑	8° 41′	3

[1] It should be 1° 31′ north. [Debet eße 1° 31′ B.] [2] The upper horn (so in the margin). [Superius cornu (ſic in marg.).] [3] The lower horn (so in the margin). [Inferius cornu (ſic. in marg.).]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
At the tip of the preceding [In Extremo cornu] horn [antecedentis]	4	297° 35′	13° 42½′ south [A]	26° 57¾′ ♑	7° 15⅔′ north [B]	6 lesser [min.] [Margin: †]
In the gape, of the three, the south- [In rictu trium au-] ern one [ſtralis]	5	300° 45′	19° 41′	28° 47′ ♑	0° 48′ 35″	6 lesser [min.] [Margin: †]
Of the remaining two, [Reliquarum dua-] the preceding one [rum præcedens]	6	301° 35′	19° 52′	29° 30¾′ ♑	0° 28′ north [B]	6 lesser [min.]
The following one [Sequens]	7	301° 19′ 20″	19° 2′	29° 27′ ♑	1° 19⅔′ north [B]	6
The nebulous one [Nebuloſa] in the forehead [in fronte]	8	299° 2′	20° 26′	27° 3′ 6″ ♑	0° 23¾′ north [B]	nebulous [nebuloſa]
The one in the upper [Quæ in ſuperiori] part of the neck [parte colli]	9	304° 7½′	16° 18¼′	2° 38⅚′ ♒	3° 24⅚′ north [B]	nebulous [nebuloſa]
The one in the lower [Quæ in inferiori] part of the neck [parte colli]	10	304° 7⅔′	19° 32¾′	1° 55½′ ♒	0° 15¼′ north [B]	6
The one that precedes, at [Quæ præcedit ad] the right knee [dextrum genu]	11	305° 35¾′	26° 39′	1° 36¼′ ♒	6° 58⅙′ south [A]	6 lesser [min.] [Margin: †]
The one that follows, at [Quæ ſequitur ad] the left knee [genu ſiniſtrum]	12	306° 54′	28° 30′	2° 17⅚′ ♒	9° 2′ 6″ south [A]	[Margin: †]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
In the left shoulder [In ſiniſtro armo]	13	310° 40¾′	26° 41′	6° 2⅔′ ♒	8° 7⅚′ south [A]	
The lowest [Infima] in the belly [in ventre]	14	315° 48′	24° 7′	11° 14½′ ♒	6° 56¼′	5
The following one of the two [Sequens duarum] adjoining, toward the north [contig. ad Boream]	15	316° 16⅔′	23° 31′	11° 50′ ♒	6° 29′ south [A]	
Of the three in the middle of the bel- [Trium in medio ven-] ly, the more eastern [tre orientalior]	16	312° 55½′	22° 16½′	9° 12½′ ♒	4° 25⅓′ south [A]	
The lowest of the three [Infima trium]	17	311° 0′	22° 48′	7° 21′ ♒	4° 27′ 5″ south [A]	[Margin: †]
The northern one of [Septentrionalis ea-] those three that are in [rum trium quæ in] the middle of the body [medio corpore] [ſunt]	18	310° 22′	21° 28′	7° 8′ ♒	3° 1⅙′ south [A]	5
In the back, of the two, [In dorſo duarum] the one that goes before [quæ anteit]	19	310° 44′ 20″	18° 45′ 40″	8° 10⅔′ ♒	0° 29⅙′ south [A]	5
The following one [Sequens]	20	314° 47′ 20″	18° 29′ 0″	11° 56½′ ♒	1° 16½′ south [A]	5
The preceding one of the two [Antecedens dua-] at the flanks [rum ad Ilia]	21	318° 31⅓′	21° 14¾′	14° 14½′ ♒	4° 48¼′	5 [Margin: †]
The following one in the back [Sequens in dorſo]	22	319° 53′	20° 42′	15° 55¾′ ♒	4° 49′	5 lesser [min.]
In the lead-out of the tail, [In eductione caudæ] of the two, the pre- [duarum præce-] ceding one [dens]	23	319° 18′ 0″	18° 23′ 40″	16° 4′ ♒	2° 26½′ south [A]	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The following one [Sequens]	24	321° 5⅙′	17° 54′ 0″	18° 4⅓′ ♒[1]	2° 27⅔′ south [A]	4 greater [mai.]
The one preceding the 4, in the up- [Antecedens 4 in ſu-] per extenſion [periori extenſione]						
of the tail [caudæ]	25	319° 46′	13° 13′ south [A]	18° 3′ 35″ ♒	2° 22′ north [B]	6 greater [mai.] [Margin: †]
Of the remaining 4 [Reliquarum 4$^{tuo^{r}}$]						
in the tail, the southern one [in cauda Auſtralis]	26	322° 58′	15° 34′	20° 16¾′ ♒	0° 14⅓′ south [M]	5
The one above [Quæ ſupra]	27	322° 43′	15° 25′	20° 5⅚′ ♒	0° 10⅓′ south [M]	6
The outermost one in the tail [Extrema in cauda]	28	320° 46⅔′	10° 52½′	19° 43⅚′ ♒	4° 17⅙′ north [B]	6 greater [mai.]

[1] Struck through with a line. The right ascension and declination give 17° 49′ 36″, with a latitude of 2° 28′ 37″ south. [Linea inducta. Aſc. R. & Decl. dant 17°49′36″ cum latitudine 2°28′37″ A.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Aquarius ♒ [AQUARIJ ♒]						
In the head [In capite]	1	319° 41′ 20″	0° 27′ 0″ north [B]	22° 16⅛′ ♒	15° 23′ north [B]	6 greater [mai.]
In the right shoulder, [In humero dextro]						
the brighter one [quæ clarior]	2	326° 10′ 0″	2° 16′ 0″ south [A]	27° 29⅙′ ♒	10° 42′ north [B]	3 lesser [min.]
The fainter and [Quæ obſcurior et]						
more southern one [auſtralior]	3	325° 32′	4° 5½′	26° 25½′ ♒	9° 11½′	5
The one in the shoulder [Quæ in humero]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
on the left [ſiniſtro]	4	317° 28′ 10″	7° 19′ 0″ south [A]	17° 41⅙′ ♒	8° 40′ north [B]	4
The one in the back, under [Quæ in dorſo ſub]						
the armpit [axilla]	5	319° 1′	9° 37′ 30″	18° 27½′ ♒	6° 0⅓′	5
The following and lower one [Sequens et inferior]						
of the three in the left [trium in ſiniſt.]						
hand [manu]	6	311° 48′	12° 57⅓′	10° 41′ ♒	4° 50′ north [B]	6
The middle one of the three in the left [Media trium in ſini-]						
hand [ſtra manu]	7	307° 34′	10° 27′	7° 18¼′ ♒	8° 19⅙′	6
The brighter and preced- [Lucidior et antece-]						
ing one of the three in the left [dens trium in ſini-]						
hand [ſtra manu]	8	306° 21′ 30″	10° 54′ 30″	6° 1⅔′ ♒	8° 9¾′ north [B]	4
In the right elbow [In cubito dextro]	9	330° 7′ 0″	3° 23′ 30″	0° 59¾′ ♓	8° 17⅓′ north [B]	3 lesser [min.]
In the right hand, the [In dextra manu quæ]						
northern one [borea]	10	331° 5′ 0″	0° 39′ 0″	2° 54½′ ♓	10° 30⅚′ north [B]	5
Of the remaining two [Reliquarum dua-]						
ſouthern ones, [rum auſtralium]						
the preceding one [præcedens]	11	331° 57′ 0″	2° 4′ 40″	3° 13′ ♓	8° 52⅓′ north [B]	4
The one that follows [Quæ ſequitur]	12	333° 35′ 15″	2° 12′ 0″	4° 42⅚′ ♓	8° 10¼′	4
In the right hollow, of the [In cotyla dextra du-]						
two, the preceding one [arum præcedens]	13	328° 48⅔′	9° 45¼′	27° 35′ ♒	2° 45⅚′	5 greater [maj.]
The following one [Sequens]	14	329° 38′	9° 45′	28° 20¾′ ♒	2° 29½′	6
The one that is in the right [Quæ eſt in dextro]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
thigh [femore]	15	332° 14½′	12° 42′	29° 42⅔′ ♒	1° 10′ south [A]	5
The one that is at the buttocks [Quæ eſt ad clunes]	16	326° 4⅓′	15° 46⅓′	23° 2⅚′ ♒	2° 0¼′	
The southern one in the right [Auſtralis in dextra]						
shin [tibia]	18	338° 14½′	17° 57⅓′ south [A]	3° 11⅚′ ♓	8° 10′ south [A]	3
The northern one, or the one in the [Borea ſeu in genu]						
right knee [dextro]	19	336° 58½′	15° 42′	2° 55′ ♓	5° 37⅙′	5
In the left hip[1] [In ſiniſtra coxa[1]]	20			29° 30′ ♒	5° 40′	6
In the left shin, of the [In ſiniſtra tibia dua-]						
two, the more southern [rum Auſtralior]	21	332° 58½′	22° 45⅓′	26° 45⅓′ ♒	10° 48½′ south [M]	6 greater [maior.]
The more northern of the two [Borealior duarum]	22	335° 31′	20° 55⅓′	29° 40′ ♒	9° 57½′ south [M]	6
The highest in the outpour- [Suprema in effuſi-]						
ing of the water [one aquæ]	23	334° 6¼′	6° 19⅔′	3° 41½′ ♓	4° 8⅓′ north [B]	5 greater [maior.]
The following, brighter one, in [Sequens lucidior in]						
the pouring-out of the water [profuſione aquæ]	24	337° 48⅔′	9° 41′	5° 53⅚′ ♓	0° 19⅔′ south [A]	4

[1] Corrected from »The lower one in the left knee«. [Corr. ex »Inferior in genu ſiniſtro«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The one that follows in [Quæ ſequitur in]					south [M]	
the first bend of the water [primo flexu aquæ]	25	340° 59′	9° 35′	8° 50′ ♓	1° 23′ 55″	6 [Margin: †]
The following one in the first [Sequens in primo]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
flow of the water [aquæ fluxu]	26	343° 16½′	8° 12 [?]/3′	11° 27⅔′ ♓	0° 59⅔′	5
In the second, southern flow [In altero fluxu Au-]						
[ſtrali]	27	343° 55′	9° 55′	11° 22⅚′ ♓	2° 48⅚′	6 greater [major.]
The preceding and more north- [Præcedens & bore-]						
ern of the two follow- [alior duarum ſe-]						
ing ones [quentium]	28	343° 35′	11° 18½′	10° 32⅗′ ♓	3° 58⅓′	5 lesser [minor.]
The following, more southern one [Sequens auſtralior]	29	344° 6⅓′	11° 19′	11° 0¾′ ♓	4° 10⅗′	5 lesser [minor.]
The following one, and inclining toward the [Sequens et ad Au-]						
south [ſtrum declinans]	30	344° 22⅔′	11° 48⅓′	11° 4¼′ ♓	4° 43¾′	5
After the 30th, of the two [Poſt 30^{mam} duarum]						
adjoining ones, [contiguarum]						
the preceding one [præcedens]	31	349° 37′	16° 26′	13° 56⅚′ ♓	10° 58⅚′	5
The following one of the two [Sequens duarum]						
adjoining ones [contiguarum]	32	350° 20′	16° 45′	14° 28′ ♓	11° 32⅔′	5
In the third flow of the water, [In tertio aquæ fluxu]						
the northern one of the three [borea trium]	33	350° 5⅓′	20° 4′	12° 52½′ ♓	14° 29 1/12′	5 lesser [minor.]
The middle one in the third [Media in tertio]						
flow of the water [aquæ fluxu]	34	351° 7′ 0″	20° 30′	13° 36⅙′ ♓	15° 16½′	6
The following one of the three, and [Sequens trium et]						
southern [auſtralis]	35	352° 30½′	21° 8′	14° 34′ ♓	16° 23 1/12′	6 lesser [minor.]
Of the following three, [Sequentium trium]						
the northern one [borealis]	36	345° 19¼′	22° 19′	7° 44⅙′ ♓	14° 45¼′	5
The middle one of the same [Media trium earun-]						
three [dem]	37	346° 3⅔′	22° 49½′	8° 10½′ ♓	15° 29⅔′	5
The southern one of these [Auſtralis trium ha-]						
three [rum]	38	347° 55⅔′	23° 10¾′	9° 39½′ ♓	16° 30⅚′	5
In the last flow, of the [In vltimo fluxu tri-]						
three, the upper one [um ſuperior]	39	341° 49⅙′	23° 21′	4° 14′ 54″ ♓	14° 25⅗′	5

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The middle one of these [Media harum]	40	341° 58 1/12′	24° 38′	3° 51½′ ♓	15° 39⅚′	5
The lowest of the three, and [Trium infima pro-]						
nearest to Fomal- [ximaque Fuma-]						
haut [hant]	41	341° 20′	25° 7′	3° 6½′ ♓	15° 52¾′	5 [Margin: †]
The last of the outpouring [Vltima effuſionis]						
of the water, or the one that [aquæ ſeu ea quæ]						
is called Fomalhaut [Fumahant dicitur]	42	338° 35′	31° 43′	28° 1¼′ ♒	20° 59¼′	1
Of Pisces ♓ [PISCIUM ♓]						
In the mouth of the Southern Fish [In ore piſcis Auſtrini]	1	340° 44⅔′	1° 37⅔′ north [B]	12° 52′ ♓	9° 4′ north [B]	5
Of the two in the back of the head, [Duarum in occipite]						
the southern one [Auſtralis]	2	343° 59½′	1° 2¾′ north [B]	15° 40¼′ ♓	7° 17⅔′ north [B]	4
The northern one in the back of the head [Borea in occipite]	3	344° 53′	3° 11′	17° 20⅓′ ♓	8° 54⅓′	6

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The preceding one of the two [Præcedens duarum]						
in the back [in dorſo]	4	346° 49′	4° 10′	19° 31¾′ ♓	9° 3¼′	5
The following one in the back [Sequens in dorſo] [Margin: †]	5	349° 44⅔′	3° 26′	21° 46⅓′ ♓	7° 13⅔′	5
The preceding one in the belly [Præcedens in aluo]	6	346° 28′	0° 58′ south [A]	17° 11′ ♓	4° 27′	5 lesser [min.]
The following one in the belly [Sequens in alvo]	7	350° 18⅔′	0° 28½′	20° 55′ ♓	3° 24⅔′	5
The one that is in the tail [Quæ eſt in cauda]						
of the southern fish [piſcis Au.]	8	354° 34½′	4° 36¾′ north [B]	26° 52′ ♓	[numeral: ?]° 23½′	5
Above the eighth, toward [Supra octauam ad]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
the east, in the tail [or. in Cauda]	9	355° 26½′	6° 8½′	28° 16⅚′ ♓	7° 26⅚′ north [B]	6
The following one [Sequens]	10	359° 56′	5° 56′	2° 18⅔′ ♈	5° 28′ north [B]	
In the southern cord, of the bright [In lino Auſtrali lu-] three [cidarum trium]						
the preceding one [præcedens]	11	6° 52⅔′	5° 21½′ north [B]	8° 26′ ♈	2° 11′ north [B]	5
The middle one of the same [Media earundem]						
three [trium]	12	10° 25′	5° 41′	11° 47⅚′ ♈	1° 5½′	5
The following one of the three [Trium ſequens] [Margin: †]	13	13° 6′	5° 24¾′	14° 9′ ♈	0° 57½′	5
In the bend of the cord, of the two [In flexu lini duarum] small ones, the pre- [exiguarum ante-] ceding and more north- [cedens ac bore-]						
ern one [alior]	14	11° 51½′	3° 27½′	12° 14⅚′ ♈	1° 31′ south [M]	6 lesser [minor]
The following one of these, toward [Sequens harum ad] the south [auſtrum]	15	14° 11¾′	1° 24′	13° 36′ ♈	4° 19⅓′	6 lesser [minor]
After the inflection, of the three, [Poſt inflexionem tri-]						
the preceding one [um præcedens]	16	17° 11½′	4° 1⅔′	17° 22⅚′ ♈	3° 3′	5 lesser [minor]
The middle one [Media]	17	20° 1′	3° 25½′	19° 46′ ♈	4° 40½′ north [B]	5
The following and last one [Sequens et vltima]	18	23° 6′	1° 9′	21° 47⅛′ ♈	7° 56⅙′	5
The brighter one in [Quæ lucidior in] the knot of both [nexu amborum] cords [linorum]	19	25° 12½′	0° 45½′	23° 37½′ ♈	9° 4⅔′ south [M]	4 greater [maj.]
The preceding northern one in the cord [Præcedens in lino] [Margin: †]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
from the junction [borea a connexu]	20	20° 58⅔′	7° 5′	22° 1⅔′ ♈	1° 38½′ north [B]	5 lesser [min.]
After this one, of the three, the south- [Poſt hanc trium au-]						
ern one [ſtralis]	21	18° 52′	10° 1′	21° 5¾′ ♈	1° 51⅔′	5
The middle and brighter one in [Media et lucidior in]						
the northern knot [nexu boreo]	22	17° 25⅓′	13° 12⅔′	21° 5⅝′ ♈	5° 21¼′	4 lesser [min.]
The northern one of the three and the last [Borea trium et vlti-]						
in the cord B [ma in lino B]	23	16° 7½′	17° 4½′	21° 26⅝′ ♈	9° 24′	5
The northern one of the two in [Borea duarum in]						
the mouth of the fish B [ore piſcis B]	24	12° 10′	29° 14′	23° 4⅔′ ♈	21° 59½′	6
The southern one in the mouth of ♓ B [Auſtralis in ore ♓ B]	25	12° 22′	27° 54¾′	22° 39¼′ ♈	20° 43⅙′	5
The more northern one of the triangle [Borealior trianguli]						
in the head of the northern ♓ [in capite ♓ borei]	26	8° 57⅔′	26° 44¾′	19° 12⅓′ ♈	20° 55⅔′	6 lesser [min.], almost [fere]
The more southern one of the three, in [Trium Auſtralior in]						nebulous [nebuloſa]
the same triangle [eodem triangulo]	27	8° 29′ 0″	24° 52′	17° 56¼′ ♈	19° 24⅙′	6 lesser [min.]
The preceding one of the [Antecedens trian-]						
same triangle [guli eiuſdem]	28	7° 1¾′	25° 21¾′	16° 53⅓′ ♈	20° 24¼′	6 lesser [min.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
In the back, of the three, the pre- [In dorſo trium præ-]						
ceding one, toward the north [cedens ad boream]	29	11° 0⅓′	19° 17½′ north [B]	17° 46½′ ♈	13° 21½′ north [B]	6 greater [major.]
The middle one in the back [Media in dorſo]	30	11° 31½′	18° 24⅔′	17° 52½′ ♈	12° 21⅓′	6 lesser [min.]
The lowest of the three, and south- [Trium infima et Au-]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
ern [ſtralis]	31	12° 3′	17° 31½′	17° 58⅚′ ♈	11° 20¾′	6
In the belly, the more northern [In aluo Borealior]						
of the two, namely in [duarum ſcilicet in]						
the following side [latere ſequenti]	32	14° 20′	25° 6′	23° 7⅔′ ♈	17° 25⅚′	5
The one more toward the [Quæ magis ad Au-]						
south, in the middle [ſtrum in media]						
of the belly [aluo]	33	12° 57⅓′	22° 26′	20° 48⅙′ ♈	5° 30⅙′	5
	34		not visible [non conſpicitur]			
The one that follows the middle [Quæ ſequitur medi-]						
one of the three in the southern [am trium in Auſt.]						
spine [ſpina]	35	12° 23′	18° 52½′	18° 49½′ ♈	12° 27½′	5
The one that follows the 32nd [Quæ ſequitur 32^{dam}]						
toward the north [ad boream]	36	14° 41¾′	26° 25⅚′	24° 0¾′ ♈	18° 30⅚′	6
In the back of the head of the northern ♓ [In occipite ♓ Borei]	37	10° 8¾′	29° 34¾′	21° 30⅚′ ♈	23° 2⅚′	6
Stars of the Lesser Bear [STELLARUM VRSÆ MINORIS]						
Commonly called the pole star [Polaris vulgo dicta]	1			22° 50¾′ ♊	66° 2′	2
The second-to-last of the tail, [Penultima Caudæ]						
or the one nearest to the pole [ſeu ſtellæ polari]						
star [proxima]	2			25° 26′ ♊	69° 50½′	4
The one at the root of the [Quæ in Caudæ ra-]						
tail [dice]	3			3° 14′ ♋	73° 50′	4
The upper of the follow- [Superior ſequen-]						
ing ones in the square [tium in □^{to}]	4			21° 19′ ♋	74° 59⅚′	4
The lower one [Inferior]	5			24° 42′ ♋	77° 38½′	5
The preceding one of the two [Præcedens duarum]						
brighter ones in the square [lucidiorum in □^{to}]	6			7° 6⅓′ ♌	72° 51⅔′	3 greater [maj.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The following and lower one [Sequens et inferior]	7	231° 15⅔′	73° 17¾′	14° 30¾′ ♌	75° 23⅔′	3 [Margin: †]
Of the Greater Bear [VRSÆ MAIORIS]						
The one in the noſtrils [Quæ in naribus]	1			17° 26⅔′ ♋	40° 2⅓′	4
The one nearest below [Quæ proxima ſub]						
the left eye [oculo ſiniſtro]	2			17° 0′ 0″ ♋	43° 55½′	3
The one immediately above [Quæ contigue ſu-]						
the 2nd [pra 2^{dam}]	3			15° 57¾′ ♋	44° 21¾′	5
The one above the right [Quæ ſupra oculum]						
eye [dextrum]	4			18° 14⅚′ ♋	47° 50½′	4
The one above the left [Quæ ſupra oculum]						
eye [ſiniſtrum]	5			19° 34¼′ ♋	47° 44½′	4 lesser [min.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The one in the left ear [Quæ in aure ſiniſtra] [Margin: †]	6			24° 32½′ ♋	51° 36½′	5
	7			23° 39⅔′ ♋	42° 3′1	5 lesser [min.]
The following one in the base of the small [Sequens in baſe par-]						
triangle in the neck [ui trianguli in collo]	8	134° 15¾′	64° 47⅔′	24° 52′ ♋	45° 3⅙′	5 greater [maj.]
The one that is in an almost straight [Quæ eſt in recta fere]						
line with 11 and 16 [linea cum 11 & 16]	9			3° 28⅙′ ♌	38° 15⅓′	4 greater [maj.]
The preceding one in the lower [Præcedens in inferi-]						
part of the neck [ori parte colli]	10	140° 7⅔′	60° 55′	0° 28′ ♌	42° 36⅓′	4
The one in the left front knee [Quæ in genu ſiniſtro]						
[anteriori]	11	134° 25⅓′	53° 30′	0° 22½′ ♌	34° 34½′	3 lesser [min.]
Of the two in the right [Duarum in dextro]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
foot, the more northern [pede borealior]	12	125° 49⅓′	49° 36¾′	25° 45¾′ ♋	29° 15½′	3 lesser [min.]
In the right foot, the southern [In dextro pede Auſt.]	13	127° 9½′	48° 43½′	27° 0′ 0″ ♋	28° 38⅙′	3 lesser [min.]
	14					
	15					
The upper of the two preced- [Superior præceden-]						
ing ones in the square [tium duarum in □to]	16	159° 25½′	63° 58′	9° 24′ ♌	49° 39⅚′	3 greater [maj.]
The lower of the two [Inferior duarum]						
preceding ones [præcedentium]						
in the square [in quadrato]	17	159° 0½′	58° 34⅔′	13° 33′ 25″ ♌	45° 3⅓′	3
The upper one in the [Superior in qua-]						
square [drato]	18	178° 42⅓′	59° 19′	25° 15⅙′ ♌	51° 37⅙′	3
The lowest of the following ones [Infima ſequentium]						
in the square [in quadrato]	19	172° 53′	56° 1′	24° 34¾′ ♌	47° 6½′	3
The upper and preced- [Superior et præce-]						
ing one of the two of the pre- [dens duarum præ-]						
ceding one of the feet [cedentis pedum]						
behind [poſt.]	20	147° 58′	44° 57 1/[?]′	13° 46½′ ♌	29° 51½′	3
The following and and more south- [Sequens et & auſtra-]						
ern one in the same foot [lior in eodem pede]	21	148° 37½′	43° 32½′	14° 54⅙′ ♌	28° 45′	3
The knee of the preceding one [Genu præcedentis]						
of the hind [pedum poſteri-]						
feet [orum]	22	160° 40′ 48″	46° 43⅙′	22° 23′ ♌	35° 14¼′	4
	23					
	24					3
The one that is at the root [Quæ eſt in caudæ]						
of the tail [radice]	25	188° 53′	58° 14½′	3° 0′ ♍	54° 17¾′	3
The middle one in the tail [Media in cauda]	26	196° 46′	57° 7⅔′	9° 46¼′ ♍	56° 21¾′	3
The last one in the tail [Vltima in cauda]	27	202° 47′	51° 26′	21° 1⅚′ ♍	54° 25′	3²
Unformed star [Informis]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The one that is in a straight [Quæ eſt in recta li-] [Margin: †]						
line with the tail of ♌ [nea cum cauda ♌]						
and the tail of the Greater Bear [& cauda vrſæ mai.]		189° 10′	40° 31⅔′	17° 33⅙′ ♍	40° 6′	2

[1] The latitude of no. 7 should be 42° 30′. [No. 7 Latitudo debet eße 42° 30′.] [2] Written in the margin: »After an examination made on other stars from... it seems that 4′ should be added to this right ascension«. [Adſcripta ſunt in margine: »Examine facto in alijs ſtellis ab... videntur 4 minuta addenda huius aſcenſioni rectæ«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of the Dragon [DRACONIS]						
The one that is in the tongue [Quæ eſt in lingua]	1			18° 46½′ ♏	76° 17′	4 lesser [min.]
The one that is in the mouth [Quæ in Ore eſt]	2			4° 4½′ ♐	78° 14¾′	4
Of the two bright ones [Duarum lucidarum]						
in the head, the pre- [in capite præce-]						
ceding one [dens]	3			6° 9½′ ♐	75° 20¾′	3
The one in the knee [Quæ in Genu]	4			18° 53′ ♐	80° 21⅔′	4
The following one in the head [Sequens in capite]						
and the brighter [et magis lucida]	5	266° 48′	51° 37¼′	22° 14′ ♐	75° 3½′	3 greater [maj.]
Of the three in the neck, [Trium in collo]						
the most northern [borealiß.]	6			16° 54′ ♑	81° 52¾′	5 greater [maj.]
The southern one of the three [Auſtralis trium]	7			24° 20⅔′ ♑	77° 57′	5 greater [maj.]
The middle one of the three [Media trium]	8			20° 23¼′ ♑	79° 51½′	5 greater [maj.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The one that follows those three toward [Quæ tres illas ad]						
the east [ortum ſequitur]	9			9° 19′ 0″ ♒	80° 53½′	4
The one that is near the sec- [Quæ eſt prope ſe-]						
ond bend [cundam flexuram]						
toward the west [ad occaſum]	10			28° 23′ 0″ ♓	81° 50⅚′	4
The northern one of the square of the 2nd [Borea quadrati 2dae]						
bend [flexuræ]	11			12° 16½′ ♈	82° 49′	3 lesser [min.]
The northern one of the fol- [Borea lateris ſe-]						
lowing side [quentis]	12			15° 10¾′ ♈	78° 9⅓′	4
The southern one of the same [Auſtralis eiusdem]						
side [lateris]	13			27° 37′ ♈	79° 25′	3 lesser [min.]
Of the following triangle [Sequentis trianguli]						
the preceding one [præcedens]	14			15° 7¾′ ♉	83° 4′ 45″	4
The one that follows toward the [Quæ ſequitur ad au-]						
south [ſtrum]	15			19° 30⅙′ ♉	80° 38⅙′	4 lesser [min.]
The one above this one [Quæ ſupra hanc]	16			26° 33¾′ ♈	80° 54′	4 greater [maj.]
In the remaining triangle [In reliquo triangulo]						
the following one [ſequens]	17			6° 24¼′ ♋	83° 4⅔′	4
The southern one of the triangle [Auſtralis trianguli]	18			1° 18′ ♋	83° 28⅔′	4 [Margin: †]
The preceding and north- [Præcedens ac Bore-]						
ern one of the triangle [alis trianguli]	19			5° 20⅔′ ♊	84° 48⅔′	4
The one in the bend of the node [Quæ in flexura nodi]						
third [tertij]	20			29° 34¼′ ♌	81° 4⅓′	3 lesser [min.]
The one nearest the pole [Quæ polo proxima]	21			6° 15⅚′ ♌	86° 52¾′	4
The one that follows 24 [Quæ 24 ſequitur]	22			28° 10⅗′ ♍	83° 18¼′	5 lesser [min.]
The one that follows that one [Quæ illam ſequitur]	23			28° 12′ ♍	81° 41¼′	5 lesser [min.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The one nearer to the pole of the ecliptic [Quæ polo Eclipticæ] [vicinior]	24			26° 41⅓′ ♏	84° 45′ 53″	3
The third-to-last [Antepenultimam] from the outermost bend, [ab extrema flexu-] the one that precedes [ra quæ præcedit]	25			7° 45′ ♎	78° 32¼′	3

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The third-to-last [Antepenultima] of the bend [flexuræ]	26			12° 18⅙′ ♎	74° 11⅓′	3 lesser [min.]
The second-to-last of the bend [Penultima flexuræ]	27			29° 11⅔′ ♏	71° 4¼′	3
The one that follows the bend, [Quæ flexuram ſe-] the second [quitur ſecunda]	28			29° 6 5/[?]′ ♌	65° 18⅙′	5 lesser [min.]
The one that follows the bend most [Quæ flexuram pro-] closely [xime ſequitur]	29			2° 0⅓′ ♏	66° 35¾′	2 lesser [min.]
The second-to-last of the tail [Penultima Caudæ][1]	30			10° 15¾′ ♌	61° 33⅙′	3
The last of the tail [Vltima Caudæ]	31			4° 27⅓′ ♌	57° 7′ 0″	3
Unformed star that is in [Informis quæ in] a straight line with 11 [recta linea cum 11] and the two in the arm [& duabus in bra-] of Cepheus [chio Cephei]				0° 53¾′ ♈	77° 31⅔′	5
Of Cepheus [CEPHEI]						
	1					
	2					
The girdle [Cingulum]	3	320° 46¼′	68° 45⅙′	0° 3⅔′ ♉	71° 7′ north [B]	3

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The bright shoulder [Lucidus humerus]	4			7° 3′ ♈	68° 53¾′	3
	5					
	6					
	7					
The one that is in the shoulder [Quæ eſt in humero]	8	338° 50½′	64° 4′	27° 43½′ ♈	62° 35½′	
The one in the tiara that fol- [Quæ in Tiara ſequi-]						
lows toward the north [tur ad Boream]	9			8° 18⅔′ ♈	61° 3⅙′	
Of Boötes [BOOTIS]						
The one that is in the left [Quæ eſt in ſiniſtra]						
hand [manu]	1			23° 59′ 21″ ♍	38° 53′ north [B]	4 lesser [min.]
The second in the left [Secunda in ſiniſtra]						
hand [manu]	2			25° 23′ 21″ ♍	38° 51′	4 lesser [min.]
The third in the left [Tertia in ſiniſtra]						
hand [manu]	3			26° 49′ 21″ ♍	40° 5′	4 lesser [min.]
The one in the left [Quæ in ſiniſtro]						
elbow [cubito]	4			1° 7′ 45″ ♎	54° 39⅚′	4
In the left shoulder [In humero ſiniſt.] [Margin: †]	5	213° 54½′	40° 6¾′	12° 55⅓′ ♎	49° 33⅓′	3
The one that is in the head [Quæ in capite eſt]	6	221° 40⅖′	42° 4′	18° 33⅓′ ♎	54° 15⅔′	3
The one in the right shoul- [Quæ in dextro hu-]						
der above the Crown [mero ſupra coro-]						
[nam]	7	224° 44′	34° 53⅔′	27° 19⅓′ ♎	49° 1⅙′	3 lesser [min.]
	8					
	9					

[1] Written in the margin: »Let this be computed«. [Adſcriptum eſt in margine: »Supputetur hæc«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
	10					
	11					
	12					
	13					
	14					
	15					
The one in the hip [Quæ in Coxendice]						
below the arm [ſub Brachio]	16	216° 46¼′	28° 51′	22° 19⅓′ ♎	40° 40′ north [B]	3
The lower or following one [Inferior ſeu ſequens]						
of the two in the back [duarum in dorſo]	17	214° 13′	31° 35¼′	18° 6′ ♎	42° 10¾′ north [B]	4
The upper of the two [Superior duarum]						
adjoining ones [contig.]	18	213° 40′	32° 17′	17° 7⅖′ ♎	42° 35′ 35″ north [B]	4 greater [maj.]
The one in the right leg [Quæ in Crure]						
[dextro]	19	215° 24¾′	15° 33¼′	27° 16¼′ ♎	27° 56′ 55″ north [B]	3
The highest in the shin [Suprema in Tibia]	20	203° 45¾′	20° 30½′	13° 31¾′ ♎	28° 9¼′ north [B]	3
The middle one in the left shin [Media in tibia ſini-]						
[ſtra]	21	201° 56⅗′	19° 31′	12° 14⅔′ ♎	26° 32⅔′ north [B]	4 lesser [min.]
The lowest in the left shin [Infima in tibia ſini-]						
[ſtra]	22	202° 25′	17° 52⅛′	13° 26⅔′ ♎	25° 13¾′ north [B]	4 greater [maj.]
Unformed stars around the right knee [INFORMES CIRCA DEXTRUM GENU]						
The lowest of the unformed stars [Infima informium]		215° 21½′	18° 17′	26° 3¼′ ♎	30° 27⅔′ north [B]	4
The middle one of them [Media earum]		216° 31½′	18° 48¼′	27° 1⅙′ ♎	31° 21′ 35″ north [B]	
The highest of the unformed stars [Suprema informium]		218° 5′ 45″	20° 54½′	27° 42⅙′ ♎	33° 52′ north [B]	
Arcturus		209° 14′ 50″	21° 22⅝′	18° 29⅙′ ♎	31° 2⅔′	
Of the Crown [CORONÆ][1]						
The bright star of the Crown [Lucida Coronæ]	1	229° 18¼′	28° 9⅝′	6° 28½′ ♏	44° 23′ north [B]	2
The one preceding all [Omnium præce-]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
[dens]	2	227° 49′	30° 34¾′	3° 26⅔′ ♏	46° 8⅙′ north [B]	4 lesser [min.]
The following one, toward the north [Sequens in Boream]	3	228° 32′	32° 47¼′	3° 0⅓′ ♏	48° 24⅔′ north [B]	
The one that follows the bright [Quæ ſequitur luci-]	4		33° 52½′			6
star toward the south [dam ad Auſtrum]	5	231° 20½′	27° 39⅓′	9° 4⅓′ ♏	44° 33 1/12′ north [B]	4
The one that follows most [Quæ proxime ſe-]						
closely [quitur]	6	233° 6½′	27° 24½′	11° 15′ 0″ ♏	44° 51¾′ north [B]	4
After this, the one following [Poſthac longius]						
farther [ſequens]	7	235° 11′	28° 8′	13° 21⅔′ ♏	46° 9⅓′ north [B]	4
	8					

[1] Written in the margin: »87 or 88, as I suspect, when complete«. [Adſcripta ſunt in margine: »87 vel 88 vt ſuſpicor completo«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Hercules [HERCULIS]						
The head [Caput]	1	253° 57¼′	14° 56½′	10° 21′ ♐	37° 22½′ S	3
The one that is in the right [Quæ eſt in dextro]						
shoulder [humero]	2	243° 7′	22° 28⅓′	25° 17⅓′ ♏	42° 48′	3
The second-to-last of the right [Penultima dextri]						
arm [brachij]	3	240° 56½′	20° 12′	23° 25⅗′ ♏	40° 5⅗′	3 lesser [min.]
The lowest in the right [Infima in dextro]						
arm [Brachio]	4	237° 23⅓′	18° 14′	19° 56⅓′ ♏	37° 19′	4 greater [major.]
The left shoulder [Siniſter humerus]	5	254° 33⅙′	25° 23⅔′	9° 0′ 0″ ♐	47° 47′	3
The left arm [Brachium ſiniſtrum]	6	258° 35′	26° 29⅔′	14° 12′ ♐	49° 23′	4
The preceding one in the [Præcedens in ex-]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
pelt [uvijs]	7	262° 32⅓′	28° 2′	19° 26⅙′ ♐	51° 16⅓′	4 greater [maj.]
The highest and following one [Suprema & ſequens] of those that are in the [earum quæ in ex-]						
pelt [uvijs]	8	268° 0′	28° 48⅔′	27° 8⅖′ ♐	52° 19′	4
At the base of the triangle in [In Baſi trianguli in] the pelt [exuvijs]	9	265° 45′	30° 20′	23° 46⅔′ ♐	53° 46′	4 lesser [minor.]
The middle one of those that [Media earum quæ] are in the pelt [in exuvijs]	10	265° 28⅓′	29° 20½′	23° 27⅚′ ♐	52° 46⅔′	4 lesser [min.]
The one that is in the left [Quæ eſt in coxa] hip [ſiniſt.]	11	246° 30′	32° 25′	25° 51⅔′ ♏	53° 10⅓′	3 lesser [min.]
	12[1]					
	13					
The more easterly of the two [Orientalior duarum] bright ones in [lucidarum in] the left thigh [ſiniſt. femore]	14	251° 9⅓′	31° 36½′	2° 35⅙′ ♐	53° 20⅚′	4 greater [major.]
The lowest of the three adjoin- [Infima trium conti-] ing ones in the thigh [guarum in femore]	15	255° 12′ 50″	37° 20⅓′	6° 11¼′ ♐	59° 38′	3
Of the three following ones, [Sequentium trium] the preceding one [præcedens]	16	257° 24⅓′	37° 35½′	9° 37⅓′ ♐	60° 13⅗′	3 greater [maj.]
The middle of the three adjoining [Media trium contig.]	17	255° 52¾′	37° 47¼′	7° 8⅔′ ♐	60° 11⅗′	4
The one in the left knee [Quæ in Genu ſiniſt.]	18	265° 34′	37° 22′	22° 46′ ♐	60° 46¾′	3
The one in the left calf [Quæ in ſiniſtra ſura] near the head of the Dragon [prope caput Drac.]	19	261° 58⅔′	46° 17⅓′	14° 7′ ♐	69° 22⅙′	3
The preceding one of the three [Præcedens trium] faint ones in [obſcurarum in]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
the left foot [pede ſiniſtro]	20	259° 2⅔′	48° 41⅓′	6° 55⅓′ ♐	71° 20′ 0″	6
The middle one of the three faint [Media trium obſcu-]						
ones in the left [rarum in pede]						
foot [ſiniſt.]	21	261° 4¼′	48° 50½′	10° 57′ ♐	71° 13½′	6
The last of the three faint [Vltima trium obſcu-]						
ones [rarum]	22	264° 10⅙′	47° 48½′	17° 50′ ♐	71° 5⅙′	nebulous [nebuloſa]
The highest in the right [Suprema in dextro]						
thigh [femore]	23	247° 12′ 55″	39° 45¼′	22° 58¼′ ♏	60° 22⅖′	3

[1] The name of the star is struck through with lines, as are the numbers too; and next to this one and the following one there is written in the margin: »These two are hard to see«. [Lineis inductum eſt nomen ſtellæ ſicut numeri quoque; ad hanc vero et ſequentem adſcripta ſunt in margine: »Hæ duæ difficulter conſpiciuntur«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The more northerly in the same [Borealior in eodem]						
thigh [femore]	24	245° 16′	43° 19½′	17° 29⅙′ ♏	63° 14′ 0″	4
The one that is in the right [Quæ eſt in dextro]						
knee [genu]	25	241° 53¾′	47° 21′	8° 33⅙′ ♏	65° 54⅔′	4
The one in the upper [Quæ in ſuperiore]						
calf [ſura]	26	238° 58¾′	46° 4⅙′	5° 46⅚′ ♏	63° 51′ 0″	4
The one in the leg [Quæ in Crure]	27	237° 33′	47° 13′	2° 32⅔′ ♏	64° 23′ 0″	4
The one in the shin of the right [Quæ in tibia dextri]						
foot, near the ankle [pedis circa Talum]	28	234° 34′ 55″	43° 39¼′	2° 18⅓′ ♏	60° 15⅗′	4
The outermost in the right [Extrema in pede]						
foot [dextro]	29	229° 16′ 50″	42° 20′	26° 55⅔′ ♎	57° 15½′	4
Unformed star [Informis]						
The one preceding 24 in [Præcedens 24 in]						
the right leg [Crure dextro]		244° 14′	42° 49′	16° 21¾′ ♏	62° 28¾′	5

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Lyra [LYRÆ]						
			north [B]		S	
Commonly, the bright star of Lyra [Lyræ vulgo lucida]	1	275° 46′	38° 27½′	9° 33¾′ ♑	61° 47½′	1
The one above the bright star, [Quæ ſupra lucidam]						
toward the north wind [ad Aquilonem]	2	277° 43½′	39° 16⅔′	13° 3⅚′ ♑	62° 27′	5
The one below the bright star, [Quæ infra lucidam]						
toward the east wind [ad Eurum]	3	277° 38⅓′	37° 14⅔′	12° 16′ ♑	60° 26⅓′	5
The one in the middle of the lead- [Quæ in medio educ-]						
out of the horns [tionis Cornuum]	4	279° 58¾′	36° 28′	16° 0⅙′ ♑	59° 26′	4 lesser [min.]
Of the two adjoining ones of [Duarum teſtudinis]						
the shell at the rising, [contiguarum ad]						
the more northerly [ortum borealior]	5	284° 55⅓′	38° 30′	24° 22⅖′ ♑	60° 45⅚′	5 greater [maj.]
Of the two adjoining ones, [Duarum contigua-]						
the more southerly [rum auſtralior]	6	285° 31⅙′	37° 29½′	24° 51⅚′ ♑	59° 40¾′	5
Of the two preceding ones [Duarum præceden-]						
in the yoke, the more [tium in jugo bore-]						
northerly [alior]	7	278° 42½′	32° 57½′	13° 6½′ ♑	56° 5′	3
The small one that is below [Parua quæ ſub præ-]						
the preceding one of the lower [cedente inferio-]						
bright ones [rum lucidarum]						
[eſt]	8	278° 39⅓′	32° 7¾′	12° 53⅓′ ♑	55° 16⅙′	6
In the yoke, of the two [In jugo duarum]						
following ones, [ſequentium]						
the northern one [borea]	9	280° 52′	32° 11′	16° 1′ ♑	55° 6′	3
The small one that lies close [Parua quæ ſequenti]						
beneath the following one [lucidarum conti-]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
of the bright ones [gue ſubeſt]	10	281° 3′	31° 37′	16° 9¾′ ♍	54° 31½′	6 [Margin: †]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination north [Declin. B.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Unformed star [Informis]						
The one in the middle of the [Quæ in medio cor-] body, in a straight line [pore in recta linea] with 5 and the following [cum 5 & ſequente] 2, the lower one [2 infer.]		283° 1½′	35° 32′	20° 42′ ♍	58° 5⅚′ north [B]	5
Of the Swan, or Olor [CYGNI SEU OLORIS]						
The beak [Roſtrum]	1	288° 32¼′	27° 8½′	25° 33⅚′ ♍	49° 1¾′ north [B]	3 lesser [min.]
The one that is in the head [Quæ eſt in capite]	2	290° 43½′	29° 15½′	29° 9¾′ ♍	50° 41½′	5 lesser [min.]
The one in the middle of the neck [Quæ in medio colli]	3	295° 16⅙′	34° 1¾′	7° 22¾′ ♒	54° 18¾′	5 greater [maj.]
Commonly, the breast of the Swan [Pectus Cygni vulgo]	4	301° 54′	38° 58⅚′	19° 14¾′ ♒	57° 9⅔′	3
The bright star of the tail [Caudæ lucida]	5	305° 50′	48° 51⅙′	29° 43¼′	59° 57′	2 greater [maj.]
The first and brightest [Prima et lucidißima] in the elbow of the upper [in ancone ſuperio-] wing [ris alæ]	6	293° 4⅔′	44° 9¾′	10° 43′ ♒	64° 28′	3
Of the three in the right [Trium in dextra] palm, the southern one [vola Auſt.]	7					4
The second-to-last of the left [Penultima ſiniſtræ] wing [alæ]	8	289° 51⅓′	50° 54½′	12° 29⅙′ ♒	71° 30⅚′	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination north [Declin. B.]	Longi-tude [Longit.]	Latitude [Latit.]	Magni-tude [Mag.]
The outermost of the left wing [Extrema ſiniſtræ alæ]	9	286° 56⅓′	52° 38¾′	9° 26¼′ ♒	73° 50½′	4
The one in the elbow of the right [Quæ in Ancone dex-]						
wing [træ alæ]	10	307° 24′	32° 28¼′	21° 59⅙′ ♒	49° 26¼′	3 lesser [min.]
In the middle of the wing itself [In Medio ipſius alæ]	11					4
[Margin: †] The outermost of the right [Extrema dextræ]						
wing[1] [alæ[1]]	12	313° 52⅚′	28° 34¾′	27° 23′ ♒	43° 43⅓′	3 lesser [min.]
The preceding one in the right [Præcedens in dex-]						
foot [tro pede]	13	310° 27½′	39° 37⅓′	0° 21⅚′ ♓	54° 59′	4
The one that follows in the [Quæ ſequitur in]						
right knee [dextro genu]	14	312° 30½′	42° 19¼′	5° 11⅙′ ♓	56° 36⅙′	4
The upper and following one [Superior & ſequens]						
of the two adjoining ones [duarum contigu-]						
in the left foot [arum in ſiniſ. pede]	15	300° 49⅚′	46° 29¾′	24° 24½′ ♒	64° 17⅓′	4
The more southerly and pre- [Auſtralior et præ-]						
ceding one [cedens]	16	300° 17⅓′	45° 32½′	22° 39⅔′ ♒	63° 37′	4
Unformed stars [Informes]						
The lower and preceding [Inferior et præce-]						
one of the two [dens duarum in-]						
unformed ones, the one that [formium quæ]						
follows the right wing [dextram alam]						
[ſequitur]		314° 35⅙′	36° 19½′	2° 53¼′ ♓	50° 33′	4 lesser [min.]
The upper of the same [Superior earundem]		315° 21¼′	37° 43′	4° 43½′ ♓	51° 31′	4

[1] Written in the margin: »See vol. 2, p. 260« (that is, our vol. IV p. 218, 10). [Adſcriptum eſt in margine: »Vide 2 To. pag. 260« (i. e. noſter Tom. IV p. 218, 10).]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Perseus [PERSEI]						
In the outermost wrapping of the right [In extrema dextræ]						
hand [manus obuolutione]	1	28° 34′	53° 59′ north [B]	18° 21′ ♉	39° 0⅓′ north [B]	6 lesser [minor.]
In the right elbow [In cubito dextro]	2	35° 18¼′	54° 10½′	22° 59½′ ♉	37° 28½′	4
In the right shoulder [In dextro humero]	3	38° 49¼′	51° 50¾′	24° 16½′ ♉	34° 30′	3
The one in the left shoul- [Quæ in ſiniſtro hu-]						
der [mero]	4	34° 7⅔′	47° 25½′	18° 54⅙′ ♉	31° 34⅔′	4
The one at the crown of the [Quæ in capitis ver-]						
head[1] [tice[1]]	5	36° 17½′	51° 7′ 0″	21° 39½′ ♉	34° 26½′	5
The one that is on the back [Quæ in dorſo eſt]	6	39° 57½′	47° 57′	23° 22¾′ ♉	30° 36½′	4
The shining one in the right [Fulgens in dextro]						
side [latere]	7	43° 51′	48° 19′	26° 7′ ♉	30° 5′	2 [Margin: †]
The one that follows closely [Quæ proxime infra]						
below [ſequitur]	8	45° 31⅓′	46° 31′	26° 54½′ ♉	27° 59¼′	5
The small one following this [Hanc ſequens parua]	9	46° 54⅙′	46° 46′	28° 3½′ ♉	27° 55′	5 greater [maj.]
The one that is at the bend [Quæ eſt ad flexu-]						
of the right side [ram dextri lateris]	10	48° 30⅔′	46° 23½′	29° 4⅔′ ♉	27° 14′	3 lesser [min.]
The one in the left el- [Quæ in cubito ſini-]						
bow [ſtro]	11	40° 30′	43° 15′	21° 56′ ♉	26° 4′	
The head of Medusa [Caput Meduſæ]	12	40° 26½′	39° 18½′	20° 26⅚′ ♉	22° 22′	3 greater [maj.]
The one below Algol [Quæ ſub Algol]	13	41° 16¾′	37° 59′	20° 21′ ♉	20° 54′	5 [Margin: †]
Of the two lower ones in [Duarum infer. in]						
the head of Medusa [capite Meduſæ]	14	39° 43⅚′	37° 11½′	19° 8′ ♉	20° 33′	4
The preceding one, toward the north [Præcedens ad Bore-]						
wind, in the head of Me- [am in capite Me-]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
dusa [duſæ]	15	38° 12′ 50″	37° 52′	18° 10′ ♉	21° 35′	4
In the hollow of the right knee [In poplite dextro]	16	56° 53½′	49° 10½′	6° 3⅓′ ♊	28° 22½′	5 greater [maj.]
The one preceding the bend [Flexuram Genu] of the knee [præcedens]	18	54° 45′ 5″	46° 32′	3° 44⅔′ ♊	26° 10⅚′	5 greater [maj.]
The one that precedes the right [Quæ dextrum genu] knee [præcedit]	17	54° 4′ 40″	49° 9½′	4° 1⅔′ ♊	28° 50′	
The middle one in the right [Media in Genu dex-] knee [tro]	19	56° 15⅙′	47° 17′	5° 3′ 52″ ♊	26° 38⅚′	4
The one below the right [Quæ infra Genu] knee [dext.]	20	57° 56½′	45° 27′	5° 49¾′ ♊	24° 35′ 0″	6 greater [maj.]
The one that is in the sole [Quæ eſt in planta] of the right foot [pedis dextri]	21	62° 5′ 45″	40° 20′	7° 50⅔′ ♊	18° 56¼′	5 greater [maj.]
The one in the left [Quæ in ſiniſtro fe-] thigh[2] [more[2]]	22	49° 17½′	41° 12′	28° 1′ ♉	22° 6¼′	5 greater [maj.]
The one in the left knee [Quæ in ſiniſtro genu]	23	52° 38⅚′	38° 46′	29° 57⅚′ ♉	19° 4⅙′	3
In the left leg [In crure ſiniſtro]	24	53° 6′	34° 33′	29° 13⅓′ ♉	14° 53⅓′	5
The one in the left [Quæ in ſiniſtro cal-] heel [caneo]	25	49° 39′	30° 56′	25° 23′ ♉	12° 8¼′	4
The following one of the left foot [Sequens ſiniſtri ped.]	26	52° 7′	30° 36½′	27° 26′ ♉	11° 17⅓′	3

[1] Written in the margin: »It is found vice versa, but the difference is 7 min.«. [Adſcripta ſunt in margine: »Habetur viceverſa, ſed differentia eſt 7 min.«.] [2] Written in the margin: »Its right ascension is obtained from one star twice, but vice versa not resp.«. [Adſcripta ſunt in margine: »Eius Aſc. recta habetur ex vna ſtella bis, viceverſa autem non reſp.«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Unformed stars [Informes]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Unformed star above [Informis ſupra]						
the head [Caput]		36° 1′ 55″	59° 50½′ north [B]	26° 34⅔′ ♉	42° 26¼′ north [B]	5
The one in the upper part [Quæ in ſuperiori par-]						
of the right thigh, [te femoris dextri,]						
unknown to Aratus [Arato ignota]		51° 39¾′	49° 25½′	2° 20⅚′ ♊	29° 31⅓′ north [B]	5 lesser [min.]
Of the Charioteer [AURIGÆ]						
	1					
	2					
Called Capella [Capella dicta]	3	71° 35½′	45° 29⅙′	16° 5¾′ ♊	22° 51⅓′ north [B]	1
The bright one in the right [Lucida in dextro]						
shoulder [humero]	4	82° 26′	44° 50′	24° 18′	21° 27⅗′	2
In the right arm [In dextro brachio]	5	82° 55′	37° 7′	23° 49′	13° 44⅙′	4
	6					
The one in the left el- [Quæ in ſiniſtro cu-]						
bow [bito]	7	68° 0½′	43° 6′	12° 58⅔′	20° 52¼′	4
The following Kid [Sequens Hædus]	8	69° 24½′	40° 33′	13° 39⅙′	18° 11⅓′	5 greater [maj.]
The preceding Kid [Præcedens Hædus]	9	68° 32¼′	40° 23¾′	12° 55⅙′	18° 8½′	5 greater [maj.]
	10					
	11					
	12					
	13					
The upper foot [Superior pes]	14	67° 36′	32° 24′	10° 54⅓′	10° 21⅚′	
Of Ophiuchus [OPHIUCHI]						
The head[1] [Caput[1]]	1	258° 56⅓′	12° 56¾′ north [B]	16° 38⅙′ ♐	35° 56⅚′ north [B]	3
The right shoulder [Dexter humerus]	2	260° 47½′	4° 50′	19° 35′ ♐	28° 2′	3
The lower and following one [Inferior & ſequens]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
in the right shoulder [in dextro humero]	3	261° 51⅙′	2° 55¾′	20° 54⅚′ ♐	26° 11⅙′	3 lesser [min.]
The preceding one of the left [Præcedens ſiniſtri]						
shoulder [humeri]	4	248° 35⅗′	10° 56′	4° 49¼′ ♐	32° 35½′	4 lesser [min.]
The following one of the left shoul- [Sequens ſiniſtri hu-]						
der [meri]	5	249° 33′ 50″	10° 6¼′	6° 6′ ♐	31° 56⅙′	4
The one in the left el- [Quæ in ſiniſtro cu-]						
bow [bito]	6	242° 39′	2° 58′	29° 52⅔′ ♏	23° 39⅓′	4
In the left hand, the more north- [In ſiniſtra manu bo-]						
erly one [realior]	7	238° 15′	2° 34½′ south [A]	26° 34¼′ ♏	17° 19¼′	3
The following and more [Sequens et auſtra-]						
southerly one in the left [lior in ſiniſtra]						
hand [manu]	8	239° 11¾′	3° 37′	27° 47′ ♏	16° 30½′	3 lesser [min.]
	9					

[1] Written in the margin: »At the beginning of the year 87«. [Adſcriptum eſt in margine: »Ad initium 87 anni«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The southern and pre- [Auſtralis & præce-]						
ceding one in the right [dens in dextra]						
hand [manu]	10	264° 9′	9° 37′	24° 3½′ ♐	13° 46¾′ north [B]	4
The upper one in the right [Superior in dextra]						
hand [manu]	11	265° 12⅙′	8° 6′	25° 4⅙′ ♐	15° 20¼′	5
The right knee [Dextrum Genu]	12	251° 43⅗′	15° 6′	12° 14′ ♐	7° 18′	3
The one in the left [Quæ in ſiniſtro]						
knee[1] [Genu[1]]	13					
	14					

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
	15					
	16					
	17					
	18					
The one that is in the left [Quæ eſt in ſiniſtro]						
knee [genu]	19	243° 39′	9° 37½′	3° 28⅔′ ♐	11° 29⅚′	3
	20					
	21					
	22					
	23					
	24					
The fifth of the unformed stars [Quinta informium]						
that is in the Milky [quæ eſt in via]						
Way [lactea]		266° 56′	9° 34′ north [B]	26° 21′ ♐	33° 2½′ north [S]	4
Of the Serpent [SERPENTIS]						
The preceding one in the mouth [Præcedens in ore]	1	230° 49′	21° 5′ north [B]	11° 23⅖′ ♏	38° 12′ north [B]	5 greater [maj.]
The one that is in the mouth [Quæ in ore eſt]	2	233° 18⅙′	21° 0⅕′	14° 14⅓′ ♏	39° 6⅓′	3 lesser [min.]
The one in the temples [Quæ in temporib.]	3	234° 24′	17° 4½′	16° 56⅔′ ♏	35° 24¾′	3 greater [maj.]
The one in the lead-out [Quæ in eductione]						
of the neck [colli]	4	231° 51½′	16° 49¼′	14° 11¼′ ♏	34° 27⅓′	3 greater [maj.]
The one at the left [Quæ ad ſiniſtrum]						
eye [oculum]	5	233° 28′	19° 30⅓′	15° 0 1/12′ ♏	37° 28⅗′	4
The one at the nostrils [Quæ ad nares]	6	236° 11′ 36″	24° 6′	16° 21⅔′ ♏	42° 37¼′	5 greater [maj.]
The second in the neck, be- [Secunda in collo in-]						
low the head [fra caput]	7	228° 50′	11° 59½′	12° 36⅙′ ♏	28° 58¼′	3 greater [maj.]
	8					
In the middle joint of the neck [In nexu medio colli]	9	231° 3½′	7° 48⅓′	16° 19⅚′ ♏	25° 35⅔′	2 lesser [min.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The more southerly of the three [Auftralior trium]	10	232° 39¼′	5° 47½′	18° 36⅓′ ♏	24° 5½′	3
The one that is in the second [Quæ eſt in ſecunda]						
bend [flexione]	11	232° 10′	2° 0′ south [A]	20° 16⅖′ ♏	16° 26½′	4
	12					
	13					
	14					
	15					

[1] Struck through with lines. [Lineis inducta.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The third from the end [Antepenultima]						
of the Tail [Caudæ]	16	26° 43′ 48″	3° 28½′ south [A]	24° 24⅙′ ♐	19° 56⅚′	3
The second from the end of the Tail [Penultima Caudæ]	17	270° 2′	2° 54′ 0″ south [A]	0° 2¼′ ♑	20° 37½′ north [B]	4 greater [maj.]
The last of the Tail [Ultima Caudæ]	18	278° 55¼′	3° 46′ north [B]	9° 59¾′ ♑	26° 58⅚′	3
Of the Dart or Arrow [TELI SEU SAGITÆ]						
The upper and more east- [Superior & orien-]			north [B]			
erly one [talior]	1	295° 9⅙′	18° 24′	1° 21⅔′ ♒	39° 12⅚′ north [S]	4
Immediately preceding [Primam proxime]						
the first [præcedens]	2	292° 19¼′	17° 35′	27° 44½′ ♑	38° 58⅓′	5
	3					
	4					
	5					
Of the Vulture [VULTURIS]						
The one that is in the head [Quæ eſt in capite]						
of the Eagle [Aquilæ]	1	295° 58⅚′	6° 14′ north [B]	29° 18⅙′ ♑	27° 8⅔′ north [S]	6 lesser [min.]
The one in the neck [Quæ in collo]	2	293° 45⅚′	5° 29′	26° 42⅔′ ♑	26° 49⅖′	3

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The bright star of the Vulture [Lucida Vulturis]	3	292° 40′		25° 58½′ ♑	29° 21½′	2 greater [maj.]
[Margin: †] The one that is above the bright star [Quæ ſupra lucidam] and immediately [eſt & quintam pro-] follows the fifth [xime ſequitur]	4	292° 44′	9° 27′	25° 22¾′ ♑	30° 54⅗′	6
In the left shoulder [In ſiniſtro humero] of the two, the pre- [duarum præce-] ceding one [dens]	5 6[1] 7[1] 8[1]	291° 43′	9° 40′	25° 16′ ♑	31° 17¾′	3
The tail of the Vulture [Cauda vulturis]	9	281° 38½′	13° 19½′	14° 5¼′ ♑	36° 16⅓′	3 greater [maj.]
Unformed stars [Informes]						
The one that immediately follows [Quæ proxime cau-] the tail [dam ſequitur]		280° 15⅙′	14° 35¼′	12° 34′ ♑	37° 40′ north [B]	3
The middle one of the unformed stars [Media informium] above the tail [ſupra caudam]		276° 58′	20° 14′	9° 1⅔′ ♑	43° 32½′ north [B]	4
The seventh unformed star, the one [Septima infor. quæ] of the three that follows [ex tribus ſequitur]		277° 12½′	17° 48′	9° 7⅙′ ♑	41° 5¼′ north [B]	3 lesser [min.]

[1] Written in the margin: »These were observed from one part of the sky in distance and declination, but not yet computed«. [Adſcripta ſunt in margine: »Hæ ab vna cœli parte in Diſt. & Declin. obſeruatæ ſunt ſed nondum ſupputatæ«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Antinous [ANTINOI]						
The one in the right foot [Quæ in dextro pede]	1					
The left hand [Manus Antinoi ſini-]						
of Antinous [ſtra]	2	297° 20½′	1° 58½′ south [A]	29° 11⅓′ ♑	18° 48′ north [B]	3 lesser [min.]
The right side[1] [Latus dextrum[1]]	3	288° 50½′	1° 57¾′	20° 7⅔′ ♑	20° 14½′	3
In the knee [In genu]	4	288° 39′ 40″	7° 49½′	18° 59⅙′ ♑	14° 27½′	
	5					
	6					
	7					
Of the Dolphin [DELPHINI]						
The bright star of the Tail[2] [Lucida Caudæ[2]]	1	303° 23½′	9° 58′ north [B]	8° 21¾′ ♒	29° 7¾′ north [B]	3
The one that follows [Quæ Caudam ſequi-]						
the Tail [tur]	2	304° 32½′	10° 0′	9° 37⅚′ ♒	28° 52⅓′	6 lesser [min.]
The one below the Tail [Quæ infra Caudam]	3	304° 48′	8° 42⅔′	9° 31⅔′ ♒	27° 33¾′	6 lesser [min.]
In the rhomboid, the more [In rhomboide præ-]						
southerly one of the pre- [cedentis lateris]						
ceding side [auſtralior]	4	304° 41½′	13° 14⅓′	10° 45¾′ ♒	31° 57⅗′	3
The more northerly one [Eiusdem lateris]						
of the same side [borealior]	5	305° 7½′	14° 31¼′	11° 40¼′ ♒	33° 5′	3
The more southerly one [Sequentis lateris]						
[Margin: †] of the following side [Auſtralior]	6	306° 4½′	13° 39½′	13° 26¼′ ♒	31° 59⅚′	3
The one that is in the Head [In Capite quæ eſt]	7	306° 54⅔′	14° 43′	13° 42′ ♒	32° 47′	3
The one in the preceding [Quæ in præcedente]						
side that goes before [latere quartam ad]						
the fourth at the side [latus anteit]	8	304° 5′	13° 15¾′	10° 6⅔′ ♒	32° 8⅔′	5
The preceding one of the [Præcedens duarum]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
two lowest faint ones [infimarum obſcur.]						
in the rhombus [in Rhomb.]	9	303° 37½′	11° 42′	9° 7⅔′ ♒	30° 41¾′	6
The other one, which follows [Altera quæ ſequitur]	10	304° 50⅙′	11° 57¼′	10° 32⅙′ ♒	30° 41⅔′	6 lesser [min.]
Of the Little Horse[3] [EQUICULI[3]]						
The head of the Little Horse, [Caput Equiculi præ-]						
the preceding one [cedens]	1	313° 46⅔′	3° 37′ north [B]	17° 22⅓′ ♒	20° 12½′ north [S]	4 lesser [min.]
The head, the following one [Caput ſequens]	2	315° 37⅔′	5° 7½′	19° 44⅓′ ♒	21° 6′	4
The preceding one of the mouth [Præcedens oris]	3	312° 35⅙′	8° 32½′	17° 43⅚′ ♒	25° 16′	4
The following one of the mouth [Sequens oris]	4	313° 35⅙′	8° 27′	18° 44⅓′ ♒	24° 52′	4

[1] The latitude here and in the »Restitution of the Fixed Stars« is 20° 14½′, but T. IV p. 264.15 has 20° 7½, which is better. The declination ought to be 2° 7¾ instead of 1° 57¾′, and the error in the latitude arose from this. [Latitudo hic et in »Stellarum inerrantium Reſtitutione« eſt 20° 14½′ ſed T. IV p. 264.15 habet 20° 7½, quæ melior eſt. Declinatio pro 1° 57¾′ debet eſſe 2° 7¾, unde error in latitudine ortus eſt.] [2] Written in the margin: »at the beginning of 87«. [Adſcriptum eſt in margine: »ad init. 87«.] [3] Written in the margin: »The longitudes and latitudes of this constellation were reduced from book 2 to the beginning of the year 89, as were the ascensions and declinations too. [Adſcripta ſunt in margine: »Longitud. & Latitud. huius ſigni e libro 2 ad initium 89 anni reductæ ſunt ſicut & Aſc. & Decl.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Pegasus [PEGASI]						
The mouth of Pegasus [Os Pegaſi]	1	321° 1′	8° 2′ north [B]	26° 11⅔′ ♒	22° 7⅔′ north [S]	3
The head of Pegasus [Caput Pegaſi]	2			1° 5½′ ♓	16° 25′	4 lesser [min.]
The one toward the south [Quæ ad Auſtrum]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
in the head [in capite]	3	326° 14½′	3° 5½′	29° 35½′ ♒	15° 42⅚′	5 lesser [min.]
The lower and following one [Inferior & ſequens]						
in the mane [in juba]	4	338° 37′	6° 38½′	12° 49⅗′ ♓	14° 30½′	6
The upper and preced- [Superior et præce-]						
ing one in the mane [dens in juba]	5	337° 55′	7° 40′	12° 34′ ♓	15° 43⅓′	6 lesser [min.]
The bright star of the neck [Lucida Colli]	6			10° 29⅓′ ♓	17° 41′	3
The following one of the neck [Sequens Colli]	7	336° 34′	10° 5½′	12° 16′ ♓	18° 28¼′	5
The left leg [Iniſtrum Crus]	8	321° 28½′	23° 49½′	3° 12⅔′ ♓	36° 42⅗′	4
The left knee [Iniſtrum Genu]	9	326° 57¾′	23° 23′	8° 40′ 4″	34° 18½′	4
The right leg [Dextrum Crus]	10	327° 57′	31° 11½′	13° 52′ 54″ ♓	41° 0½′	4
The preceding one of the two [Præcedens duarum]						
in the breast [in pectore]	11	336° 42½′	21° 26′	17° 19⅓′ ♓	28° 49⅙′	4
The following one in the breast [Sequens in pectore]	12	337° 35½′	22° 28⅙′	18° 43′ ♓	29° 24½′	4
The right knee [Dextrum Genu]	13	335° 56′	28° 6½′	20° 0½′ ♓	35° 7½′	3
More toward the south [In auſtrum magis]	14	335° 39′	27° 10⅔′	19° 14⅔′ ♓	34° 24⅔′	5
The preceding one of the two [Præcedens duarum]						
that are in the wing [quæ in ala]	15	345° 6½′	21° 31⅔′	25° 22⅚′ ♓	25° 34⅚′	6
[Margin: †] The following and more southerly one [Sequens & auſtrior]	16	346° 17′	21° 13½′	26° 56′ ♓	24° 50⅓′	6
Marchab, or the first [Marchab ſeu prima]						
of the wing [alæ]	17	341° 6¼′	13° 1′	17° 46⅔′ ♓	19° 25′	2
Scheat, or the one in the [Scheat ſeu in ſe-]						
right thigh [more dextro]	18	341° 0′ 0″	25° 52½′	23° 39′ 4″ ♓	31° 8′	2
The outermost one of the wing [Extrema alæ]	19	358° 4⅓′	12° 54′	3° 27⅚′ ♈	12° 34⅚′	2
Of Andromeda [ANDROMEDÆ]						
The head [Caput]	1	356° 50′	26° 50½′ north [B]	8° 37′ ♈	25° 42′ north [B]	2
The lowest one in the [Infima in ſcapula]						
right shoulder-blade [dextra]	2	3° 45⅛′	31° 25′	16° 56′ 7″ ♈	27° 6⅓′	5
The lower one in the [Inferior in ſiniſtro]						
left shoulder [humero]	3	4° 13⅔′	27° 6⅔′	15° 15′ ♈	23° 3½′	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
In the right arm, [In Dextro Brachio]						
the more southerly of three [trium Auſtralior]	4	359° 21′	34° 31′	14° 48′ ♈	31° 33′	5
The one in the right arm [Quæ in dextro bra-]						
toward the north [chio ad Boream]	5	359° 2¼′	36° 24½′	15° 35½′ ♈	33° 20⅓′	4 lesser [min.]
The middle one of the three [Media trium]	6	0° 0½′	35° 35′	15° 56⅗′ ♈	32° 14⅖′	5 lesser [min.]
The more southerly one [Auſtralior in ſumma]						
at the top of the hand [manu]	7			10° 18′ ♈	40° 56½′	4
The upper of the two lower [Super. duarum infe-]						
ones in the right hand [rior. in dext. manu]	8	350° 3½′	42° 5′	11° 35¾′ ♈	41° 44′	4
[Margin: †] The fainter one in [Obſcurior in ſuperi-]						
the upper hand [ori manu]	9	351° 24¼′	44° 9½′	14° 12¾′ ♈	42° 8′	5 lesser [min.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The highest one in the up- [Suprema in ſuperi-]						
per hand[1] [ori manu[1]]		349° 23½′	44° 15′ north [B]	12° 36¾′ ♈	43° 49⅓′ north [B]	4
The upper and preced- [Superior et præce-]						
ing one of the two in [dens duarum in]						
the left B. [ſiniſtro B.]	10	6° 26⅖′	22° 15′	14° 59′ ♈	17° 48′	4
The one in the left el- [Quæ in ſiniſtro cu-]						
bow [bito]	11	8° 53′	21° 15½′	16° 43¼′ ♈	15° 58′	5
The more southerly one [Auſtralior in Cin-]						
in the girdle [gulo]	12	11° 40⅖′	33° 27¾′	24° 39′ ♈	25° 59¼′	2 lesser [min.]
The middle one in the girdle [Media in Cingulo]	13	8° 30¾′	37° 17′	23° 57½′ ♈	30° 33⅔′	4
The highest one in the girdle [Suprema in Cingulo]	14	6° 49¾′	38° 48′	23° 26′ ♈	32° 30½′	5 greater [maj.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The southern, or bright, [Auſtralis ſeu lucidus]						
foot [pes]	15	24° 44½′	40° 19½′	8° 29′ ♉	27° 46½′	2 lesser [min.]
The outermost one in the up- [Extrema in ſuperi-]						
per foot [ori pede]	16	19° 37½′	48° 37⅓′	8° 56⅛′ ♉	36° 49½′	5
The brighter and preced- [Lucidior et præce-]						
ing one in the right [dens in dextro]						
foot [pede]	17		46° 31½′	6° 42′ ♉	35° 21⅓′	4
The upper one in the left [Superior in ſiniſtra]						
calf [ſura]	18	18° 18′	39° 21½′	4° 55½′ ♉	28° 59′	5
The lower one in the calf [Inferior in ſura]	19	19° 10½′	38° 29½′	3° 12⅚′ ♉	27° 54½′	5 lesser [min.]
The one at the right [Quæ ad genu dex-]						
knee [trum]	20	11° 32′	45° 3′	0° 46′ ♉	36° 20 1/[?]′	
	21					
	22					
The one that is in the ring [Quæ eſt in annulo]						
of the chain [Catenæ]	23	304° 45⅓′	40° 7⅓′	23° 49⅔′ ♑	57° 18⅚′	4
The clearer and upper one [Clarior et ſuperior]						
in the left shoulder-blade[2] [in ſiniſtra ſcapula[2]]		4° 26⅔′	28° 37½′	16° 9⅙′ ♈	24° 20′	3
The highest one in the up- [Suprema in ſuperi-]						
per hand [ori mana]		349° 23⅔′	44° 15′	12° 37⅙′ ♈	43° 49⅓′	4
Of the Triangle or Deltoton [TRIANGULI SEU DELTOTI]						
The one in the acute angle [Quæ in Oxygonio]	1	22° 27⅙′	27° 34½′ north [B]	1° 8¾′ ♉	16° 49½′ north [B]	4
In the base, toward the north [In baſi ad boream]	2	26° 22⅙′	33° 1⅔′	6° 39⅙′ ♉	20° 33⅙′	4 greater [maj.]
The more southerly one in the base [Auſtralior in baſi]	4	28° 16½′	31° 56⅛′	7° 47⅚′ ♉	18° 56¾′	4
Beyond the equator to the south, of the Whale [VLTRA ÆQUATOREM AD AUSTRUM CETI]						
The one that is in the snout [Quæ in roſtro eſt]	1	39° 27⅓′	7° 13⅔′ north [B]	9° 21′ ♉	7° 50′ south [M]	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The bright star of the jaw [Lucida Mandibulæ]	2	40° 14½′	2° 26½′	8° 36½′ ♉	12° 37⅔′ south [M]	3 greater [maj.]
The middle one in the middle of the mouth [Media in ore medio]	3	35° 32⅚′	1° 27′	3° 43⅓′ ♉	12° 2⅔′ south [M]	3

[1] Written in the margin: »Aratus does not count this one«. [Adſcriptum eſt in margine: »Hanc Aratus non numerat«.] [2] Written in the margin: »Observed only once«. [Adſcriptum eſt in margine: »Semel tantum obſeruata«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The preceding one of the three [Præcedens trium in]						
in the knee [genu]	4	34° 40⅗′	1° 29⅔′ south [M]	1° 52′ ♉	14° 31⅚′ south [M]	3
The one below the eye [Quæ infra oculum]	5	31° 36½′	6° 36′ north [B]	1° 43¾′ ♉	5° 52⅙′	4 lesser [min.]
The one that is above the [Quæ eſt ſupra ocu-]						
eye [lum]	6	35° 43′	8° 20½′	5° 56⅚′ ♉	5° 35⅖′	4
The one that is in the back of the head [In occipite quæ eſt]	7	27° 51′	6° 53⅓′	28° 19⅓′ ♈	4° 18⅚′	4 lesser [min.]
In the breast, of the preceding [In pectore quadri-]						
ones of the quadrilateral, [lateri præceden-]						
the northern [tium Bor.]	8	31° 33′	14° 10′ south [M]	23° 58½′ ♈	25° 16¾′	4
Of the two lower ones [Duarum inferiorum]						
in the breast, the preced- [in pectore præce-]						
ing one, toward the south [dens ad Auſt.]	9	33° 9′	17° 2⅔′ south [M]	24° 21⅓′ ♈	28° 31′	4
Of the following ones in the [Sequentium in pec-]						
breast, the northern [tore borealis]	10	36° 11⅓′	15° 36½′	28° 1⅙′ ♈	28° 16⅓′	4
Of the lower ones in the [Inferiorum in pec-]						
breast, the following one [tore ſequens]	11	34° 57⅗′	13° 35½′	27° 37⅙′ ♈	25° 58¼′	3 lesser [min.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
In the belly, toward the [In ventre ad au-]						
south [ſtrum]	12	21° 17⅙′	18° 7′	12° 15′ ♈	25° 1′	4 lesser [min.]
The lowest one in the belly [Infima in ventre]	13	25° 11⅙′	23° 6′	13° 40′ ♈	31° 3¾′	5 greater [maj.]
The northern one of the belly [Borea ventris]	14	22° 50′	12° 20′	16° 14⅔′ ♈	20° 19′	3 greater [maj.]
Of the two bright ones [Duarum lucidarum]						
in the back, the more [in dorſo orien-]						
easterly [talior]	15	15° 55′	10° 19′	10° 32⅙′ ♈	15° 46⅖′	4 greater [maj.]
The more westerly [Occidentalior]	16	11° 59⅚′	12° 21′	6° 1⅖′ ♈	16° 55′	4 greater [maj.]
	17					
	18					
	19					
	20					
The northern one of the tail [Borealis Caudæ]	21	359° 39⅙′	11° 5′ 0″	25° 13′ ♓	10° 1⅙′	3
The southern one of the tail [Auſtralis Caudæ]	22	5° 42½′	20° 16′	26° 46′ ♓	20° 47¼′	2 lesser [min.]
Unformed stars [Informes]						
The one that follows the bright [Quæ lucidam Man-]						
star of the jaw toward [dibulæ ad ortum]						
the rising [ſequitur]		44° 29⅔′	1° 49½′ north [B]	12° 35′ ♉	14° 30′ south [M]	
The one next [Quæ proxime]						
to the 14th, toward the [a 14ta ad Afri-]						
south-west [cum]				14° 54¼′ ♈	21° 55′ south [M]	4 lesser [min.]
The one that is in a straight [Quæ eſt in recta li-]						
line with the 3rd and 5th [nea cum 3tia et 5ta]						
of the head [Capitis]		33° 36¾′	3° 46⅔′ north [B]	2° 39¼′ ♉	9° 12½′ south [M]	

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Orion [ORIONIS]						
The one in the head, the more [Quæ in capite ori-] easterly of three [entalior ex tribus] adjoining ones[1] [contiguis[1]]		78° 36′	8° 59½′ north [B]	18° 23⅛′ ♊	14° 4⅓′ south [M]	5
The more westerly of the three [Occidentalior trium] in the head [in Cap.]		78° 8′ 55″	9° 7½′	17° 56½′ ♊	13° 54½′	5
The highest of the three in [Suprema trium in] the head of Orion [Capite Orionis]	1	78° 11⅖′	9° 35½′	18° 1⅓′ ♊	13° 26′	4
The bright, or following, [Lucidus ſeu ſequens] shoulder [humerus]	2	83° 15⅔′	7° 15¼′	23° 12⅝′ ♊	16° 6′	2 greater [maj.]
The left, or preced- [Siniſter ſeu præce-] ing, shoulder [dens humerus]	3	75° 48′	5° 54½′	15° 13′ ♊	16° 53⅙′	2 lesser [min.]
The one following the left [Sequens ſiniſtri hu-] shoulder [meri]	4	77° 10½′	5° 33′	16° 36⅔′ ♊	17° 22¼′	5
The one in the right [Quæ in dextro] arm [brachio] [Margin: †]	5	84° 59⅓′	9° 34⅔′	24° 54½′ ♊	14° 51′	4
In the right forearm [In dextra ulna] [Margin: †]	6	88° 20⅔′	12° 21′	28° 20⅙′ ♊	11° 30⅙′	6
In the right hand, the more [In manu dextra au-] southerly [ſtralior]	7	87° 11′	14° 14⅛′	27° 13½′ ♊	9° 15⅙′	4
The preceding one in the [Præcedens in dex-] right hand [tra manu]	8	86° 5⅚′	14° 44½′	26° 10⅔′ ♊	8° 44′	4 lesser [min.]
The one next to the highest [Proxima ſupremæ] in the right hand [in dext. manu]	9	87° 6′ 45″	16° 9′	27° 11′ 54″ ♊	7° 20⅛′	6 greater [mai.]
The highest and last [Suprema et vltima] of those that are in [earum quæ in]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
the hand [manu]	10	87° 55′	16° 11½′	27° 58¼′ ♊	7° 18 2/8′	6 lesser [min.]
The preceding one of the two [Præcedens duarum] in the coloboro [in coloboro]	11	82° 31⅚′	20° 7⅔′	22° 58⅗′ ♊	3° 12⅛′	5
The following one of the two [Sequens duarum] in the coloboro [in coloboro]	12	84° 53⅖′	20° 4 2/8′	25° 11½′ ♊	3° 21¼′	5
The one that is below the right [Quæ eſt infra dex-] shoulder [trum humerum] toward the setting [ad occaſum]	13	79° 23⅗′	3° 48½′	18° 46⅓′ ♊	19° 17⅔′	5 lesser [min.]
Of the two faint ones [Ex duabus obſcuris] in the back, the following one [in dorſo ſequens]	14	78° 13′	3° 24′	17° 29¾′ ♊	19° 36⅓′	faint [obſcura]
The preceding one of the two [Præcedens duarum] middle ones in [mediarum in] the back [dorſo]	15	77° 23⅔′	3° 3½′	16° 35⅚′ ♊	19° 52⅓′	faint [obſcura]
The one that, of the four in [Quæ ex quatuor in] the back, precedes [dorſo præcedit]	16	76° 17½′	2° 41′	15° 23⅔′ ♊	20° 8½′	5 lesser [min.]
The one that is the most northerly [Quæ borealißima] in the cloth [eſt in linteo]	17	67° 18⅓′	13° 29⅓′	7° 43′ ♊	8° 16⅚′	4
The second in the cloth [Secunda in linteo]	18	68° 21⅓′	12° 48′	8° 38′ ♊	9° 7⅙′	4 lesser [min.]

[1] Written in the margin: »These first two are beyond the number assigned by the ancients«. [Adſcripta ſunt in margine: »Duæ hæ primæ ſunt vltra numerum a veteribus aßignatum«.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The third in the cloth [Tertia in linteo]	19	68° 2′	10° 44⅔′ north [B]	8° 0′ 0″ ♊	11° 6¼′ south [M]	6

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The fourth in the cloth [Quarta in linteo]	20	68° 5′ 0″	9° 25′	7° 50½′ ♊	12° 25½′	4
The fifth in the cloth [Quinta in linteo]	21	67° 5½′	8° 9′	6° 39′ ♊	13° 31½′	4
The sixth in the cloth [Sexta in linteo]	22	66° 59⅖′	6° 11′	6° 13′ ♊	15° 27′	4
The seventh in the cloth [Septima in linteo]	23	67° 22′	4° 50⅔′	6° 22⅔′ ♊	16° 49¾′	4
The eighth in the cloth [Octava in linteo]	24	68° 16′	1° 44′	6° 47⅔′ ♊	20° 2¼′	4 greater [maj.]
The last of those that are [Vltima earum quæ]						
in the linen [in lino]	25	69° 19′	1° 0½′	7° 47′ ♊	20° 55⅓′	4
The first of the belt [Prima balthei]	26	77° 48½′	0° 40⅓′ south [A]	16° 40⅙′ ♊	23° 38′	2
The middle one of the belt [Media balthei]	27	78° 51½′	1° 30½′	17° 44′	24° 33½′	2
The last of the belt [Vltima Balthei]	28	80° 0¾′	2° 13′	18° 56⅖′ ♊	25° 21½′	2 lesser [min.]
The one in the hilt [Quæ in manubrio]						
of the sword [Enſis]	29	76° 0′ 0″	2° 50⅔′	14° 27′ 30″	25° 36½′	3
The highest of the three in [Suprema trium in]						
the sword [Enſe]	30	78° 46⅔′	5° 8′	17° 17⅔′	28° 9⅔′	5
The middle one of the sword, or, of the two [Media Enſis ſeu du-]						
bright [arum e lucidis]						
adjoining ones, [contiguarum]						
the northern [borealis]	31	78° 47¼′	5° 43½′	17° 14⅔′	28° 45′	3 lesser [min.]
The southern one in the sword [Auſtralis in Enſe]	32	78° 52⅗′	6° 15′	17° 17½′	29° 17′	3
The following one of the two be- [Sequens duarum in-]						
low the sword [fra Enſem]	33	79° 48′	7° 31½′	18° 13′	30° 37¾′	5
The preceding one of the two [Præcedens duarum]						
below the sword [infra Enſem]	34	78° 1⅙′	7° 40½′	16° 10′	30° 37½′	4
The bright, or left, [Lucidus ſeu ſiniſter]						
foot[1] [Pes[1]]	35	73° 42⅖′	8° 44′	11° 5⅙′	31° 11⅓′	1
The one in the left [Quæ in ſiniſtro Cal-]						
heel [caneo]	36	74° 24¼′	7° 19½′	12° 5½′	29° 53′	4
The one in the calf of the left [Quæ in ſura ſiniſtri]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
foot [pedis]	37	76° 4½′	8° 15⅓′	13° 52′	31° 0⅙′	5 greater [mai.]
The one in the right knee [Quæ in genu dextro]	38	82° 4¼′	9° 52′	20° 39¼′	33° 8′	3
Unformed stars around Orion [Informes circa Or.]						
The one that precedes the last [Quæ vltimam bal-]						
of the belt, toward [thei præcedit ad]						
the south [auſtrum]		79° 39⅓′	2° 54¼′ south [A]	18° 28′ 54″ ♊	6° 0½′ south [A]	4
The one preceding that one [Præcedens istam]						
toward the back [ad dorſum]		75° 18½′	3° 4′ north [B]	14° 24′ ♊	19° 40′	6

[1] Written in the margin: »for the year 86 compl.«. [Adſcriptum eſt in margine: »ad annum 86 compl.«.]

Names of the stars [Nomina Stellarum]	Old number [Num vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Eridanus [ERIDANI]						
The one at the left [Quæ ad ſiniſtrum pe-]			south [A]		south [A]	
foot of Orion, preceding [dem Or. præced.]	1	72° 24⅙′	9° 19½′	9° 29¾′ ♊	31° 35½′	4
At the beginning of the river, [In principio fluvij ſu-]						
above the foot of Orion [pra pedem Orionis]	2	71° 55′	5° 40⅓′	9° 32′	27° 54½′	3 lesser [min.]
Of two others, the [Duarum aliarum]						
following one [ſequens]	3	70° 24½′	7° 50½′	7° 28¾′	29° 52′	4
The preceding one [Præcedens]	4	68° 12⅓′	6° 11½′	5° 19¼′	27° 51⅓′	5
The following one of the two [Sequens duarum]						
upper ones [ſuperiorum] [Margin: †]	5	66° 16⅔′	4° 2⅔′	3° 35⅓′	25° 33⅔′	4
The preceding one of the two [Præcedens duarum]						

Names of the stars [Nomina Stellarum]	Old number [Num vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
upper ones [ſup.]	6	63° 58¼′	4° 15′	1° 4⅖′	25° 11½′	4 greater [maj.]
	7					
	8					
	9					
After an interval, the following one [Poſt interuallum ſe-]						
of the four [quens ex quatuor]	10	54° 45⅓′	14° 42′	18° 8′ ♉	33° 13 2[?]/[?]′	3
	11					
The one that is toward the north [Quæ ad ſeptentrio-]						
[nem eſt] [Margin: †]	12	50° 55⅝′	11° 11′	14° 57′ ♉	28° 46⅛′	3
The one following this [Hanc ſequens]	13	48° 27⅔′	10° 51½′	12° 35′ ♉	27° 47′	3
Of the Hare [LEPORIS]						
The upper of the preceding [Superior præceden-]			south [A]		south [M]	
ear [tis auris]	1	73° 19′ 0″	12° 11½′	10° 4⅛′ ♊	34° 33⅝′	5
The lower of the preceding [Inferior præceden-]						
ear [tis auris]	2	73° 35¼′	13° 30′	10° 10¼′ ♊	35° 53¾′	5
The upper of the following [Superior ſequentis]						
ear [auris]	3	75° 15⅙′	12° 43′	12° 16⅔′ ♊	35° 18′ 0″	6
The lower of the following ear [Infer. ſequentis auris]	4	75° 11⅖′	13° 38′	12° 3 ⅜′ ♊	36° 14⅙′	5
The one in the head [Quæ in Capite]	5	73° 38′ 0″	16° 42′	9° 39′ ♊	39° 4¼′	5
The outermost of the fore- [Extrema anterio-]						
feet [rum pedum]	6	71° 59⅙′	22° 57′	6° 15⅙′ ♊	44° 59⅔′	4
The one in the back, or [Quæ in dorſo ſeu]						
middle of the body [medio corpore]	7	78° 40′	18° 8′	15° 39⅙′ ♊	41° 5½′	3 lesser [min.]
The one that is in the thigh [Quæ eſt in femore]						
of the left foot [ſiniſtri pedis]	8	77° 40⅓′	21° 7¼′	13° 56½′ ♊	43° 57⅔′	3
The more southern of the two [Auſtralior duarum]						
in the hind [in poſterioribus]						
feet [pedibus]	9	81° 52′	22° 36¼′	19° 11¼′ ♊	45° 49⅓′	3rd lesser [3^{tiae} min.]
The more northern of the two [Borealior duarum]						
in the hind feet [in poſt. ped.]	10	83° 26⅓′	20° 58′	21° 25⅖′ ♊	44° 17⅔′	3 lesser [min.]

Names of the stars [Nomina Stellarum]	Old number [Num vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The preceding one in the back [Præcedens in dorſo]	11	82° 6¼′	15° 0½′	20° 16⅙′ ♊	38° 16′	4
The following one in the back [Sequens in dorſo]	12	84° 32′	14° 16½′	23° 17½′ ♊	37° 40⅓′	4
The last in the tail [Vltima in Cauda]	13	86° 55¾′	14° 57′	26° 12′ ♊	38° 26′	4 lesser [min.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of the Greater Dog [CANIS MAIORIS]						
In the mouth, the most brilliant, [In ore ſplendidißima]			south [A]		south [A]	
Sirius [Seirius]	1	96° 45½′	16° 10¼′	8° 25½′ ♋	39° 29⅚′	1
The one in the forehead by [Quæ in fronte ad] [Margin: †]						
the right ear [dextram aurem]	2	98° 49⅔′	11° 38′	10° 51½′ ♋	34° 49′ 54″	4
In the middle of the forehead [In media fronte]	3	99° 16′ 35″	13° 33½′	11° 16¾′ ♋	36° 43′	5
The one under the left [Quæ ſub ſiniſtra]						
ear [aure]	4	101° 19⅙′	15° 4′	13° 55⅔′ ♋	31° 2⅗′	3 lesser [min.]
	5	99° 32′	16° 22½′	11° 53′ ♋	39° 30⅓′	
	6					
	7					
In the right shoulder of the [In armo dextro an-]						
forefoot [terioris pedis]	8	95° 6⅔′	17° 54½′	6° 32¼′ ♋	42° 12⅓′	
The one that is at the tip [Quæ eſt in extremi-]						
of the forefoot [tate pedis prioris]	9	91° 13′	17° 47½′	1° 32⅙′ ♋ 1° 32¾′ ♋	41° 18½′	2 lesser [min.]
	10					
	11					
The one in the back [Quæ in dorſo]	12	101° 30′	23° 15′	15° 20⅓′ ♋	46° 9⅔′	5 greater [maj.]
In the breast, the middle one [In pectore media]	13	99° 17′	23° 32′	12° 26½′ ♋	46° 39⅓′	5 greater [maj.]

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The one in the belly [Quæ in ventre]	14	102° 57⅚′	25° 46⅓′	17° 45′ ♋	48° 30′	3
In the belly, between the hind [In ventre inter poſte-]						
thighs [riora femora]	15 16	100° 44′	28° 27′	15° 11⅓′ ♋	51° 24⅔′	3
The lower, or southern, [Inferior ſeu Auſtra-] [Margin: †]						
foot [lis pes]	17	90° 39¾′	28° 27′	0° 56⅔′ ♋	51° 46⅗′	3
The one in the tail [Quæ in Cauda] [Margin: †]	18	107° 4′ 55″	28° 34′	24° 1⅖′ ♋	50° 41⅓′	3
Of the Lesser Dog [CANIS MINORIS]						
The preceding one in the neck [Præcedens in collo]	1	106° 13⅗′	9° 2½′ north [B]	16° 29⅖′ ♋	13° 33⅓′ south [M]	3
The bright one in the thigh, [Lucida in femore]						
or the Dog itself, [ſeu Canis ipſe]						
the Lesser [minor]	2	109° 27⅙′	6° 13⅓′	20° 8½′ ♋	15° 56⅚′	2
Of Argo, or the Ship [ARGOS SEU NAVIS]						
The one on the topmost [Quæ in ſuprema]			south [A]		south [A]	3
stern of the ship [navis puppi]	2	117° 30⅚′	23° 9′	5° 42⅗′ ♌	43° 18⅔′	3
The topmost of the shield [Suprema Clypei]						
of the ship [navis]	3	113° 3¾′	23° 52′	0° 25¼′ ♌	44° 58⅔′	3 lesser [min.]
The preceding one of the shield [Præcedens Clypei]	5	110° 32⅔′	25° 55′	27° 49½′ ♋	47° 28⅙′	3

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
Of Hydra [HYDRÆ]						
The preceding one in the head [Præcedens in Capite]	1	124° 18⅙′	4° 46′ north [B]	5° 29½′ ♌	14° 37′ south [M]	5
Above the first, toward [Supra primam ad]						
the north [Aquilonem]	2	125° 25½′	4° 50½′	6° 35¾′	14° 16⅖′	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The more northern in the back of the head [Borealior in occipite]	3	126° 13⅓′	7° 52¾′	6° 37′ 50″	11° 8⅙′	4
The one that, toward [Quæ tertiam ad]						
the south, most nearly [Auſtrum proxime]						
precedes the third [anteit]	4	126° 39⅚′	7° 16⅚′	7° 12½′	11° 36½′	5
Of all in the head, [Omnium in capite]						
the more eastern [orientalior]	5	128° 22⅓′	7° 27⅓′	8° 50½′	11° 1⅙′	4
The one in the neck that [Quæ in collo]						
precedes [præcedit]	6	131° 4½′	6° 39⅔′	11° 41⅙′	11° 5⅗′	6 lesser [min.]
The following one in [Sequens in]						
the lead-out of the neck [eductione colli]	7	133° 12′	3° 59′	14° 31⅓′	13° 5⅙′	4
The middle and preceding one [Media et præcedens]						
of the three in the knot [trium in nexu]	8	137° 44⅔′	0° 35′ 30″	20° 1½′	15° 0′ 0″	5
The northern of the three in the bend [Borea trium in flexu]						
of the neck [colli]	9	139° 41¼′	0° 41½′	21° 54′	14° 17½′	4
The southern one in the knot [Auſtralis in nexu]	10	136° 55¾′	1° 0½′ south [A]	19° 43⅙′	16° 46⅛′	5
	11					
The bright one, or the heart [Lucida ſeu cor]						
of Hydra [Hydræ]	12	136° 52⅓′	6° 53⅔′	21° 35½′	22° 23⅚′	1 lesser [min.]
The one that immediately follows [Quæ proxime cor]						
the heart [ſequitur]	13	140° 13⅙′	12° 27½′			5 greater [maj.]
The one that follows [Quæ hanc deinde]						
this one next [ſequitur]	14	142° 56⅙′	13° 3′			5
	15					
	16					4
The one that is 5th from the Heart [Quæ a Corde 5ta eſt]	17	151° 35′	14° 44′			4
The one that is in a straight line [Quæ in recta linea]						
with 17 and 19 [cum 17 & 19 eſt]	18	154° 38¾′	14° 46′ 0″	12° 31⅛′ ♏23° 30′ 54″		

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The one immediately preceding [Proxime Crateram] the Cup [præcedens]	19	157° 23′	14° 3′	14° 41⅙′	21° 48½′	
Unformed star [Informis]						
The one that immediately precedes [Quæ proxime caput] the head [præcedit]		123° 57′	7° 4′	4° 35⅓′ ♌	12° 27′ south [M]	4
The constellation of the Cup [CRATERIS ASTERISMUS]						
The one that is in the base [Quæ eſt in Baſi] of the Cup [Crateris]	1	159° 58⅓′	16° 6′ south [A]	18° 3′ ♍	22° 4⅚′ south [M]	4
The following one of the two in [Sequens duarum in] the middle [medio]	2	166° 7′	15° 26′	23° 32⅚′ ♍	19° 39′ 5″	4
The preceding one of the two [Præcedens duarum]	3	164° 44⅗′	12° 31½′	21° 0′ 25″ ♍	17° 24′ 57″	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The constellation of the Crow [CORUI ASTERISMUS]						
			south [M]		south [M]	
The one at the eye [Quæ ad oculum]	2	177° 16⅔′	20° 19½′	5° 57¾′ ♎	19° 38′ 53″	4 greater [mai.]
The preceding one of the upper [Præcedens ſuperio-] bright stars [rum lucidarum] in the square [in □to]	4	178° 44¾′	15° 12½′	5° 3½′ ♎	14° 24′ 56″	3
The following one of the upper [Sequens ſuperio-] ones [rum]	5	182° 11⅔′	14° 11′	7° 44′ 55″ ♎	12° 6⅚′	3
The following one of the bright stars [Sequens lucidarum] lower in the square [in □to inferiorum]	7	183° 15⅙′	21° 5′	11° 39 1/12′ ♎	17° 59′	
The constellation of Berenice [BERENICES ASTERISMUS]						

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Afc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
In the apex of the first and [In Cuſpide primi &]			north [B]	♏	north [B]	
northern triangle [Borealis Trianguli]	1	181° 33′	30° 35′	18° 7′ 23″	28° 25′	3 lesser [min.]
The topmost of the adjoining [Suprema contigua-]						
ones that follow [rum inſequen-]						
[tium]	2	181° 25′	29° 30′	18° 32′ 0″	27° 23⅔′	4
The lower of the adjoining [Inferior contigua-]						
ones [rum]	3	181° 27′	29° 25′	18° 36⅙′	27° 20′	4
The one that the two adjoining [Quæ contiguas]						
ones most closely [duas proxime]						
follows [ſequitur]	4	181° 58′	28° 1½′	19° 8¾′	27° 7′	4
The preceding one of the two [Præcedens duarum]						
more southern [auſtraliorum]						
adjoining ones [contiguarum]	5	180° 22½′	28° 13½′	18° 14½′	25° 50⅚′	4
The other adjoining one, [Altera contig. ad]						
at the rising [ortum]	6	180° 52½′	28° 18⅔′	18° 38½′	26° 7′	4
The one that precedes all, [Quæ omnes præce-]						
toward the south [dit ad Auſtrum]	7	178° 50′	26° 14½′	17° 50⅖′	23° 29¾′	4
The following adjoining one, in [Sequens contig. in]						
a straight line with [recta linea cum]						
the first in the apex [prima in cuſpide]						
and the bright cor ♌ [& lucid. corde ♌]	8	182° 36⅓′	26° 36½′	20° 59¾′	25° 16⅙′	4
The other adjoining one, preceding, [Altera contig. præ-]						
toward the south [ced. ad auſtrum]	9	182° 8½′	26° 24⅔′	20° 41⅙′	24° 56′	4
The lowest in the said straight [Infima in dicta recta]						
line [linea]	10	183° 32¼′	24° 47⅚′	22° 42′ 0″	24° 0½′	4

Names of the stars [Nomina Stellarum]	Old number [Num. vet.]	Right ascension [Aſc. Recta]	Declination [Declin.]	Longitude [Longit.]	Latitude [Latit.]	Magnitude [Mag.]
The last in the exten- [Poſtrema in exten-] [Margin: †]						
sion of the Hair [ſione Comæ]	11	193° 11⅙′	29° 53⅚′	28° 48⅓′	32° 45⅚′	4 greater [maj.]
The adjoining one that precedes [Quæ dictam in ex-]						
the said one in the extension [tenſione contig.]						
[præcedit]	12	191° 48⅚′	29° 42⅚′	27° 39⅙′	31° 41⅔′	4
The one that is in a straight line [Quæ in recta linea]						
with these and with 1 [eſt cum his & 1]						
in the apex [in cuſpide]	13	187° 56⅓′	29° 50′	24° 6⅔′	30° 16′	4

Observations of the year 1593 [OBSERUATIONES ANNI 1593.]

Observations of the Sun [OBSERUATIONES SOLIS.]

27 February [DIE 27 FEBUARIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	29° 43′
by the revolving quadrant [per Volub.]	29° 42′
Declination of the Sun by the armillae, with one [Declin. ⊙ per Armillas, vno]	4° 23⅚′
with the other pinnule [alt. pinn.]	4° 24½′

7 March [DIE 7 MARTIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	32° 51½′
by the revolving quadrant [per Volub.]	32° 50½′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	1° 15⅓′
	1° 15′ south [A.]

It was clear enough, but the instruments disagreed: the cause of this was the long interruption in their use. [Erat ſatis ſerenum, ſed inſtrumentorum diſconuenientia: illius diutina eorum vſus intermißio cauſa fuit.]

10 March [DIE 10 MARTIJ.]

Near the vernal equinox itself. [prope ipſum æquinoctium vernum.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	34° 1½′
steel instrument corrected to the plumb-line [Chalyb. ad perpend. correct.]	
by the revolving quadrant [per Volub.]	34° 0⅚′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	0° 3′ south [M.]
	0° 3½′

The sky was moderately clear, but the air was rather more unsteady and stronger. [Erat mediocriter ſerenum, ſed aër aliquanto intranquillior ac vehementior.]

12 March [DIE 12 MARTIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	34° 50′
by the revolving quadrant [per Volub.]	34° 49⅓′
Declination of the Sun by the largest armillae [Declin. ⊙ per Armillas max.]	0° 44½′
	0° 44′

The sky was moderately clear. [Erat mediocriter ſerenum.]

14 March [DIE 14 MARTIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	35° 35½′
by the revolving quadrant [per Volub.]	35° 36′ nearly [fere]
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	1° 30½′
	1° 30′ north [B.]

The sky was not quite clear. [Non erat ſatis bene ſerenum.]

16 March [DIE 16 MARTIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	36° 23′
by the revolving quadrant [per Volub.]	36° 22¾′

Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	2° 18′
	2° 18½′

It was clear enough. [Erat ſatis ſerenum.]

17 March [DIE 17 MARTIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	37° 47⅓′
by the revolving quadrant [per Volub.]	37° 46⅙′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	2° 42¼′
	2° 42½′

It was very clear. The clock ran slower than it should, from noon of the preceding day, by 14^{m} [14 M.]. [Erat bene ſerenum. Horologium tardius iuſto mouebatur a Meridie anteced. 14 M.]

15 May [DIE 15 MAIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	55° 4⅝′
by the revolving quadrant [per Volub.]	55° 3¾′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	21° 0′
	21° 0′

It was very clear. Afterwards an error was detected in the revolving quadrant and corrected on the same day. [Erat bene ſerenum. Error poſtea in Volubili deprehenſus & correctus eſt eodem die.]

17 May [DIE 17 MAIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	55° 26⅓′
by the revolving quadrant [per Volub.]	55° 26′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	21° 22⅓′
	21° 22¼′

It was quite clear. [Fuit ſatis bene ſerenum.]

20 May [DIE 20 MAIJ.]

At noon the clock was corrected for the eclipse of the Sun that was to take place on the same day. This was done by observing both the centre of the Sun and each limb as it crossed the meridian, on the revolving quadrant, through the slits of the pinnules, with what precision was possible, since the sky was not so clear that the shadow could be observed. The clock, moreover, had fallen short by nearly three minutes since 10^{h} A.M. [hora 10 A. M.], when it had likewise been corrected on the equator approximately [ἐν πλάτει]; for this reason we have now also added a little to its weight. [In Meridie corrigebatur pro eclipſi ☉ eodem die futura horologium, idque obſeruato tum centro Solis tum vtroque limbo tranſeuntis Meridianum in Volubili per rimulas pinnacidiorum, præciſione qua fieri potuit, quando ita ſerenum non fuit, vt vmbra obſeruari poßet. Defecit autem horologium in tribus minutis fere ab hora 10 A. M., quando ſimiliter in æquatore ἐν πλάτει correctum fuit, quapropter etiam parum nunc ad pondus eius adiecimus.]

Shortly after noon the clock was corrected to the Sun several times, and, by watching carefully from the first hour until 3½^{h} [horam 3½], nothing [*Paulo poſt Meridiem corrigebatur horologium ad ſolem aliquoties, & attendendo diligenter ab hora prima vſque in horam 3½, nihil*] *seemed to be missing from the Sun [☉] at all, even at the time when the eclipse should have been greatest, namely as the third hour came on. And although it was not clear enough, but clouds came between at intervals and it was never pure enough, it could nevertheless be made out well enough that nothing at all was lacking from the Sun's body in its lower part at this time. It follows necessarily that the Moon cannot have covered the Sun with any part of itself by coming between it and our view. According to the calculation of others, however, the Sun ought to have been eclipsed somewhat on our horizon, though only very little.* [*prorſus de ☉ abeßе videbatur, etiam tum, cum maxima eßе debuit eclipſis nempe hora ingruente tertia, & quamuis non fuerit ſatis ſerenum ſed per interualla nubes interponebantur & nunquam ſatis defæcatum, tamen id ſatis diſcernebatur, nihil prorſus de ſolari corpore deſiderari in inferiori eius parte hoc tempore, quare neceßе eſt lunam nulla ſui parte ſolem obtegere potuißе, interuentu ad intuitum noſtrum. Debuit autem Sol iuxta aliorum calculum nonnihil in noſtro horizonte deficere, quamuis admodum parum.*]

An inquiry[1] whether any eclipse of the Sun [Eclipſis ☉$^{l_{is}}$] could take place this year on 20 May, from our restoration of the motions. [Exploratio an aliqua Eclipſis ☉$^{l_{is}}$ hoc anno die 20 Maij fieri poßet, ex noſtra reſtitutione motuum.]

Our true latitude of the Moon [Latitudo vera ☾ noſtra]			4¼
Altitude [Altitudo]	43° 0′		
Resp. parallax of the Moon from the Sun [Reſp. Parallaxis ☾ a Sole]	46′		
Parallax in longitude [Parall. Longit.]	31½,	Latitude [Latit.]	34½
Therefore the apparent latitude of the Moon [Ergo viſa latitudo ☾]			30′ 15″
Semidiameter of the Sun [Semidiameter ☉]	15 3		
Semidiameter of the Moon [Semidiameter ☾]	14 12		

Aggregate [Aggregatum]	29 15

Since, therefore, the apparent latitude of the Moon is greater than the sum of the semidiameters by about 1′ [1ᴹ], it is clear that no eclipse of the Sun [Eclipſationum ☉] took place on our horizon, even though according to the calculation of others it is quite perceptible. That there was none here will be attested by the observations made of the Sun on the same day; see above. [Quoniam itaque latitudo ☾ viſa maior eſt aggregato ſemidiametrorum quaſi 1ᴹ, patet nulla in noſtro Horizonte facta Eclipſationum ☉, etiamſi iuxta aliorum calculum ſatis ſenſibilis eſt. Nulla autem fuiße hic teſtabuntur obſeruationes ad ſolem eodem die factæ, vide ſupra.]

N.B. This eclipse, however, was observed at Rostock [Roſtochij], so that at the beginning the Sun had an altitude of about 48° [48 Grad.], at the end 40½°. [N. B. Hæc tamen Eclipſis Roſtochij obſeruabatur, ita vt in principio habuerit Sol Altit. quaſi 48 Grad., in fine 40½.]

Rostock² [ROSTOCHIJ².]

Some observations of lunar eclipses, such as the one that occurred in the year 1584 November 7, and in the year 1588 August 25; and also of the solar eclipse in the year 90 [A° 90], in the month of July. All of them were lost to me in the fire by which the College of the Brothers [Collegium Fratrum] was consumed in the year 1594 July 1. I have kept only one, not yet added to the earlier ones, which is this. [Obſeruationes aliquot Eclipſium Lunarium, vt quæ incidit Anno 1584 7 Nouembris et anno 1588 25 Auguſti. Nec non Eclipſis Solaris A° 90 Menſe Julio. Omnes mihi incendio perierunt, quo Collegium Fratrum abſumptum fuit A. 1594 die 1 Julij. Vnicam tantum prioribus nondum adſcriptam retinui, quæ hæc eſt.]

In the year 1593 May 20 an eclipse of the Sun [eclipſis $\odot^{l_i s}$] took place in the afternoon; its times were set out from the Alphonsine Tables [Tabulis Alphonſinis]. [Anno 1593 die 20 Maij facta eſt eclipſis $\odot^{l_i s}$ poſt meridiem, cuius tempora ex Tabulis Alphonſinis exhibita fuerunt.]

Beginning at [Initium hora]	$2^h\ 7^m$ [2 M. 7]	End at [Finis hora]	$3^h\ 23^m$ [3 M. 23.]
From the Tables of Eclipses of Peurbach [Ex Tabulis Eclipſium Purbachij]			
Beginning at [Initium hora]	$2^h\ 2^m$ [2 M. 2]	End at [Finis hora]	$3^h\ 20^m$ [3 M. 20.]

Observation made at Rostock in this eclipse of the Sun. [Obſeruatio Roſtochij facta in hac Eclipſi $\odot^{l_i s}$.]

At the beginning of the eclipse the Sun was found to have an altitude of 47° 50′. From this, when the operation had been performed, the time of the observation was found to be $2^h\ 24^m\ 5^s\ 44$ [$2^H\ 24'\ 5''\ 44'''$] after noon [P. Merid.]. [Sub initium eclipſis depræhenſus eſt Sol altitudinem habere 47° 50′. Hinc tempus obſeruationis, facta operatione, collectum fuit $2^H\ 24'\ 5''\ 44'''$ P. Merid.]

The Sun's altitude near the end of the eclipse was 40° 45′. From this the time of the observation was $3^h\ 19^m$ [$3^H 19'$], taking the Sun's place at noon of the 20th as 8° 50′ 47″ ♊, under a pole altitude of 54, with the Sun's greatest declination 23° 30′. [Altitudo Solis ſub finem Eclipſis fuit 40° 45′. Vnde tempus obſeruationis $3^H 19'$, aßumpto Solis loco in Meridie diej 20 8° 50′ 47″ ♊, ſub altitudine poli 54, in maxima ſolis declinatione 23° 30′.]

In the year 1583 December 2 the meridian altitude of the pole star was observed; the upper was 56° 55′, the lower 51° 4′. Hence the elevation of the pole 53° 59′ 30″. [Anno 1583 die 2 Decembris obſeruata eſt altitudo ſtellæ polaris Meridiana quæ ſuperior fuit 56° 55′, inferior 51° 4′. Hinc poli eleuatio 53° 59′ 30″.]

On the following days the upper meridian altitude of the same star was found to be 56° 56′, and the lower 51° 4′. Hence the elevation of the pole 54°. This observation was repeated several times, and only twice was the same elevation of the pole found. On the other occasions the altitudes, being either greater or smaller, gave an unequal elevation of the pole. [Sequentibus diebus eiuſdem ſtellæ altitudo meridiana ſuperior inuenta eſt 56° 56′, inferior vero 51° 4′. Hinc poli eleuatio 54°. Repetita hæc obſeruatio aliquoties fuit & tantum bis depræhenſa eſt eadem poli eleuatio. Ceteris vicibus altitudines vel maiores vel minores inæqualem poli eleuationem dederunt.]

[1] This is found in codex K. alone. [Hæc in codice K. ſolo inuenitur.] [2] This observation is written in another hand on a leaf that was later inserted into codex E. [Hæc obſeruatio alia manu in folio conſcripta eſt, qvod poſtea codici E inſertum eſt.]

In the year of the Lord 1593, 20 May [ANNO D^{NI} 1593 DIE 20 MAIJ.]

Observation of the solar eclipse under the meridian of Zerbst in Anhalt[1] [ſub Meridiano Serveſtano Anhaldinorum]. The pole at Zerbst in Anhalt [Serveſtæ Anhaldinorum] is elevated 52⅙°. [Obſeruatio defectus ſolaris ſub Meridiano Serveſtano Anhaldinorum. Eleuatur autem polus Serveſtæ Anhaldinorum 52⅙°.]

The Sun was observed at noon and had an altitude of 59° 45′. The time by the wooden equatorium [æquatorium ligneum]. [Obſeruabatur ☉ in meridie habuitque altitudinem 59 45. Tempus per æquatorium ligneum.]

Diagram. Ten circles, each representing the Sun's disc at one stage of the eclipse, set in two columns of five, with a label to the right of each. In nine of the circles a small Sun sign (a ring with a central dot) is drawn near the centre; in the second circle of the right column no such sign is drawn. Each circle carries a hatched segment cut off along its lower edge: in the left column the

segment sits at the bottom, growing to its largest in the third circle and smaller in the fourth and fifth; in the right column it is largest in the first circle and shrinks down the column, moving toward the lower left, to a thin sliver in the fourth and fifth. In the third circle of the left column a short vertical row of dots is drawn below the Sun sign. Labels, as printed:

- Left 1 (top): 2^h 22^m [H. 2 M. 22]; the altitude of the Sun at that time 48° 10′ [Alt. ⊙ tunc temporis 48° 10′]
- Left 2: 2^h 38^m [H. 2 38′]; among clouds [inter nubes]
- Left 3: 2^h 47^m [H. 2 M. 47]; this one uncertain, about the middle of the eclipse [incerta hæc, circa medium Eclipſis]
- Left 4: 2^h 48^m [H. 2 48]; and, set lower beside the same circle: in the following ones the sky clearer [In ſequentibus cœlum ſerenius]
- Left 5 (bottom): 2^h $55\frac{5}{6}^m$ [H. 2 55⅚]; altitude of the Sun 43½° [Alt. ⊙ 43½]
- Right 1 (top): 2^h $56\frac{1}{2}^m$ [H. 2 56½ M]
- Right 2: 2^h 58^m [H. 2 58M]
- Right 3: 3^h 5^m [H. 3 5]
- Right 4: 3^h 9^m [H. 3 Mto 9]
- Right 5 (bottom): 3^h $17\frac{1}{2}^m$ [H. 3 Mto 17½]

The whole Sun was seen exactly free of the shadow at $3\frac{1}{3}^h$ [H. 3⅓]. The apparent diameter of the Sun, observed with the Radius [per Radium], was also about 30′. The digits of the total obscuration [Digiti … obſcurationis totalis] appeared to be about two, or a little more. [Totus Sol liber ab vmbra exacte conſpiciebatur H. 3⅓. Erat etiam diameter ⊙ apparens per Radium obſeruata circiter 30′. Digiti autem obſcurationis totalis apparebant circiter duo vel paulo plus.]

[1] This observation was made by Christianus Ioannis Ripensis, a pupil of Tycho. [Hæc obſervatio α Chriſtiano Ioannis Ripenſi, diſcipulo Tychonis, facta eſt.]

11 June [DIE 11 JUNIJ.]

Very close to the summer solstice. [Circa ſolſtitium æſtiuum proxime.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	57° 35⅙′
by the revolving quadrant [per Volub.]	57° 34¾′
Trust the steel instrument. [*Crede Chalybeo.*]	
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	23° 30′
	23° 29⅔′

The sky was moderately clear, but the air was somewhat more unsteady. [Erat mediocriter ſerenum, ſed aër aliquanto intranquillior.]

13 June [DIE 13 JUNIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	57° 34¾′
by the revolving quadrant [per Volub.]	57° 34′
Declination of the Sun by the larger armillae [Declin. ⊙ per Armillas mai.]	23° 29⅔′
	23° 29¾′

Rather trust the steel instrument. It was very clear. [*Crede potius chalybeo.* Erat bene ſerenum.]

14 June [DIE 14 JUNIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	57° 34⅙′
by the revolving quadrant [per Volub.]	57° 34′ [57. 34]
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	23° 28¾′
	23° 29′

The revolving quadrant had been corrected exactly [ad amußim] a little before. The clock was running 11½^{m} [M. 11½] slower than it should. It was moderately clear, but not enough, since the air had been made denser by earthly vapours raised by the heat of the Sun. [Volubilis paulo ante ad amußim correctus eſt. Horologium M. 11½ tardius iuſto mouebatur. Fuit mediocriter ſerenum ſed non ſatis, aëre ex vaporibus terreſtribus ſolis feruore eleuatis denſiore facto.]

18 June [DIE 18 JUNIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	57° 26⅓′
by the revolving quadrant [per Volub.]	57° 26′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	23° 21¼′
	23° 20¾′

The sky was moderately clear. [Erat mediocriter ſerenum.]

3 July [DIE 3 JULIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]

by the steel instrument [per Chalyb.]	55° 59⅚′
by the revolving quadrant [per Volub.]	56° 0⅙′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	21° 55′
	21° 54½′

It was very clear. [Fuit bene ſerenum.]

20 August [DIE 20 AUGUSTI.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	43° 7⅔′
by the revolving quadrant [per Volub.]	43° 7′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	9° 2′ north [B.]
	9° 2½′

It was not clear enough. [Non fuit ſatis ſerenum.]

24 August [*DIE 24 AUGUSTI.*]

Observations of the Sun, as much for its own sake as for Mars [♂]. It was very clear and calm. [*Obſeruationes ⊙ tam propter ſe quam ♂. Erat bene ſerenum & tranquillum.*]

At 11^h 52^m the declination of the Sun was [*H. 11 52 fuit declinatio ⊙*]	*7° 34′*
	7° 34⅓′
At 11^h 57^m the repeated declination [*11 57 repetita decli-*]	*7° 34⅙′*
of the Sun [*natio ⊙*]	*7° 34⅓′*
Meridian altitude of the Sun [*Alt. ⊙ Merid.*], *with one* [*vno*]	*41° 40⅓′*
by the mural quadrant [*per Mural.*], *with the other* [*altero*]	*41° 40⅛′*
by the steel instrument [*per Chalyb.*]	*41° 40′*
by the revolving quadrant [*per Volub.*]	*41° 39⅓′*
At 12^h 3^m, declination of the Sun with both pinnules [*H. 12 3 Decl. ⊙ vtroque pinn.*]	*7° 34′*

13 September [DIE 13 SEPTEMBRIS.]

Very close to the autumnal equinox. [Proxime circa æquinoctium autumnale.]

Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	0° 5½′ south [M]
larger subterranean [mai. ſubterr.]	0° 5⅔′

When the Sun was on the equator 1° 24′ east of the meridian [ad ortum a merid.], and it was moderately clear. [cum ⊙ eßet in æquatore ad ortum a merid. 1° 24′, & eßet mediocriter ſerenum. Repetita]

Repeated [Repetita]	0° 5⅔′
	0° 6′ south [M]

When the Sun was on the equator 3° 0′ west [occidentalis]. At noon it was not clear. [cum ⊙ eßet in æquatore 3° 0′ occidentalis. In meridie non fuit ſerenum.]

1 October[1] [DIE 1 OCTOBRIS[1].]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	26° 17′
by the revolving quadrant [per Volub.]	26° 16⅔′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	7° 50′
	7° 49⅓′

It was moderately clear. [Fuit mediocriter ſerenum.]

26 November [DIE 26 NOUEMBRIS.]

Since it was exceptionally clear and calm. [cum eßet apprime ſerenum atque tranquillum.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the mural quadrant [per Muralem]	11° 34⅚′
by the steel instrument [per Chalyb.]	11° 35′
by the revolving quadrant [per Volub.]	11° 35¼′

[1] Written in afterwards: "Note well: the Sun's meridian declination 7° 49⅓′, and by the parallax 7° 47′, requires a place of the Sun of about 19° 52′ ♎ [19.52 circiter ♎], such as it was on the third day of October." [Poſtea adſcriptum eſt: »Nota bene, declinatio ⊙ Meridiana 7 49⅓ & per parallaxin 7 47 requirit locum Solis 19.52 circiter ♎, qualis fuit die tertia Octobris«.]

Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	22° 31′
	22° 31⅔′
Place of the Sun from our restoration [*Locus Solis ex noſtra reſtitutione*]	*14° 22′ ♐*
Declination of the Sun [*Declinatio ⊙*]	*22° 36⅓′*
Altitude of the equator [*Altitudo æquatoris*]	*34° 5½′*
True altitude of the Sun [*Vera altitudo ⊙*]	*11° 29′*
Parallax, subtracted [*Parallaxis ſubt.*]	*3*
Altitude by the parallax [*Altitudo per parallaxin*]	*11° 26′*

observed [*obſeruata*]	*11° 35′*
Refraction [*Refractio*]	*0 9*

which agrees with our table. [*quod reſpondet Tabellæ noſtræ.*]

4 December [DIE 4 DECEMBRIS.]

Meridian altitude of the Sun by the mural quadrant [Alt. ⊙ Merid. per Mural.]	10° 57¼′
by the steel instrument [per Chalyb.]	10° 57′
by the revolving quadrant [per Volub.]	10° 56¾′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	23° 9½′
	23° 10′

It was very clear and calm. [Erat bene ſerenum & tranquillum.]

30 December [DIE 30 DECEMBRIS.]

Meridian altitude of the Sun by the steel instrument [Alt. ⊙ Merid. per Chalyb.]	12° 1⅚′
by the revolving quadrant [per Volub.]	12° 1½′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	22° 5½′
	22° 5′

It was not clear enough. [Non fuit ſatis ſerenum.]

Observations of the Moon [OBSERUATIONES LUNÆ.]

15 March [DIE 15 MARTIJ.]

For correcting the clock for the following observations: on the preceding day the clock was corrected at noon. In the morning, a little before the following observations were taken, the clock was corrected by the bright star of the Vulture [ſtellam Vulturis Lucidam], which was then 38° 55′ east of the meridian on the equator [in æquatore a Meridie ad ortum], while the clock showed 3^h 44^m [H. 3 M. 44]. At that same moment it was advanced 54^m [54 M.] for the sake of the correction, so that it then showed 4^h 38^m [H. 4 M. 38], and that only roughly [lato modo]. Hence correct the clock more precisely. [Pro horologio ad ſequentes obſeruationes corrigendo: Die præcedente in Meridie horologium corrigebatur. Mane, paulo ante ſequentes obſeruationes acceptas, corrigebatur horologium ad ſtellam Vulturis Lucidam, quæ tum in æquatore a Meridie ad ortum abfuit 38° 55′, horologium autem indicabat H. 3 M. 44, quod eodem momento corrigendi gratia promotum eſt 54 M., ita vt tum demonſtraret H. 4 M. 38, idque lato modo. Hinc præciſius corrige horologium.]

Afterwards the Moon [☾] was observed close to its last quadrature and its apogee, so that a proper test of both the mean motions and the parallaxes can be made from it, provided the observations have turned out reliable and good enough. Add that it was not far from the winter tropic, which also contributes something to investigating parallaxes and refractions. While these were being observed, the Moon was approaching the meridian and the 90th [90mo] degree of the ecliptic from the east, which by the calculation it would reach at $5^h\ 52^m$ [H. 5 M. 52]. [Poſtea obſeruabatur ☾ proxima vltimæ quadraturæ & apogæo ſua, vnde tam mediorum motuum quam parallaxium rite examen inſtitui poterit, modo obſeruationes ſatis ratæ ac bonæ exſtiterint; adde quod non longe a tropico hyberno abfuit, quod parallaxibus & refractionibus indagandis nonnihil etiam confert. Cum autem hæc obſeruarentur, appropinquabat Luna Meridiano ac 90mo ab oriente Eclipticæ gradu, quo perueniret iuxta calculum H. 5 M. 52.]

Time [H. M.]	Distance of Jupiter [♃] from the eastern limb of the Moon [Diſt. ♃ ab orient. limbo ☾]	Declination of the upper/lower horn of the Moon [Declin. ſup./inf. cornu ☾]	Altitude of the upper horn [Altit. cornu ſup.]
$5^h\ 2⅓^m$	12° 57⅓′	25° 57½′	6° 52⅚′
$5^h\ 4^m$ corrected [corr.]		26° 27⅔′	

Time [H. M.]	Distance of Jupiter from the eastern limb of the Moon [Diſt. ♃ ab orient. limbo ☾]	Declination of the upper/lower horn of the Moon [Declin. ſup./inf. cornu ☾]	Altitude of the upper horn [Altit. cornu ſup.]
$5^h\ 8⅔^m$	12° 53½′	25° 58′	
$5^h\ 10½^m$ corrected [corr.]		26° 27½′	

$5^h\ 11^m$ [5 11]	Azimuth of the eastern limb [Azim. orient. limbi]	13° 24′
	Altitude of the lower horn [Altit. infer. cornu]	6° 38¼′

precisely, by the revolving quadrant [per Volub.]; the upper horn was in cloud. [præciſe per Volub.; ſuperius cornu erat in nube.]

In these distances Jupiter was a little higher above the horizon than the Moon, but not so much that there was any room for working these refractions in. These were likewise observed with the sky moderately clear in that place, though elsewhere full of clouds on every side, which afterwards took the appearances [Greek: φαινόμενα (phainomena, "appearances")] of both Jupiter and the Moon from sight, so that we could not continue the observations further. [In his diſtantijs fuit ♃ paulo eleuatior ab horizonte quam ☾, ſed non tantum, vt refractionibus hiſce inſinuandis locus aliquis daretur. Obſeruata item

ſunt hæc cœlo in eo loco mediocriter ſereno, licet alibi vndique nubibus referto, quæ poſtea quominus vlterius obſeruationes continuaremus tam ♃ quam ☾ φαινόμενα viſui exemerunt.]

Examination of the found place of the Moon for 15 March, taking as the basis a more correct right ascension of Jupiter, which was found in this way according to the nearest preceding observations from cor ♏ [a corde ♏]. [Examinatio inuenti loci ☾ ad diem 15 Martij ex ♃ correctiori Aſcenſione Recta ſuppoſita, quæ iuxtæ proximas præcedentes obſeruationes a corde ♏ hoc modo reperta eſt.]

On the 17th, at 4^h 55^m in the morning [Die 17, H. 4 M. 55 Mane]

Distance of Jupiter from cor ♏ [Diſtantia ♃ a corde ♏]	45° 29′
Observed declination of Jupiter [Declinatio ♃ obſeruata]	21° 59½′
Refraction at an altitude of 8° [Refractio in altitud. 8 grad.]	0 6½
True declination of Jupiter, south [Vera declinatio ♃ M.]	22° 6′
Right ascension of cor ♏ [Aſcenſio Recta cordis ♏]	241° 11⅔′
Declination of the same, south [Declinatio eiuſdem M.]	25° 25′
Therefore the true right ascension of Jupiter [Ergo Aſcenſ. Recta ♃ vera]	291° 2⅖′
Resp. longitude [Reſp. Longitudo]	19° 26′ ♐
latitude [Latitudo]	0° 0¾′ north [B.]

	From the Prutenic tables [E. tabulis Pruten.]	Alphonsine calculation [Calc. Alphons.]
Longitude [Longitudo]	19° 18′ ♐	18° 39′ ♐
Latitude [Latitudo]	0° 27′ north [B.]	0° 10′ north [B.]

When the right ascension of Jupiter [♃] is reduced to the moment at which the Moon was observed from it in the morning three days before [triduo], and that by the daily motion, which in Copernicus is 8′ [M. 8], the same comes out as 290° 44′ 0″. And so the restored right ascension of the Moon [☾] observed is 277° 3′ 40″. The longitude of the Moon from this is 6° 21′ 46″ ♐. But when both the refractions and the parallaxes are eliminated, the true longitude of the Moon observed on 15 March at 5^h 10^m [H. 5 M. 10] in the morning comes out as 6° 18½′ ♐. From the Prutenic tables, however, corrected by the usual emendation of the mean motions, the true place of the Moon corresponding to this time is 6° 38′ 0″ ♐. Difference 19½′ [M. 19½]. [Reducta autem Aſcenſione Recta ♃ ad momentum, quo Luna triduo mane ab eodem obſeruata eſt, idque per motum diurnum qui Copernico eſt M. 8, prouenit eadem 290° 44′ 0″. Ideoque ☾ Aſcenſio Recta reſtituta 277° 3′ 40″ obſeruata. Longitudo ☾ hinc 6° 21′ 46″ ♐. Verum eliminatis tam refractionibus quam parallaxibus prouenit vera Longitudo ☾ obſeruata die 15 Martij H. 5 M. 10 mane 6 18½ ♐. Ex tabulis autem Prutenicis correctis, vſitata emendatione medijs motibus ad hoc tempus reſpondet verus locus ☾ 6° 38′ 0″ ♐. Differentia M. 19½.]

24 August [DIE 24 AUGUSTI.]

Observation of the Moon when it had passed the meridian by a very little. [Obſeruatio ☾ paululum Meridianum prætergreßæ.]

Time [H. M.]	Altitude of the lower limb [Altit. inf. limbi]	Azimuth of the western limb [Azim. limb. occ.]	Declination of the horn [Declin. cornu]: upper [ſup.]	lower [inf.]
$6^h\ 57\frac{1}{2}^m$	8° 5′	3° 45′	25° 29½′	25° 59⅓′
$7^h\ 9^m$	7° 58′	5° 58′	25° 29′	26° 0⅙′

8 September [DIE 8 SEPTEMBRIS.]

Observation of the Moon a little after its last quadrature [vltimam □], near the Tropic of Cancer, when it was not far from the meridian and the 90th degree [90 grad.], at $5^h\ 50^m$ [H. 5 M. 50] according to the computations. [Obſeruatio ☾ paulo poſt vltimam □ circa Tropicum Cancri, cum non longe abeßet a meridiano & 90 grad. H. 5 M. 50 iuxta ſupputationes.]

N.B. These observations are useful both for the parallax of the Moon near the perigee and for learning and more fully examining the remaining appearances [Greek: φαινομένα (phainomena, "appearances")]. [N. B. Conducunt hæ obſeruationes tum pro ☾ parallaxi iuxta Perigæum tum φαινομένα reliqua cognoſcenda & plenius examinanda.]

Time [H. M.]	Distance of the Moon from Venus [Diſt. ☾ a ♀]	Declination of the horn [Decl. cornu]: upper [ſup.]	lower [infer.]	Venus east [♀ orient.]
$5^h\ 10\frac{1}{3}^m$	43° 34⅔′		24° 41½′	56 15
$5^h\ 17\frac{1}{2}^m$	43° 36′			55 35

Time [H. M.]	Distance of the Moon from Venus [Diſt. ☾ a ♀]	Declination of the horn [Decl. cornu]: upper [ſup.]	lower [infer.]	Venus east [♀ orient.]	
$5^h\ 21^m$	43° 33⅚′				
$5^h\ 24\frac{1}{6}^m$	43° 32′ good [bona]			54 14	
$5^h\ 26\frac{1}{3}^m$	43° 30⅚′			53 40	
$5^h\ 30\frac{1}{6}^m$	43° 29′			52 44	
$5^h\ 33^m$ corrected [corr.]					
$5^h\ 34\frac{1}{2}^m$		25° 17⅔′	24° 44¼′		
$5^h\ 40\frac{2}{3}^m$	43° 26′				
$5^h\ 42\frac{1}{6}^m$	43° 25⅔′				here the Moon was in the 90° [hic fuit ☾ in 90°]
$5^h\ 44\frac{2}{3}^m$	43° 24⅔′				as far as sight goes. [quantum ad viſum.]

Time [H. M.]	Distance of the Moon from Venus [Diſt. ☾ a ♀]	Declination of the horn [Decl. cornu]: upper [ſup.]	lower [in-fer.]	Venus east [♀ orient.]
5^h $50^{2}/_{3}{}^m$ corrected [corr.]				

5^h $54½^m$: transit of the eastern limb of the Moon through the meridian; it had [5 54½ Tranſitus orient. limbi ☾ per Merid., habuit]

	by the steel instrument [per Chalyb.]	by the revolving quadrant [per Volub.]
altitude of the upper horn [ſup. cornu altit.]	59° 20½′	59° 21½′
lower horn [infer. cornu]	58° 52′	58° 51¼′

Around the transit, however, the Moon was entangled in some clouds, but these were not so dense that it was not sufficiently open to observation. [Implicata autem fuit ☾ circa tranſitum nubibus quibuſdam, ſed non ita denſis quin obſeruationi ſatis patuerit.]

(Set the distance of the eastern limb of the Moon from Venus at $5^{5}/_{6}{}^h$ [H. 5⅚], when the Moon was in the 90th degree [90 g.], as 43° 24½′. [(Pone diſtantiam orientalis limbi ☾ a ♀ H. 5⅚, cum ☾ eßet in 90 g., 43 24½.]

N.B. Although the diameter of the Moon in the steel instrument seems smaller according to the observations, yet for the altitude of the centre it agrees with the revolving quadrant.)[1] [N. B. Diameter ☾ in Chalybeo etſi minor iuxta obſeruata videatur, tamen pro altitudine centri conuenit cum Volubili)[1].]

For the place of the Moon from the preceding observations.[1] [Pro loco ☾ ex antecedentibus obſeruationibus[1].]

At 5^h 50^m, distance of the eastern limb of the Moon from Venus [H. 5 M. 50 Diſt. ☾ orient. limb. a ♀]	43° 24½′
Semidiameter of the Moon [Semidiameter ☾]	0° 15½′
Therefore the distance of the centre of the Moon from Venus [Ergo diſtantia centri ☾ a ♀]	43° 40′
Declination of the centre of the Moon [Declinatio centri ☾]	25° 0½′ north [B.]
Observed declination of Venus [Declinatio ♀ obſeruata]	17° 7½′ north [B.]
Right ascension of Venus [Aſcenſio Recta ♀]	131° 24¼′
Angular difference of ascension [Angulus differ. aſcenſ.]	45° 30¾′
Therefore the right ascension of the Moon [Ergo Aſcenſio R. ☾]	85° 53½′
Resp. longitude [Reſp. Longitudo]	26° 16½′ ♊
latitude [Latitudo]	1° 32⅙′ north [B.]

Arc of inclination [Arcus inclinat.]	added [add.] 5′ 15″
Therefore the true longitude in its own circle [Ergo vera longit. in proprio circulo]	26° 21¾′ ♊

[1] From codex K. [E codice K.]

Observations of Saturn [OBSERUATIONES SATURNI.]

7 January, in the evening [DIE 7 JANUARIJ, VESPERI.]

Observation of Saturn [♄] a little after its opposition [☍] with the Sun [☉]. [Obſeruatio ♄ paulo poſt ☍ cum ☉.]

Time [H. M.]	Distance of Saturn from the bright shoulder of Orion [Diſt. ♄ a luc. hum. Or.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Equatorial distance of the Lesser Dog, east [Diſt. æq. Can. min. or.]
$8^h\ 37\frac{2}{3}^m$	33° 55′ approximately, among clouds [fere, inter nubes]	21° 41⅔′	43° 11′	
$8^h\ 49\frac{5}{6}^m$	33° 54½′	21° 41¼′ 21° 41⅚′	44° 38½′	34° 50′

During the following observations it was clear enough, though the Moon was shining out rather brightly with its rays; this, however, took nothing away from the precision. Transit of the Lesser Dog through the meridian at $11^h\ 17\frac{3}{5}^m$ [H. 11 17⅗′] by computation. [Erat in ſequentibus obſeruationibus ſatis ſerenum, ☾ ſaltem radijs clarius emicante, quod tamen nihil præciſioni derogabat. Tranſitus Canis min. per Merid. H. 11 17⅗′ per ſupput.]

Time [H. M.]	Distance of Saturn from the bright shoulder of Orion [Diſt. ♄ a luc. hum. Or.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Equatorial distance of the Lesser Dog, east [Diſt. æq. Can. min. or.]
$8^h\ 59\frac{1}{3}^m$	33° 55′ precisely [præciſe]	21° 41⅚′ 21° 41⅓′	45° 37′	

Vice versa, from cor ♌. [Viceverſa a corde ♌.]

Time [H. M.]	Distance of Saturn from the bright shoulder of Orion [Diſt. ♄ a luc. hum. Or.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Equatorial distance of the Lesser Dog, east [Diſt. æq. Can. min. or.]
$9^h\ 9\frac{1}{3}^m$	30° 57′			29° 42′
$9^h\ 18\frac{5}{6}^m$ corrected [corr.]				
$9^h\ 17\frac{1}{6}^m$	30° 57⅔′	21° 42′	altitude of cor ♌ [Altit. cord. ♌]	

Time [H. M.]	Distance of Saturn from the bright shoulder of Orion [Diſt. ♄ a luc. hum. Or.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Equatorial distance of the Lesser Dog, east [Diſt. æq. Can. min. or.]
		21° 41½′	25° 27′	
9^h $24½^m$	30° 57⅚′		altitude of Saturn [Alt. ♄]	25° 56′
9^h $33⅚^m$ corrected [corr.]			48° 33′	
9^h $29⅔^m$	30° 57¾′	21° 41½′		
	distance of Saturn from Aldebaran [Diſt. ♄ ab Aldeb.]	21° 41⅔′		
10^h $47½^m$	49° 21⅔′			
10^h 57^m corrected [corr.]				
10^h $54⅔^m$	49° 21½′			2° 54′
11^h 2^m	49° 21½′			
11^h $12⅙^m$ corrected [corr.]				
11^h 28^m	Saturn passed through the meridian, having [Tranſijt ♄ per Merid. habens]			
11^h 38^m corrected [corr.]			altitude by the steel instrument [Altit. per Chal.] 55° 45⅙′	
			by the revolving quadrant [per Vol.] 55° 45′	
		declination [Declin.]		the Lesser Dog, west [Can. min. occ.]
		21° 41⅓′		
		21° 40½′		5° 36′

Afterwards the sky was again covered over with thinner clouds. [Poſtea obducebatur cœlum iterum rarioribus nubibus.]

Let its distance for $10⅓^h$ [ad horam 10⅓] be set, but first verified: [*Ponatur eius diſtantia ad horam 10⅓ ſed prius verificatam*]

from cor ♌ [*a corde ♌*]	*30° 58′*
from Aldebaran [*ab Aldeboram*]	*49° 21⅔′*
Declination [*Declinatio*]	*21° 40′ north [Bor.]*

From this let its place be sought and, with the earlier one applied, let the time of the opposition with the mean place of the Sun be found, as usual. [*Hinc inquiratur ipſius locus & adhibito priore inueniatur tempus ☍ cum medio loco Solis vt ſolet.*]

Calculation for the place of Saturn from the preceding observations [Calculus pro loco ♄ ex antecedentibus obſeruationibus]

9^h 34^m [H. 9 34′]	Distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	30° 58′ 0″
	Angular difference of ascension [Ang. diff. aſcenſ.]	31° 33′ 40″
	Therefore the right ascension of Saturn from cor ♌ [Ergo Aſc. recta ♄ a corde ♌]	115° 5′ 40″
10^h 57^m [10 57]	Distance of Saturn from the eye of ♉ [Diſt. ♄ ab oculo ♉]	49° 21⅔′
	Hence the angular difference of ascension [Hinc angulus diff. aſcenſionalis]	51° 55′ 55″
	Therefore the right ascension from Aldebaran [Ergo Aſc. recta ab Aldeb.]	115° 5′ 20″

Let the limited right ascension of Saturn therefore be set, for $10\frac{1}{3}^h$ [Ponatur itaque Aſcenſio recta ♄ limitata hora 10⅓]	115° 5⅓′
Declination [Declinatio]	21° 40′
Resp. longitude [Reſp. Longitudo]	23° 12⅔′ ♋
latitude [Latitudo]	0° 8′ 0″ north [B.]

It is inferred, however, both from the place of Saturn for 29 December of the preceding year, found there from the observations, and from its place for the present 7th day of January, computed in the same way from most certain observations, that its true opposition with the mean place of the Sun was in 23° 32½′ ♋ on 3 January at 17^h 4^m after noon [hora 17 4′ pomeridiana]. Further, the daily motion of Saturn, gathered over the interval between these observations and distributed proportionally over the single days, comes out as 5′ [5 Minut.] very nearly. [Colligitur vero tam ex loco ♄ ad diem 29 Decembris anni præcedentis ex obſeruationibus ibidem inquiſito quam ex loco eius ad præſentem 7 diem Januarij, eodem modo e certiſſimis obſeruationibus ſupputato, fuiſſe eius veram oppoſitionem cum medio loco ☉ in 23° 32½′ ♋ die 3 Januarij hora 17 4′ pomeridiana. Porro motus ♄ diurnus inter harum obſeruationum interſtitium collectus et per ſingulos dies proportionali modo diſtributus prodit 5 Minut. quam proxime.]

8 January [DIE 8 JANUARIJ.]

Saturn was observed in this way. Around the beginning of these observations Saturn was in a straight line with both heads of ♊ [vtroque capite ♊], or a little before, namely at $8\frac{1}{2}^h$ [H. 8½], as was observed exactly by a wooden ruler. [Obſeruabatur ♄ in hunc modum. Fuit autem circa initium harum obſeruationum ♄ in recta linea cum vtroque capite ♊ vel paulo antea, ſcilicet H. 8½, quemadmodum per regulam ligneam ad amußim obſeruatus eſt.]

To find the latitude, Saturn [♄$^{nu^s}$] was observed first from the lower head of ♊ [infer. cap. ♊]. [Pro inquirenda latitudine obſeruabatur primum ab infer. cap. ♊ ♄$^{nu^s}$.]

Time [H·M.]	Distance [Diſt.]	Declination of Saturn [Declin. ♄]	Altitude of Saturn [Alt. ♄]	The Lesser Dog, east [Can. min. or.]
9^h 34½^m	8° 31′			
9^h 37⅔^m	8° 31½′			
set [*pone*]	*8° 31⅓′*			
9^h 40⅔^m	8° 31⅓′	21° 42′ 21° 41⅚′	49° 45′	23 4

Further, the distance of Saturn from Aldebaran, as follows. [Porro diſt. ♄ ab Aldeboram vt ſequitur.]

Time [H·M.]	Distance [Diſt.]	Declination of Saturn [Declin. ♄]	Altitude of Saturn [Alt. ♄]	The Lesser Dog, east [Can. min. or.]
9^h 53⅓^m	49° 18′			
set here [*pone hic*]	*49° 17⅚′*			
9^h 56⅔^m	49° 17⅚′			
10^h 1⅙^m	49° 17¾′	21° 42′ 21° 42′	51° 40′	
10^h 11½^m	49° 17′ among clouds [inter nubes]			15 10

Let the place of Saturn be sought from the last observations, using at least its distance from each of the two stars together with their longitude and latitude. This is for greater confirmation of the latitude to be sought, which the Prutenic Tables give far too erroneously, departing by more than a whole degree from the appearances; the Alphonsine ones, by contrast, agree very nearly, but have the longitude quite false. [Inquiratur locus ♄ ex vltimis obſeruationibus, adhibita ſaltem eius ab vtraque ſtella diſtantia vna cum earundem longitudine & latitudine: pro maiori confirmatione latitudinis inquirendæ, quam Tabulæ Prutenicæ nimis erroneam ponunt, aberrando plus integro gradu ab apparentijs; Alphonſinæ vero quam proxime conſentiunt, ſed longitudinem falſam admodum habent.]

A more exact investigation of the motion of Saturn around its opposition with the Sun [☉], one appearance of Saturn being taken for 9 January from its distances alone from the fixed stars named below, by working out the triangles. [Exquiſitior inueſtigatio motus ♄ circa oppoſitionem ☉, aßumpta vna ad diem 9 Januarij ♄ ex ſolis diſtantijs a poſtnominatis fixis per triangulorum ſubductionem apparentia.]

Diagram. A tall, pointed spherical figure set at the left of the left column, beside the paragraph "Sit in hac figuratione …". Three arcs descend from A at

the top: the left-hand arc runs down to D at the lower left; a middle arc runs down through B and continues a little below it; the right-hand arc runs down to C and a little below it. Two lines run from D up to the right, one to B and one to C, and a short line joins B and C. A nearly horizontal line crosses the lower part of the figure from the left-hand arc to the foot of the right-hand arc, below B and C. Four letters are printed; no other labels.

- A (top, at the meeting of the three arcs): A
- B (on the middle arc, lower part, to the left of C): B
- C (at the right, on the right-hand arc): C
- D (lower left, at the foot of the left-hand arc): D

In this figure let A be the pole of the ecliptic, B the lower head of ♊, C Saturn [♄$^{nu^s}$], D Aldebaran. [Sit in hac figuratione A polus Eclipticæ, B inferius caput ♊, C ♄$^{nu^s}$, D Aldeboran.]

Longitude of Aldebaran [Aldeb. longit.]	4° 6′ ♊
latitude [latit.]	5° 31′ south [M.]
Longitude of the lower head [Inf. cap. long.]	17° 36½′ ♋
latitude [lat.]	6° 38′ north [B.]

In the triangle DAB [In triangulo DAB]		was found from observation [ex obſeruatione inuenta eſt]	
BA	83 22		45 5 0
DA	95 31	BDC	10 7 9
DAB	43 30½	DC	49 17 50
DB	45 5½, which [quæ]	BC	8 31 20

In the triangle ADB [In triangulo ADB]

	DA	95 31	
	DB	45 5½	
	BA	83 22	
Therefore [Ergo]	ADB	74 55 23	
and [et]	ADC	85 2 32	
Hence [Hinc]	CA	89° 51′ 23″	complement of the latitude of Saturn [latit. ♄ compl.]
and [et]	DAC	49° 2′ 56″	difference of longitude of Saturn [Diff. longit. ♄]

Therefore at 10^h on 8 January [Ergo hora 10 diej 8 Januarij]

Longitude of Saturn [♄ Longitudo]	23° 8′ 56″ ♋
Latitude [Latitudo]	0° 8′ 37″ north [B.]

When this place of Saturn is compared with the one immediately preceding, and also with the one that was found before the opposition [☍], it is gathered that Saturn, around the time of its opposition with the mean motion of the Sun, was in 23° 32½′ ♋, with northern latitude 0° 8½′. This is reconciled quite precisely with the other acronychal appearances of Saturn, according to the general correction of its motions. [Collato hoc ♄ loco cum præcedente proxime, item cum eo qui ante ☍ inuentus fuit, colligitur ♄ circa tempus oppoſitionis cum medio motu ☉ fuiße in 23° 32½′ ♋, cum latitudine borea 0° 8½′. Quod cæteris Acronychijs apparentijs ♄ ſatis præciſe iuxta generalem motuum eius emendationem reconciliatur.]

But[1] on 29 December of the preceding year, around midnight, the place of Saturn, well limited from the preceding observations, could be in [At[1] die 29 Decembris anni præcedentis, circa mediam noctem, locus ♄ ex antecedentibus bene limitatus eße poterit in]

	23° 58′ ♋
On 8 January in [Die 8 Januarij in]	23 9
Interval of 10 days [Dierum 10 interuallum]	0 49

Therefore on 3 January at 17^h after noon [H. 17 a meridie], when the opposition [☍] with the mean motion of the Sun occurred, which fell in the middle of these, though nearer to the 8th day by about 5 hours, there will correspond 23′ 30″ to be added to the place of 8 January. For 5 days make half of 49′, that is 24′ 30″; but the 5 hours take away about 1 small minute, so that at least 23′ 30″ are to be added. Therefore the longitude of Saturn at the time of opposition with the Sun comes out [Ergo die 3 Januarij H. 17 a meridie, quando ☍ medio motu ☉, quæ erat in medio horum, propius tamen diej 8, quaſi 5 horis, competent 23′ 30″ addenda ad locum 8 Januarij, nam 5 dies faciunt medium de 49′, id eſt 24′ 30″, ſed horæ 5 auferunt quaſi 1 minutulum, vt ſint ſaltem 23′ 30″ addenda; ergo prouenit longitudo ♄ tempore oppoſitionis cum ☉]

	23° 32½′ ♋
The verified calculation gives [Calculus verificatus dat]	23 33⅙
Difference [Differentia]	40″

But it may be that the rather large difference in days brought in some discrepancy. Since, however, the daily motion over ten days in fact amounts to

at least 50′, let 1′ be added to the 29th day, because its motion is more doubtful than that of the other day; and so we shall make up the motion of Saturn at that time as 23° 59′ ♋. [Sed fieri poteſt quod maiuſcula differentia dierum aliquid diſcriminis attulerit. Quia vero competit diebus decem motus diurnus reuera 50′ ad minimum, addatur ad diem 29 1′, quia eius motus eſt magis dubius quam alterius diej, ſicque conflabimus motum ♄ tunc temporis 23° 59′ ♋.]

6 May [DIE 6 MAIJ]

We observed Saturn in this way. [obſeruauimus ♄ in hunc modum.]

Time [H. M.]	Distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	Spica, at the setting [Spica ad occaſ.]
10^h $13½^m$	31° 27′	21° 54′ with both [vtroque]	14½	
10^h 32^m	31° 26′			
10^h 36^m		21° 54½′	15° 0′	14 7
		21° 55′		

The sky was quite clear this evening, but the north wind blew with some force, which made the air rather more turbulent. There were also chasmata around the northern horizon. [Fuit hac veſpera ſatis ſerenum, ſed venti Aquilonis nonnulla vehementia, quæ aërem aliquanto turbulentiorem reddidit. Fuerunt & chaſmata circa horizontem ſeptrionalem.]

[1] What follows is from codex K alone. [Quæ ſequuntur, e codice K. ſolo.]

15 May [*DIE 15 MAIJ*]

Saturn was observed in this way. [*obſeruabatur* ♄ *in hunc modum.*]

Time [*H. M.*]	*Distance of Saturn from Capella* [*Dist.* ♄ *a Capella*]	*Declination of Saturn* [*Decl.* ♄]	*Altitude of Saturn* [*Altit.* ♄]	*Spica* ♍, *west* [*Spica* ♍ *occid.*]
10^h 7^m	42° 46¾′	21° 47¼′	12° 30′	19 0
10^h 13^m	42° 46⅝′	21° 47½′	12° 0′	20 36
	distance of Saturn from cor ♌ [*Diſt.* ♄ *a corde* ♌]			
10^h 19^m	30° 35′	21° 47¾′	11° 0′	22 3
	doubtful [*dubia*]			
10^h $26½^m$	30° 33′		10° 30′	23 56
10^h 30^m	30° 32½′	21° 48½′	9° 50′	
		21° 49′		
10^h 36^m	30° 31¾′		9° 10′	26 14
	distance of Saturn from the lower head of ♊ [*Diſt.* ♄ *ab infer. cap.* ♊]			
10^h 42^m	8° 41′	21° 49⅔′	8° 30′	27 43

Time [*H. M.*]	*Distance of Saturn from Capella* [*Dist.* ♄ *a Capella*]	*Declination of Saturn* [*Decl.* ♄]	*Altitude of Saturn* [*Altit.* ♄]	*Spica* ♍, *west* [*Spica* ♍ *occid.*]
10h 47m	*8° 41⅓′*		*7° 50′*	*the northern scale-pan of* ♎, *west* [*Bor. lanx.* ♎ *occid.*]
10h 50m	*8° 41½′*		*7° 30′*	*2 0*
10h 55m	*8° 41¼′*		*7° 0′*	*3 23*
10h 58m	*8° 40½′*	*21° 52′*	*6° 40′*	*4 0*

These observations of Saturn were made when it was approaching the Sun on its way to heliacal setting, so that I might become more certain especially of its latitude, since it was near the apogee of the epicycle (as the hypotheses of the ancients have it). [*Hæ obſeruationes in* ♄ *factæ ſunt cum appropinquaret Soli tendens ad occaſum heliacum, vt de ipſius latitudine præſertim certior fierem, cum eßet circa Epicycli apogæum (vt ferunt veterum hypotheſes).*]

Refraction, however, must be guarded against, though in the distance from the lower head of ♊ *it does little. Use there the distance 8° 41½′* [*8*☿ *41½′*] *without sensible error.* [*Cauenda eſt autem refractio, quæ tamen in diſtantia ab inferiori capite* ♊ *parum facit. Vtere illic diſtantia 8*☿ *41½′ abſque ſenſibili errore.*]

1 September, in the morning [DIE 1 SEPTEMBRIS, MANE.]

5 3½	Distance of Saturn from the Lesser Dog [Diſt. ♄ a Cane min.]	23° 8′
	among clouds. Altitude of Saturn [inter nubes. Altit. ♄]	25° 34′

8 September, in the morning [DIE 8 SEPTEMBRIS, MANE.]

Time [H. M.]	Distance of Saturn from the Lesser Dog [Diſt. ♄ a Cane min.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	The right shoulder of Orion [Dext. hum. Orionis]
4h 0m	23° 39⅙′	19° 0′		23 42
		19° 0½′		
4h 16m	40ſ3° 39′		27° 45′	
	distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	vice versa [Vice Verſa]		
4h 21m	50ſ0° 40¾′			20 14
4h 24m	20° 40⅓′			
4h 26m	20° 40⅔′	19° 0′ with one [vno]		19 5

N.B. These observations serve above all for finding the latitude of Saturn; it will be possible to work them out by calculation, by drawing triangles from the two fixed stars from which Saturn is found to have been observed. With them it formed an almost equilateral triangle, such that the Lesser Dog bounded the

western part of the base of this triangle, and the lower head took the place of the acute angle towards the zenith, in this way: [N. B. Faciunt hæ obſeruationes imprimis pro latitudine ♄ inquirenda, quas calculo per triangulorum inductiones ex binis fixis a quibus obſeruatus reperitur ſubducere licebit. Conſtituit autem fere triangulum æquilaterum cum illis, ita vt Canis minor occidentalem partem baſis huiusmodi trianguli terminaret & caput inferius anguli oxygonij vicem zenit verſus gereret hoc modo.]

Diagram. A star-position sketch set in the right column below the paragraph ending "hoc modo.": four asterisks, each with a label to its right, with no lines drawn between them. One stands at the top, near the middle of the column; one below it to the left; one a little lower to the right; and one lowest, further to the left. Four labels are printed; no other marks.

- top: ✳ the lower head of ♊ [inf. cap. ♊]
- middle left: ✳ ♄
- middle right, a little lower: ✳ the Lesser Dog [Can. min.]
- bottom left: ✳ ♀

30 October [DIE 30 OCTOBRIS]

In the morning, near the meridian, Saturn was observed around its western square [□] with the Sun, in the following way. [Mane, iuxta meridianum obſeruabatur ♄ circa □ ☉ occiduum in ſequentem modum.]

Time [H. M.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination of Saturn [Decl. ♄]	Cor ♌, east [Cor ♌ or.]
$6^h\ 30½^m$	23° 56½′	18° 12′	
$6^h\ 37^m$	23° 56½′		6 18
$6^h\ 41^m$	23° 56¼′		5 15
	distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	vice versa [Vice Verſa]	
$6^h\ 47^m$	13° 23⅓′	18° 11⅓′	
		18° 11¼′	
$6^h\ 53^m$	13° 23⅔′		
$6^h\ 55½^m$	13° 23⅓′		2 4
$7^h\ 2^m$	cor ♌ was passing through the meridian, having an altitude [Tranſibat cor ♌ per merid. habens altit.]		
	by the steel instrument [per Chalyb.]		48° 0⅔′
	by the revolving quadrant [per Volub.]		48° 1′ 0″
	declination of cor ♌ by the [Declin. cordis ♌ per]		13° 55′
	armillae [armillas]		13° 55⅙′
$7^h\ 9^m$	declination of Saturn [Declin. ♄]	18° 11⅔′ with one [vno]	

From this you can correct the declination of Saturn observed by the armillae, by comparing these values that were observed in cor ♌ near the meridian. For Saturn had moved a little past the meridian when the observation began. [Hinc potes obſeruatam ♄ declinationem per armillas emendare, collatis hiſce quæ in

corde ☋ circa meridianum ſunt obſeruata. Erat enim ♄ paululum meridianum transvectus cum obſeruari inciperetur.]

Set the distance of Saturn from the lower one of ♊ [*Pone* ♄ *diſtantiam ab inf.* ♊]	*23° 56½′*
from Regulus [*a Regulo*]	*13° 23½′*
the declination [*declinationem*]	*18° 12′*

23 November [DIE 23 NOUEMBRIS.]

From 30 October up to this day it was not clear. [*A die 30 Octobris vsque in hunc diem non fuit ſerenum.*]

In the morning Saturn was observed near the meridian and around its western trine [△] with the Sun, *now retrograde, near the beginning.* [Mane obſeruabatur ♄ prope merid. & circa △ ☉ occid., *iam retrogradus iuxta initium.*]

Meridian altitude of Saturn [Altit. ♄ Merid.]	
by the steel instrument [per Chalyb.]	52° 19½′
by the revolving quadrant [per Volub.]	52° 19⅙′
Declination of Saturn by the armillae [Declin. ♄ per Armillas]	18° 15′
	18° 14½′

Time [H. M.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	The heart of Hydra, west [Cor Hydræ occid.]
$5^h\ 36^m$	23° 57½′	1 56
5^h [numeral: ?]1^m	23° 57⅚′	5 26
5^h 5[numeral: ?]$½^m$	23° $57\frac{11}{12}$′	
$6^h\ 0^m$	23° $57\frac{11}{12}$′	7 48
	distance of Saturn from cor ☋ [Diſt. ♄ a corde ☋]	vice versa [Vice Verſa]
$6^h\ 7⅔^m$	13° 19¾′	9 16
$6^h\ 19⅓^m$	13° 19⅝′	
$6^h\ 30^m$	13° 19¾′	
$6^h\ 41½^m$	13° 19⅔′	17 8

It was quite clear this morning, though a rather stronger west wind was blowing. [Erat hoc mane ſatis bene ſerenum, flante tamen occidentali vento paulo vehementiori.]

The clock verified by the equatorial distances of the fixed stars; for at the beginning of these observations we set it by conjecture and made it run. [Horologium ad diſtantias æquatorias fixarum verificato; per coniecturam enim ad initium obſeruationum harum direximus & moueri fecimus.]

27 November, in the morning [DIE 27 NOUEMBRIS, MANE.]

Time [H. M.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	The Lesser Dog, west [Can. min. occ.]
$7^h\ 4^m$	23° 50′	18° 16′	44⅓	57 49 Cor ♌, west [Cor ♌ occ.]
$7^h\ 14^m$	23° 50½′			22 37
	distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	vice versa [Vice Verſa]		
$7^h\ 19⅙^m$	13° 25⅙′			23 52
$7^h\ 24^m$	13° 24⅓′	18° 15¾′ 18° 16′		
$7^h\ 32¾^m$	13° 25′			26 50

This morning it was quite clear, and the condition of the air was calm. [Fuit hoc mane ſatis bene ſerenum, & tranquilla aëris conſtitutio.]

Set the declination of Saturn 18° 15′ on account of the observations made on the 23rd. [*Pone decl. ♄ 18 15 propter obſeruationes die 23 habitas.*]

10 December, in the evening [DIE 10 DECEMBRIS, VESPERI.]

Time [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	The Lesser Dog, west [Can. min. occ.]
$9^h\ 17^m\ 10^s$	23° 15⅓′	18° 32½′ 18° 32′	17¼	27 62[1]

The sky, now cloudy, prevented us from keeping watch on the stars any longer, *and laziness!!*[2] [Cœlum iam nubiloſum prohibuit nos diutius ſtellis invigilare *& pigritia!!*[2].]

30 December [DIE 30 DECEMBRIS.]

In the evening Saturn was observed, tending towards opposition [☍] with the Sun, in this way. [Veſperi obſeruabatur ♄ tendens ad ☍ ☉ in hunc modum.]

Time [H. M. S.]	Distance of Saturn from the bright foot of ♊ [Diſt. ♄ a luc. pede ♊]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
$9^h\ 19^m$	36° 15′	18° 54′ 18° 53½′	23° 45′	47 7½
$9^h\ 26^m\ 50^s$	36° 14¼′		25° 7′	25 2
$9^h\ 34^m\ 10^s$	36° 14′			23 27
$9^h\ 37^m\ 50^s$	36° 14⅚′			22 37

Time [H. M. S.]	Distance of Saturn from the bright foot of ♊ [Dist. ♄ a luc. pede ♊]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Alt. ♄]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
	distance of Saturn from the Lesser Dog [Dist. ♄ a Cane min.]			
$9^h\ 44^m\ 50^s$	24° 58⅓′	18° 53⅔′	27° 15′	21 0
		18° 54′		
$9^h\ 52^m\ 10^s$	24° 59′			19 17
$9^h\ 54^m\ 40^s$	24° 58¼′			
$9^h\ 57^m\ 20^s$	24° 58′	18° 53⅓′	28° 50′	18 6

These observations are moderately good, but nonetheless somewhat less certain because of the brightness of the nearby Moon [☾], on account of which Saturn could not be observed from the eastern side. [Hæ obſeruationes ſunt mediocriter bonæ, ſed tamen aliquantulum incertiores propter vicinæ ☾ ſplendorem, propter quam ab orientali parte ♄ obſeruari nequibat.]

[1] So in codices E and K. [Sic in codicibus E & K.] [2] These two words were added afterwards by Tycho himself. [Hæc duo verba ab ipſo Tychone poſtea addita ſunt.]

Observations of Jupiter [OBSERUATIONES IOUIS.]

17 March, in the morning [DIE 17 MARTIJ, MANE.]

Time [H. M.]	Distance of Jupiter from cor ♏ [Dist. ♃ a corde ♏]	Declination of Jupiter, south [Decl. ♃ M.]	Altitude of cor ♏ [Alt. cord. ♏]	The Vulture, east [Vultur or.]
$4^h\ 39½^m$	45° 28½′		8° 0′	
			altitude of Jupiter by the lesser quadrant [Alt. ♃ per Q. min.]	
$4^h\ 42^m$		21° 59′		33 38
$4^h\ 55½^m$ corrected [corr.]		21° 59½′	7° 45′	
$4^h\ 47^m$	45° 29′			
$4^h\ 49^m$	45° 29⅔′	21° 59½′	8° 20′	31 46
$5^h\ 3^m$ corrected [corr.]		22° 0′		

More could not be observed because of the twilight. [Plura propter crepuſculum obſeruari non poterant.]

13 June [DIE 13 JUNIJ.]

In the evening Jupiter was first observed, approaching the point opposite the Sun [oppoſito $\odot^{l\,is}$], in this way. [Veſperi obſeruabatur primum ♃ oppoſito $\odot^{l\,is}$ appropinquans in hunc modum.]

Time [H. M.]	Distance of Jupiter from the eastern one of the head of ♐ [Diſt. ♃ ab or. cap. ♐]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	The Vulture, east [Vultur orient.]
12h 12¼m	8° 58½′	22° 18′	10° 58′	15 54
		22° 17⅔′		
12h 27m	8° 59⅓′	22° 18′	Jupiter not far from the meridian [♃ non longe a meridiano]	
		22° 18½′		
12h 30⅝m	59½′			
	distance of Jupiter from the lower head of ♑ [♃ ab inf. cap. ♑ diſt.]	vice versa [Vice Verſa]		
12h 46m	12⅙′			7 15
12h 51⅓m	10° 12½′			
	distance from the rear one of the tail of ♑ [Diſt. a poſt. caud. ♑]			
12h 58⅓m	28° 30′			
1h 9m	Jupiter was passing through the meridian, having [Tranſibat ♃ per merid. habens]			
	altitude by the steel instrument [altit. per Chalyb.]		11° 47⅚′	
	by the revolving quadrant [per Volub.]		11° 47¼′	

This evening it was not clear enough, but rather thin clouds spread under the sky almost everywhere. [Fuit hac veſpera non ſatis ſerenum, ſed nubes rariores cœlo vbique fere ſubſtratæ.]

Trust rather the altitude taken by the steel instrument, or take it as exactly 11° 47¾′, and you will not go wrong. [*Crede potius altitudini per Chalyb. ſumptæ, vel accipe eandem 11 47¾ præciſe, & non errabis.*]

N.B. Let Jupiter be observed near its opposition [☍] with the Sun: [*N. B. Obſeruetur Jupiter iuxta ☍ ☉*]

I. From stars that appear in ♐ and, conversely, in ♑, which are nearly level with it with respect to the horizon. [*I. A ſtellis quæ apparent in ♐ & vice verſa in ♑, quæ fere ſunt cum eo in æquilibrio horizontis.*]

II. And also from the left shoulder of ♒ and, conversely, from some one in the knee of Ophiuchus. [*II. Et quoque a ſiniſtro humero ♒ & vice verſa ab aliqua in genu Ophiuchi.*]

For a triangular determination, however, which will test both the longitude and the latitude, let it be observed, when it is near the meridian, from three brighter stars: the bright star of the Vulture, which, standing above it, tests the latitude; the mouth of Pegasus, towards the rising; and the head of Ophiuchus or of Hercules, towards the setting; so that triangles can be formed in this way. [*Pro triangulari vero denotatione quæ & longitudinem & latitudinem examinabit, obſeruetur cum iuxta meridianum eſt a tribus illuſtrioribus ſtellis; lucida Vulturis, quæ ſupra ipſum latitudinem examinat; ore Pegaſi verſus ortum; & capite Ophiuchi vel Herculis verſus occaſum, vt trianguli in hunc modum formari queant.*]

Diagram. A reproduced hand-drawn star sketch set in the right column below the paragraph ending "formari queant.". Three stars, each drawn as a small asterisk with a handwritten label above or beside it, lie on a dashed horizontal line across the top: one at the left, one near the middle, one at the right. A fourth star, with the sign ♃ beneath it, lies well below the middle one. Dashed lines run down from the left star and from the right star to the lower star, and a dashed vertical line runs from the middle star down to it, forming two triangles. Four labels are written; one is flagged.

- top left: ✳ Cap[?] Her[?] (handwritten; not resolved)
- top middle: ✳ Vultur (handwritten)
- top right: ✳ os Pegasi (handwritten)
- bottom: ✳ ♃

23 June, in the evening [DIE 23 JUNIJ, VESPERI.]

12^h $27\frac{1}{3}^m$ declination of Jupiter by the armillae [Declin. ♃ per Armillas]	
	22° 30′ approximately, with both [fere, vtroque]
Meridian altitude of Jupiter [Altit. ♃ Merid.]	
by the steel instrument [per Chalyb.]	11° $36\frac{1}{3}$′
by the revolving quadrant [per Volub.]	11° 36′
the bright star of the Vulture, east, was [Erat Lucida Vult. orient.]	2 50

Only these were observed in Jupiter this evening, since the fixed stars from which its distance might be taken did not appear, because the air towards the south was less clear. [Hæc ſaltem in ♃ hac veſpera ſunt obſeruata, quando fixæ a quibus eius diſtantia caperetur propter aërem ad meridiem minus defecatum, non apparebant.]

Let the interval of time be noted that passes meanwhile between the bright star of the Vulture being on the meridian and Jupiter, both by the clock and by the armillae; and from this let its right ascension also be gathered. [*Notetur interuallum temporis quod tranſit interea dum lucida Vulturis eſt in meridiano & ♃ tam per horologium quam armillas, atque hinc etiam eius colligatur aſcenſio recta.*]

25 June [DIE 25 JUNIJ.]

After midnight, an observation of Jupiter at its acronychal position. [Poſt mediam noctem obſeruatio ♃ Acronychij.]

Time [H. M.]	Distance of Jupiter from the head of Ophiuchus [Diſt. ♃ a cap. Ophiuchi]	Declination of Jupiter, south [Decl. ♃ M.]	Altitude of Jupiter [Altit. ♃]	Time on the equator, the Vulture, west [Tempus in æquat. Vultur occ.]
12^h 35^m		22° $32\frac{1}{3}$′		4 11

Time [H. M.]	Distance of Jupiter from the head of Ophiuchus [Diſt. ♃ a cap. Ophiuchi]	Declination of Jupiter, south [Decl. ♃ M.]	Altitude of Jupiter [Altit. ♃]	Time on the equator, the Vulture, west [Tempus in æquat. Vultur occ.]
$12^h\ 47\frac{3}{4}^m$ corrected [corr.]		22° 32¼′		
$12^h\ 41^m$	46° 21′			
$12^h\ 45^m$	46° 21⅔′			
$12^h\ 48\frac{1}{2}^m$	46° 21′ approximately [fere]			
$1^h\ 0^m$ corrected [corr.]				
	distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	vice versa [Vice Verſa.]		
$12^h\ 53^m$	43° 30′ approximately [fere]			
$12^h\ 59\frac{1}{2}^m$	43° 30′ exactly [præciſe]		10½	9 47
$1^h\ 10\frac{1}{6}^m$ corrected [cor.]				
	43° 30½′ doubtful [dubia]			

Time [H. M.]	Distance of Jupiter from the head of Ophiuchus [Diſt. ♃ a cap. Ophiuchi]	Declination of Jupiter, south [Decl. ♃ M.]	Altitude of Jupiter [Altit. ♃]	Time on the equator, the Vulture, west [Tempus in æquat. Vultur occ.]
	distance of Jupiter from Mars [Diſt. ♃ a ♂]			
$1^h\ 18\frac{5}{6}^m$	54° 30¾′			
$1^h\ 25\frac{1}{2}^m$	54° 30′ exactly [præciſe]		altitude of Mars [Altit. ♂]	
$1^h\ 29\frac{1}{3}^m$	54° 30⅙′		17½	

Note. The head of Ophiuchus and the mouth of Pegasus make with Jupiter a triangle quite well disposed for the calculation. But afterwards Jupiter's refraction will have to be guarded against, especially on account of the latitude. [*Nota. Caput Ophiuchi & os Pegaſi faciunt cum ♃ triangulum ſatis bene pro calculo diſpoſitum. Sed cauenda erit poſtea ♃ refractio præſertim ob latitudinem.*]

27 June [DIE 27 JUNIJ.]

Time [H. M.]	Distance of Jupiter from the head of Ophiuchus [Diſt. ♃ a cap. Oph.]	Declination of Jupiter [Decl. ♃]	The Vulture, east [Vultur orient.]
$11^h\ 36\frac{3}{4}^m$	46° 12⅓′ clear [ſerenum]		
	fairly [ſatis]	22° 35′	
		22° 34½′	
$11^h\ 53\frac{1}{2}^m$	46° 13⅔′ cloudy [nebuloſum]		6 9

Time [H. M.]	Distance of Jupiter from the head of Ophiuchus [Dist. ♃ a cap. Oph.]	Declination of Jupiter [Decl. ♃]	The Vulture, east [Vultur orient.]
12^h $1½^m$	46° 13′ accurate [accurata]		
12^h $7⅓^m$	meridian altitude of Jupiter on the revolving quadrant [Altit. merid. ♃ in Volub.]		11° 31⅓′
	distance of Jupiter from the mouth of Pegasus [Dist. ♃ ab ore Pegasi]		
12^h $17½^m$	43° 52½′	22° 35′ with both [vtroque]	

These observations are very uncertain because of the continuous clouds running across the sky; and when these came between more thickly as well, we were kept from the task of observing. [Hæ obſeruationes ſunt admodum incertæ propter continuas discurrentes nubes, quibus etiam denſioribus interuenientibus ab obſeruandi officio retenti ſumus.]

Set here the declination [Pone hic declinationem]	*22° 34½′*
and the distance from the head of Ophiuchus [& diſt. a capite Oph.]	*46° 13′*
the distance from the mouth of Pegasus [diſt. ab ore Pegaſi]	*43° 52½′*

Demonstration of the place of Jupiter found from the observations made on 25 June after midnight. [Apodixis inuenti loci ♃ ex obſeruationibus habitis die 25 Junij poſt M. N.]

At 1^h 0^m, distance of Jupiter [Hora 1 M. 0 Diſt. ♃]	
from the head of Ophiuchus [a capite Ophiuchi]	46° 21′ 0″
from the mouth of Pegasus [ab ore Pegaſi]	43° 30′ 0″
Longitude of the head of Ophiuchus [Capitis Ophiuchi Longit.]	16° 43′ 40″ ♐
Latitude [Latit.]	35° 57′ 0″ north [B.]
Longitude of the mouth of Pegasus [Oris Pegaſi Longit.]	26° 15′ 40″ ♒
Latitude [Latit.]	22° 7½′ north [B.]
Angle of the difference of longitude [Angulus diff. long.]	
from the mouth of Pegasus [ab ore Peg.]	38° 19′ 26″
Therefore at 1^h 0^m, longitude of Jupiter [Ergo H.1 M.0 ♃ Longitudo]	17° 56¼′ ♑
Latitude [Latitudo]	0° 12½′ south [M.]

Test of the latitude found, by the declination, and conversely. [Examen inuentæ latitudinis per declinationem & econtra.]

Longitude 17° 56¼′ ♑, Resp. [Longit. 17 56¼ ♑, reſp.]	
declination [declin.]	22° 19′ 48″ south [M.]
Add on account of the latitude, south [Adde propter latitudinem M.]	0 12 30

Declination from the latitude [Declin. ex latitudine]	22° 32⅓′ south [M.]
The same declination, observed [Eadem declin. obſeruata]	22° 32⅓′
	22° 32¼′

It is therefore clear that the latitude of Jupiter from the distances from the fixed stars is entirely the same as the latitude to be derived from the observed declination; but if you add 5′ to this on account of refraction, the true observed latitude is set at 0° 17½′ south [M.]. [Patet itaque latitudinem ♃ ex diſtantijs a fixis eandem omnino eße cum ea ex declinatione obſeruata derivanda, huic vero ſi adieceris 5′ propter refractionem, ponitur latit. vera obſeruata 0 17½ M.]

The Prutenic Tables have [Tabulæ Prutenicæ habent]	0° 20′ 0″ north [S.]
Difference of latitude [Differentia latitudinis]	0° 37½′
Subtract also 45″ from the longitude for refraction, so that the [Subtrahe etiam ex longitudine pro refractione 45″, vt ſit]	
true longitude is [vera Longitudo]	17° 55½′ ♍
latitude [Latitudo]	0° 17½′ south [M.]
With refraction, by the ascension and declination [Refracte per Aſc. & Decl.]	
longitude [Longit.]	17° 56⅙′ ♍
latitude [Latit.]	0° 12⅓′ south [M.]

29 June [DIE 29 JUNIJ.]

In the evening Jupiter was observed. [Veſperi obſeruabatur ♃.]

Time [H. M. S.]	Distance of Jupiter from the head of Ophiuchus [Diſt. ♃ a cap. Ophiu.]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	The Vulture, east [Vultur orient.]
10h 17m 30s	6° 1⅙′	22° 35⅚′	8° 32′	29 34
		22° 35½′		
10h 28m 19s	6° 1¼′		9° 6′	26 40
10h 33m 44s	6° 1⅔′	22° 35⅔′		25 31
		22° 36′		
10h 41m 44s	6° 2′		9° 45′	33 30
10h 47m 44s	6° 2′			22 4
	distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	vice versa [Vice Verſa]		
10h 57m 59s	4° 0⅔′		10° 24′	19 29

Time [H. M. S.]	Distance of Jupiter from the head of Ophiuchus [Dist. ♃ a cap. Ophiu.]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	The Vulture, east [Vultur orient.]
11h 4m 20s	44° 0⅚′		10° 38′	17 50
	distance from the eastern one of the head of ♐ [Dist. ab or. cap. ♐]			
11h 13m 50s	7° 4⅚′			
11h 19m 40s	7° 5′	22° 36′	11° 0′	
		22° 36½′		
	distance of Jupiter from the left shoulder of ♒ [Dist. ♃ a sin. hum. ♒]			
11h 31m 40s	31° 33½′		11° 15′	
11h 37m 50s	31° 32⅚′			9 26
11h 47m 49s	31° 33′			
12h 0m		22° 37′	*Trust rather the meridian altitude.* [*Crede potius alt. mer.*]	3 52½
		22° 37′		

Meridian altitude of Jupiter by the steel instrument [Altit. ♃ merid. per Chal.]	11° 29⅓′
by the revolving quadrant [per Volub.]	11° 29½′

Time [H. M. S.]	Distance of Jupiter from the head of Ophiuchus [Dist. ♃ a cap. Ophiu.]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	The Vulture, east [Vultur orient.]
	distance of Jupiter from the head of Ophiuchus [Dist. ♃ a cap. Ophiuchi]			the bright star of the Vulture, west [Luc.Vult. occid.]
12h 20m 30s	31° 3⅓′			
12h 23m 40s	31° 3¼′			2 6
	distance of Jupiter from the mouth of Pegasus [Dist. ♃ ab ore Pegasi]			Jupiter was a little fainter here because of the denser vapours around the horizon. [♃ hic paulo obscurior fuit propter vapores circa horizonta densiores.]
12h 31m	43° 59½′		altitude of Jupiter [Alt. ♃]	
12h 36m 30s	44° 0′		10° 51′	
	distance of Jupiter from Mars [Dist. ♃ a ♂]			
12h 56m 30s	18° 18⅔′			
1h 8m 10s	56° 18⅓′		9° 30′	

Let the times that are to be used in deriving the place of Jupiter be verified. [*Verificentur tempora quæ adhibenda in loco ♃ eruendo.*]

Set, at 11^h, the distance of Jupiter from the eastern one of the head of ♐ [Pone ad horam 11 diſtant. ♃ ab orient. cap. ♐]	*7° 5′*
From the left shoulder of ♒ [A ſiniſtro humero ♒]	*31° 33¼′*
Its declination [Declinationem eius]	*22° 36′*
Then, after 12½^h, set the distance of Jupiter from the head of Ophiuchus [Deinde poſt horam 12½ pone diſtantiam ♃ a cap. Ophiuchi]	*46° 3′*
from the mouth of Pegasus [ab ore Pegaſi]	*44° 0′*
The declination as before. [Declinatio vt prius.]	

See also what the right ascension of the midheaven is when the bright star of the Vulture is east by p. 3 M. 52½. Assign this to Jupiter and use the declination from the meridian altitude, and from this find the longitude and the latitude. [*Vide etiam quæ ſit Aſc. R. M. C. quando Lucida Vulturis eſt orientalis p. 3 M. 52½. Hanc tribue ♃ & adhibe declinationem ex altitudine Meridiana, hincque inquire longitudinem & latitudinem.*]

2 JULY, IN THE EVENING [DIE 2 JULIJ, VESPERI.]

	Distance of Jupiter from the head of Ophiuchus [Diſt. ♃ a cap. Ophiuchi]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]	
11 44	45° 50⅙′	22° 40′	11° 0′	12^h 3⅙^m: the transit of the Vulture through the meridian, computed. [Hora 12 M. 3⅙ tranſitus Vulturis per meridianum ſupputatus.]
11 9 corrected [corr.]		22° 40′		
11 54½	45° 50⅔′			
11 20 corrected [corr.]				
11 59⅔	45° 50⅙′ good [bona]			the Vulture, east [Vult. or.]
11 24¾ corrected [corr.]				9 36
	distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]			
12 9¼	44° 18⅔′			7 13

	Distance of Jupiter from the head of Ophiuchus [Diſt. ♃ a cap. Ophiuchi]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Alt. ♃]
11 34⅓ corrected [corr.]			
12 14⅚	44° 18½′		5 30
11 41 corrected [corr.]			
12 20		22° 40⅓′	4 19
11 46 corrected [corr.]		22° 40¼′	

Meridian altitude of Jupiter [Alt. ♃ merid.]	
by the steel instrument [per Chalyb.]	11° 26⅙′
by the revolving quadrant [per Volub.]	11° 26′

This evening it was fairly clear and the air calm, but the brightness of the Moon, because of its nearness, was something of a hindrance. [Fuit hac veſpera ſatis ſerenum & aër tranquillus, ſed ☾ ſplendor ob vicinitatem nonnihil impedimento fuit.]

For finding the place of Jupiter from the observations made on 29 June, when it was most nearly in opposition to the simple Sun. [Pro inueniendo loco ♃ ex obſeruationibus ad diem 29 Junij habitis quando proxime ſimplici ☉ opponebatur.]

At 11½^{h}, distance of Jupiter [H. 11½ Diſt. ♃]	
from the eastern one of the head of ♐ [ab orient. cap. ♐]	7° 4⅚′
from the left shoulder of ♒ [a ſiniſtro humero ♒]	31° 32⅔′
Declination of Jupiter from the meridian altitude [Declin. ♃ ex altit. merid.]	22° 36′ south [M.]
Declination, with refraction, of the eastern one of the head of ♐ [Declinatio refracte capitis orient. ♐]	
(altitude 11°, 5′ subtracted) [(Altit. 11 g., 5′ ſubtr.)]	21° 30′ 0″
of the left shoulder of ♒ [ſiniſtri humeri ♒]	
(altitude 16°, 2½′ subtracted) [(Altit. 16 g., 2½′ ſubtr.)]	7° 14½′
Right ascension of the eastern one of the head of ♐ [Aſcenſ. R. orient. capitis ♐]	281° 24′ 0″
of the left shoulder of ♒ [ſiniſtri hum. ♒]	317° 30′ 30″
Angle of the difference of right ascension [Angulus differ. aſcenſ. rectæ]	

supp. from the head of ♐ [ſupp. a capite ♐]	7° 30′ 0″
Angular difference of ascension from the left shoulder of ♒ [Ang. diff. aſc. a ſin. hum. ♒]	28° 38′ 25″
Right ascension of Jupiter from the eastern one of the head of ♐ [Aſc. R. ♃ a cap. orient. ♐]	288° 54′ 0″
from the shoulder of ♒ [a humero ♒]	288° 52′ 5″
limited [limitata]	288° 53′ 0″
Declination of Jupiter without refraction [Declin. ♃ absque refract.]	22° 41′ 0″
Resp. true longitude [Reſp. Longitudo vera]	17° 22⅔′ ♍
Latitude [Latitudo]	0° 17⅗′
Declination with refraction [Declinatio refracta]	22° 36′ south [M.]
Resp. longitude [Reſp. Longitudo]	17° 23′ 20″ ♍
Latitude [Latitudo]	0° 12′ 43″
At 12½^{h}, distance of Jupiter [H. 12½ Diſt. ♃]	
from the mouth of Pegasus [ab ore Pegaſi]	44° 0′ 0″
from the head of Ophiuchus [a capite Ophiuchi]	46° 2′ 0″
Declination of the mouth of Pegasus [Declinatio oris Pegaſi]	8° 3′ north [B.]
of the head of Ophiuchus [capitis Ophiuchi]	12° 56′ 0″
Right ascension of the mouth of Pegasus [Aſcenſ. Recta oris Pegaſi]	321° 4′ 30″
of the head of Ophiuchus [capitis Ophiuchi]	259° 0′ 30″
Angular difference of ascension of Jupiter from the mouth of Pegasus [Ang. diff. aſc. ♃ ab ore Peg.]	32° 14′ 45″
from the head of Ophiuchus [a cap. Ophiuchi]	29° 52′ 15″
Therefore the ascension of Jupiter from the mouth of Pegasus [Ergo Aſc. ♃ ab ore Pegaſi]	288° 49′ 55″
from the head of Ophiuchus [a cap. Ophiuchi]	288° 52′ 45″
limited [limitata]	288° 51′ 20″
Resp. longitude of Jupiter [Reſp. Longitudo ♃]	17° 21′ ♍
Longitude with refraction [Longit. cum refract.]	17° 21⅔′

For the right ascension of Jupiter from Mars. [Pro aſcenſione recta ♃ a ♂.]

At 1^{h} 0^{m}, distance between Jupiter and Mars [H. 1 0′ Diſt. inter ♃ & ♂]	56° 18½′
Angular difference of ascension [Ang. differ. aſcenſ.] between Jupiter and Mars [inter ♃ & ♂]	57° 49′ 40″

Right ascension of Mars, limited [Aſcenſ. recta ♂ limitata]	346° 44⅓′[1]
Therefore the right ascension of Jupiter [Ergo Aſc. R. ♃] from Mars at this time [a ♂ ad hoc tempus]	288° 54′ 20″[2]
Right ascension of Jupiter from the transit [Aſc. R. ♃ ex tranſitu] of the Vulture through the meridian [a Vulture per mer.]	288° 50′ 30″
Resp. longitude of Jupiter from Mars [Reſp. Longitudo ♃ a ♂]	17° 24′ 0″ ♍

Longitude with refraction [Longit. cum refract.]	17° 24⅔′ ♍

Another method of investigating the place of Jupiter, from the observed distances [Alia ratio inveſtigandi ♃ locum ex diſtantijs obſeruatis]	
from the head of Ophiuchus [a capite Ophiuchi]	46° 2′
from the mouth of Pegasus [ab ore Pegaſi]	44° 0′
Longitude of the mouth of Pegasus [Longitudo oris Pegaſi]	26° 15′ 40″ ♒
Angular difference of longitude of Jupiter [Ang. diff. long. ♃]	
from the mouth of Pegasus [ab ore Peg.]	38° 54′ 40″
Therefore the longitude of Jupiter [Ergo Longitudo ♃]	17° 21′ 15″2 ♍
Latitude, south [Latitudo M.]	0° 13′ 50″ south [M.]

2 July, computation for Jupiter [DIE 2 JULIJ, ſupputatio pro ♃.]

At 11½^{h}, distance of Jupiter [H. 11½ Diſt. ♃]	
from the head of Ophiuchus [a cap. Ophiuchi]	45° 50⅙′
from the mouth of Pegasus [ab ore Pegaſi]	44° 18½′
Apparent declination of Jupiter [Declinatio viſa ♃]	22° 39′ 30″
Angular difference of ascension from the head of Ophiuchus [Ang. diff. aſc. a cap. Oph.]	29° 28′ 22″
from the mouth of Pegasus [ab ore Peg.]	32° 37′ 20″
Right ascension from the head of Ophiuchus [Aſcenſ. R. a cap. Ophiuchi]	288° 28′ 50″
from the mouth of Pegasus [ab ore Pegaſi]	288° 27′ 10″
limited [limitata]	288° 28′ 0″
True declination [Declinatio vera]	22° 44½′
Corresponding longitude [Reſpondet Longitudo]	16° 59′ 15″ ♍
Latitude [Latitudo]	0° 18′ 15″ south [M.]
With refraction: longitude [Cum refractione Long.]	16° 59′ 54″ ♍
latitude [Lat.]	0° 13′ 20″ south [M.]

Another method of finding the place of Jupiter on 2 July from the observations set down above. [Altera ratio inquirendi locum ♃ ad diem 2 Julij ex obſeruationibus præſcriptis.]

Difference of longitude from the mouth of Pegasus [Differ. longit. ab ore Pegaſi]	39° 16′ 5″
Therefore the longitude of Jupiter [Ergo ♃ Long.]	16° 59′ 35″ ♍

Latitude [Lat.]	0° 14′ 30″ with refraction [cum refractione]

Computation for the place of Jupiter from the distances and declinations, for 25 June. [Supputatio pro loco Iouis ex diſtantijs & declinationibus ad diem 25 JUNIJ.]

At 1^h 0^m after midnight, distance of Jupiter [H. 1 M. 0 P. M. N. Diſt. ♃]	
from the head of Ophiuchus [a cap. Ophiuchi]	46° 21′
from the mouth of Pegasus [ab ore Pegaſi]	43° 30′
See the places of the fixed stars above. [Vide loca fixarum ſuperius.]	
Observed declination of Jupiter [Declinatio ♃ obſeruata]	22° 31½′
Angular difference of right ascension from the head of Ophiuchus [Ang. diff. Aſc. R. a cap. Oph.]	30° 27′ 15″
from the mouth of Pegasus [ab ore Peg.]	31° 35′ 50″
Right ascension of Jupiter from the head of Ophiuchus [Aſcenſ. R. ♃ a cap. Oph.]	289° 27′ 45″
from the mouth of Pegasus [ab ore Peg.]	289° 28′ 40″
limited [limitata]	289° 28⅙′
Declination of Jupiter free from refraction [Decl. ♃ a refractione libera]	22° 36½′ south [M.]
Resp. longitude of Jupiter [Reſp. Longitudo ♃]	17° 55′ 20″ ♑
Latitude [Latitudo]	0° 17′ 35″ south [M.]

For 29 June [AD DIEM 29 JUNIJ.]

After a careful examination of all the observations of Jupiter from the fixed stars and from Mars made for this day, and also of those that we took on the preceding and following days for the sake of comparison, the place of Jupiter in longitude and latitude comes to be set, according to the following limitation, for the completed 12th equinoctial hour. [Facta diligenti examinatione obſeruationum omnium ♃ a fixis & ♂ ad hunc diem habitarum, tum earum quas præcedentibus & ſequentibus diebus collationis cauſa accepimus, locus ♃ ſecundum longum & latum iuxta ſequentem limitationem ponendus venit ad horam 12am completam æquinoctialem.]

A collection of the acronychal motions of Jupiter from the various observations described above, together with the refractions of the altitudes at the moments of the observations; once these refractions have afterwards been divided in the due manner into longitude and latitude (as is usually done with the parallaxes of the Moon), the true places of Jupiter in longitude and latitude become known. [Collectio motuum ♃ acronychiorum ex diuerſis obſeruationibus ſuperius deſcriptis vna cum refractionibus altitudinum ad obſeruationum momenta, ex quibus poſtea in longit. & latit. debito modo diuiſis (prout in parallaxibus ☾ fieri ſolet) vera eius loca ſecundum longum & latum innoteſcunt.]

June [Junij]	Altitude of Jupiter [Alt. ♃]	Refraction [Refractio]: altitude [Altit.]	longi-tude [Long.]	lati-tude [Lat.]	Refracted [Refracta]: longitude [Longit.]	True [Vera]: lati-tude [Latit.]	True [Vera]: longitude [Longit.]	lati-tude [Latit.]
25th, 1^{h} after midnight [25^{d} 1^{h} P.M.N.]	10½°	5½′	1⅓′	5′ 0″	17° 56⅙′	0° 12⅓′	17° 54′ 50″	0° 17′ 20″
29 11½	11° 0′	5	0⅓	4 58	17° 23⅓′	0° 12′ 43″	17° 23′ 0″	0° 17′ 40″
29 12½	11° 0′	5	0 50″	4 50	17° 21⅔′	0° 12′ 45″	17° 20′ 50″	0° 17′ 35″
29 1 after midnight [P.M.N.]	10⅓	5½	1 25	5 0	17° 24⅔′	0° 12⅔′	17° 23′ 15″	0° 17′ 40″
July [Julij]								
2 11½	11	5	0 22	5 0	16° 59⅚′	0° 13⅓′	16° 59′ 30″	0° 18′ 20″

[1] Cf. below, among the observations of Mars. [Cf. infra inter obſeruationes Martis.] [2] Thus in the codex. [Sic in codice.]

On the parallax of Jupiter in this acronychal position. [Pro Parallaxi Iouis in hoc ſitu acronychio.]

Mean distance of Jupiter from the Earth [Media diſtantia ♃ a terra]	3990 semidiameters of the Earth [ſemid. terræ]
Semidiameter of the annual orb, subtracted [Semidiameter orbis annui ſubt.]	575
Least distance of Jupiter [Proxima diſtantia ♃]	3415

The corresponding parallax in the horizon is exactly 1′, that is, a third part of the mean parallax of the Sun in the horizon. Therefore the same proportion is kept at any altitude as well; at an altitude of 11°, however, the proportion is 59″, for which you may take one minute without perceptible error. [Reſpondet in horizonte parallaxis 1′ præciſe, id eſt tertia pars de parallaxi ☉ media in horizonte; ergo etiam in qualibet altitudine eadem proportio ſeruatur; in altitudine vero 11 partium proportio eſt 59″, pro quibus inſenſibiliter vnum minutum ſumas.]

Reduction of the phenomena [Greek: phainomenōn, "of the appearances, of the phenomena"] of Jupiter observed on the 29th to 12^{h}, or midnight, and likewise of those that were obtained on the preceding and following days, to the same time. [Reductio φαινομένων ♃ die 29 obſeruatorum ad horam 12 ſeu mediam noctem, item eorum quæ diebus præcedentibus & ſequentibus habita ſunt ad idem tempus.]

	Designation of the fixed stars from which Jupiter was observed [Denominatio fixarum a quibus ♃ obſeruabatur]	True observed longitude of Jupiter [Long. ♃ obſeruata vera]
June, day 29, $12^h\ 0^m$ [Junij D. 29 H. 12 M. 0]	the eastern one of the head of ♐ and the left shoulder of ♒ [Orient. cap. ♐ & ſin. humer. ♒]	17° 22′ 50″ ♍
	from Mars [a ♂]	17° 23′ 35″
	from the head of Ophiuchus and the mouth of Pegasus [a capite Ophiuchi & ore Pegaſi]	17° 21′ 0″
On 25 June [Die 25 Junij]	from the mouth of Pegasus and the head of Ophiuchus [ex ore Pegaſi & cap. Ophiuchi]	17° 23′ 10″
On 2 July [Die 2 Julij]	from the mouth of Pegasus and the head of Ophiuchus [ex ore Pegaſi & cap. Ophiuchi]	17° 23′ 20″
	Latitude of Jupiter from the meridian altitude [Latitudo ♃ ex altit. merid.]	0° 17′ 40″
	Latitude of Jupiter from the distances from the mouth of Pegasus and the head of Ophiuchus [Latit. ♃ ex diſt. ab ore Peg. & cap. Ophiuchi]	0° 18′ 50″
	A third part of the difference, added to the latitude from the meridian altitude [Tertia pars differentiæ add. lat. ex merid. altit.]	0 23
	Latitude observed and free from refraction [Latitudo obſeruata & a refractione libera]	0° 18′ 0″ approximately [proxime]
	Parallax of Jupiter, to be subtracted [Parallaxis ♃ ſubtrahenda]	0 1 approx. [prox.]
	True latitude about the opposition [Vera Latitudo circa ☍]	0° 17′ south [M.]
12^h [H. 12]	Limited longitude of Jupiter [Longitudo ♃ limitata]	17° 23′ 0″ ♍

Calculation for the opposition of Jupiter with the simple Sun on 29 June. [Calculus pro ☍ ♃ cum ſimplici ☉ die 29 Iunij.]

From the preceding, the limited longitude of Jupiter at 12^h [Ex præcedenti limatata, Hora 12, ♃ longitudo]	17° 23′ ♍
Our simple Sun at the same time [Noſter ſimplex ☉ eodem tempore]	17° 46′ 55″ ♋
Difference [Differentia]	0 23 55
Daily motion of each [Motus vtriusque diurnus]	1 7 8

In time this corresponds to $8^h\ 33^m$. To this interval there corresponds a motion of the Sun of 21′ 4″, and of Jupiter of 2′ 50″. Therefore the opposition of Jupiter with the simple Sun took place this year on 29 June at about $3\frac{1}{2}^h$, Jupiter standing at 17° 25′ 50″ ♍ with a true latitude of 0° 17′ 0″ south [M.]. [Reſpondet in tempore H. 8 M. 33. Huic interuallo reſpondet motus ☉ M. 21 4″, ♃ M. 2 50″. Ergo oppoſitio ♃ cum ſimplici ☉ hoc anno facta eſt die 29 Iunij, H. 3½ proxime, ♃ exiſtente in 17ᵍ25′50″ ♍ cum latitudine vera 0ᵍ17′0″ M.]

	Copernican calculation [Calculus Copernic.]		Alphonsine calculation [Calculus Alphonſ.]	
29 June, 3½^{h} [Iunij 29 H. 3½]	17° 34′ ♌	0° 21′ north [S.]	16° 34′ ♌	0° 5′ south [M.]

Assuming the latitude of Jupiter in this acronychal position to be 0° 17′ 0″ south [M.], and the greatest latitude 1° 40′ 0″, the intersection, or southern or descending node, falls at 7° 38½′. But with the same latitude at 0° 17½′, that is, increased by ½, the intersection falls at 7° 21⅖′ ♌. If the greatest southern latitude of Jupiter is assumed to be 1° 43′, the intersection comes out at 7° 47½′ ♌. [Aßumpta latitudine in hoc acronychio ſitu ♃ 0^{g}17′ 0″ M. & maxima latitudine 1^{g}40′ 0″, cadit interſectio ſeu nodus méridionalis aut deſcendens in 7^{g}38½′. Eadem autem latitudine exiſtente 0^{g}17½′, ſcilicet ½ aucta, incidit interſectio in 7^{g}21⅖′ ♌. Si aßumatur maxima latitudo M. ♃ 1 43, prouenit interſectio in 7 47½ ♌.]

30 August [DIE 30 AUGUSTI.]

In the evening Jupiter was observed about its last station after the opposition with the simple Sun, as follows. [Veſperi obſeruabatur ♃ circa vltimam a ☍ cum ſimplici ☉ ſtationem in modum ſequentem.]

7^{h} 40^{m} [7^{H}40′]	Meridian altitude of Jupiter [Altit. ♃ mer.]	
	by the steel instrument [per Chalyb.]	10° 51′ approximately [fere]
	by the revolving quadrant [per Volub.]	10° 51⅙′
	Declination of Jupiter by [Declin. ♃ per]	23° 16′
	the armillae [Armillas]	23° 15⅓′
	The bright star of the Vulture, east, was then [Erat tunc Luc. Vult. or.]	9 13
7 52½	Distance of Jupiter from the right [Diſt. ♃ a dextro]	31° 2¼′
7 56	knee [genu]	31° 3′
8 1	of Ophiuchus [Ophiuchi]	31° 3′

During the observation this star of Ophiuchus was almost level with Jupiter with respect to the horizon, but a little higher nevertheless. For guarding against refraction in the distance. [Fuit hæc Ophiuchi ſtella inter obſeruandum fere in æquilibrio reſpectu horizontis cum ♃, ſed paulo tamen eleuatior. Pro refractione in diſtantia cauenda.]

Vice versa. [Vice Verſa.]

8 15½	Distance of Jupiter from the [Diſt. ♃ ab]	16° 41′
8 20⅓	lower horn [inf. cornu]	16° 40⅙′

8 24	of ♉ [♉]	16° 40⅚′

Around the time of these observations the horn of ♉ was not far from the meridian; it was also hard to see because of the brightness of the Moon. Nevertheless I consider these observations trustworthy, because of the calm state of the air and the clearness of the sky. [Erat cornu ♉ non longe a meridiano circa has obſeruationes, difficulter item videbatur propter ☾ ſplendorem; nihilominus tamen obſeruationibus hiſce fidendum duco propter tranquillum aëris ſtatum & cœli ſerenitatem.]

28 September [DIE 28 SEPTEMBRIS]

In the evening Jupiter was observed *near* the square to the Sun, *at its greatest prosthaphaeresis.* [Veſperi obſeruabatur ♃ *iuxta* □ ☉ *in maxima proſtaphæreſi.*]

Hours, minutes [H. M.]	Distance of Jupiter from the right knee of Ophiuchus [Diſt. ♃ a dext. genu Ophiuchi]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter by the lesser quadrant [Alt. ♃ per min. Quad.]	
$6^h\ 23^m$		23° 8¾′	10° 52′	
		23° 8′		
$6^h\ 53^m$	33° 32⅔′	among clouds [inter nubes]		
$6^h\ 58^m$	33° 34′	doubtful [dubia]		
	from the end of the tail of ♉ [ab extr. cauda ♉]			Mars, east [♂ orient.]
$7^h\ 56^m\ 50^s$	33° 59′	23° 7′	8° 0′	29 38
		23° 7⅓′		the Vulture, east [Vult. or.]
$8^h\ 3^m\ 20^s$	34° 0½′	doubtful [dubia]		19 39
$8^h\ 6^m\ 40^s$	33° 58½′		7° 40′	
$8^h\ 11½^m$	33° 58⅓′			
$8^h\ 17^m$	33° 59′		6° 40′	

N.B. Jupiter was then near the square to the Sun, west of the Sun, but refractions are to be guarded against because of its low position. [*N. B.* ♃ *tunc fuit iuxta* □ ☉ *occident. a Sole, ſed refractiones cauendæ ob eius decliuitatem.*]

1 October[1] [DIE 1 OCTOBRIS[1].]

Observation of Jupiter about the last square to the Sun. [Obſeruatio ♃ circa □ ☉ vltimam.]

5 51	Meridian altitude of Jupiter [Alt. merid. ♃]	
	by the steel instrument [per Chalyb.]	11° 1′ 25″
	by the revolving quadrant [per Volub.]	11° 1⅓′
	Declination by the armillae [Declin. per Armillas]	23° 5′
		23° 4⅚′

Hours, minutes [H. M.]	Distance of Jupiter from the Vulture [Diſt. ♃ a Vulture]			The Vulture, east [Vultur orient.]
6^h 13^m	31° 45′	among clouds [inter nubes]		
6^h $18¼^m$	31° 43¼′			0 32
6^h $23⅙^m$	31° 43⅚′			
	Distance of Jupiter from the head of Ophiuchus [Diſt. ♃ a cap. Ophiuchi]		Altitude of Jupiter [Alt. ♃]	the Vulture, west [Vult. occ.]
6^h 31^m	44° 31⅓′	Here it was [Hic fuit]	10° 32′	
6^h $37⅔^m$	44° 31⅙′	clear [ſerenum]		4 2
	Distance of Jupiter from the following one of the tail of ♉ [Diſt. ♃ a ſeq. caudæ ♉]			
6^h 45^m	33° 34′	moderately clear [ſerenum mediocriter]	10° 35′	
6^h 50^m	33° 33⅙′	among clouds [inter nubes]		

This star was a little higher than Jupiter with respect to the horizon. [Fuit hæc ſtella paulo altior ♃ reſpectu horizontis.]

27 November [DIE 27 NOUEMBRIS.]

In the evening Jupiter was observed approaching the Sun. [Veſperi obſeruabatur ♃ $\odot^{li}$ appropinquans.]

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the Vulture [Diſt. ♃ a Vulture]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter by the lesser quadrant [Alt. ♃ per min. Quad.]	The Vulture, west [Vult. occ.]
4^h 40^m 20^s	29° 47⅔′	21° 50′ with one [vno]	8° 0′	34 36
4^h 48^m 20^s	29° 48′		7⅓	36 17
4^h 54^m 20^s	29° 47⅔′	21° 49′ approxi-mately [fere]	7° 5′	39 41

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the Vulture [Diſt. ♃ a Vulture]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter by the lesser quadrant [Alt. ♃ per min. Quad.]	The Vulture, west [Vult. occ.]
	Distance of Jupiter from the right and eastern shoulder of ♒ [Diſt. ♃ a dext. & orient. hum. ♒]	Vice versa [Vice Verſa]		
$5^h\ 6^m\ 30^s$	35° 42′		6	
$5^h\ 11^m\ 20^s$	35° 43¾′			41 20
$5^h\ 19^m\ 10^s$	35° 43¼′		5	43 5
$5^h\ 27^m\ 40^s$	35° 41′		4½	44 43

Diagram. A small typeset figure set into the left side of the closing paragraph of 27 November: three asterisks standing for stars, arranged in a triangle, each with a label.

- Upper right: an asterisk with "Vultur" set above it at its left — the Vulture.
- Left: an asterisk with "Dext. hum." and "♒" set below it — the right shoulder of ♒.
- Lower right, below the Vulture: an asterisk with "♃" set at its right — Jupiter.

Since the fixed stars from which Jupiter was observed this time are not well placed with respect to the equator, you will be able to find its position with respect to the zodiac from the two better-chosen distances on either side, by the usual induction of triangles, since the stars stood conveniently arranged with respect to one another in a triangular form. [Quoniam fixæ, a quibus ♃ hac vice obſeruabatur ad æquatorem haud bene diſpoſitæ ſint, poteris ex binis ſelectioribus vtrinque diſtantijs per inductionem triangulorum ſolitam inquirere eius ſitum ad zodiacum, quod triangulari forma convenienter diſpoſitæ ſe invicem habebant.]

[1] It should be Day 3. Cf. the note on the observation of the Sun, which in the codex is written after this observation of Jupiter (above, p. 269). [Debet eße Die 3. Cf. annotationem ad obſervationem ſolis, quæ in codice poſt hanc obſervationem Iovis adſcripta eſt (ſupra p. 269).]

Observations of Mars [OBSERUATIONES MARTIS.]

13 June [*DIE 13 JUNIJ.*]

Mars should be observed from the brighter stars of ♒, and from some in Pegasus, so that it forms a triangle of nearly equal sides with two of them. [♂ *obſeruetur ab* ♒ *ſtellis lucidioribus, & aliquibus in Pegaſo ita vt triangulum quaſi æqualium laterum cum duabus faciat.*]

14 June [DIE 14 JUNIJ.]

In the morning Mars was observed about the western trine of the Sun. [Mane ♂ circa trigonum $\odot^{l_{is}}$ occidentalem obſeruabatur.]

1h 28⅔m [1H28⅔′]	Distance of Mars from the end [Diſt. ♂ ab extrema] of the tail of ♍ [cauda ♍]	19° 42⅚′
1 30½	The same distance repeated [Eadem diſtantia repet.]	19° 43¼′
1 33	Declination of Mars [Declin. ♂]	12° 17′ with both [vtroq.],
	altitude [Alt.]	12° 43′
	The bright star of the Vulture, west [Lucida Vulturis occ.]	4 22

These observations of Mars were made in the morning twilight, so that we could see the star of ♍ from which it was observed only with difficulty. [Hæ obſeruationes factæ ſunt ad ♂ in diluculo matutino, ita vt difficulter ♍ ſtellam a qua obſeruabatur, videremus.]

For the place of Mars.[1] [Pro loco ♂[1].]

Angular difference of ascension [Ang. diff. aſcenſionalis]	17° 38′ 52″
Right ascension of the end of the tail of ♍ [Aſcenſio R. extr. caudæ ♍]	321° 9′ 12″
Right ascension of Mars [Aſcenſio Recta ♂]	338° 48′ 4″
Resp. longitude [Reſp. Longitudo]	5° 49′ 50″ ♓
Latitude [Latitudo]	3° 5′ 54″ south [M.]

25 June [DIE 25 JUNIJ.]

1h 41⅙m [1H41⅙′]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	55° 44⅔′ good [bona]
	Mars was then on the equator [Fuit tum ♂ in æquat.]	30° 36′ east [orient.]
1 49½	The same distance repeated [Eadem diſt. repetita] not so precise because of the dawn. [non tam præciſe propter auroram.]	55° 44′

29 June [*DIE 29 JUNIJ.*]

After midnight Mars was observed in this way. [*P. M. N. obſeruabatur* ♂ *in hunc modum.*]

Hours, minutes, seconds [*H. M. S.*]	*Distance of Jupiter from Mars* [*Diſt.* ♃ *a* ♂]	*Declination of Mars* [*Declin.* ♂]		
12h 56m 30s	*56° 18⅔′*	*10° 45′*		
		10° 45½′		
1h 8m 10s	*56° 18⅓′*			
	Distance of Mars from the bright star of ♈ [*Diſt.* ♂ *a luc.* ♈]		*Altitude of Mars* [*Alt.* ♂]	*The Vulture, west* [*Vultur occid.*]
1h 18m	*50° 21′*	*10° 46′*	*16° 12′*	

Hours, minutes, seconds [*H. M. S.*]	*Distance of Jupiter from Mars* [*Diſt.* ♃ *a* ♂]	*Declination of Mars* [*Declin.* ♂]	
		10° 45⅔′	
1h 25m	*50° 20′ 15″*		
1h 28m	*50° 20′ 15″*	*10° 45⅓′*	
		10° 46′	
1h 31m	*50° 20′ 15″*		*17° 45′*

[1] From codex K. [E codice K.]

Afterwards the distance between Mars and the bright star of the Vulture was observed. [*Poſtea obſeruabatur diſt. inter* ♂ *& lucid. Vultur.*]

Hours, minutes, seconds [*H. M. S.*]	*Distance* [*diſt.*]	*Declination of Mars* [*Declin.* ♂]	*Altitude of Mars* [*Alt.* ♂]	*The Vulture, west* [*Vultur occid.*]
1h 37m	*56° 51′*	*10° 45½′*	*18° 23′*	*21 0*
		10° 46′		
1h 40m	*56° 53⅓′*			
1h 46m	*56° 52′*			
1h 49m	*56° 52¼′*		*18° 32′*	*23 7*
1h 52m	*56° 52′ 15″*			*24 31*
1h 55m	*56° 51′ 50″*		*19° 5′*	*25 13*
1h 58m		*10° 45′*	*19° 17′*	
2h 6m		*10° 45′ 50″*	*19° 56′ by the revolving quadrant* [*per Volub.*]	
		10° 46′ 0″	*20° 10′ by the lesser quadrant* [*per Q. min.*]	

Afterwards it was not possible to observe more because of the approaching dawn, but the observations made this night are quite good, so that you may rely on them both for verifying Jupiter in its acronychal position and Mars near its greatest prosthaphaeresis [Greek: προσθαφαιρεσιν (prosthaphairesin, "prosthaphaeresis")] *of the orb, etc. I myself was present after midnight.* [*Poſtea non licuit plura obſeruare propter auroram ingruentem, ſed obſeruationes hac nocte factæ ſunt ſatis bonæ, quibus poßis fidere tam in Acronychio ſitu* ♃ *verificando quam* ♂ *iuxta maximam* προσθαφαιρεσιν *orbis &c. Ipſemet aderam poſt mediam noctem.*]

Find the place of Mars in this way. [*Inquire locum* ♂ *hoc pacto.*]

Set the distance of Mars at about 1½h [*Pone circa Horam 1½* ♂ *diſt.*]	
from the bright star of ♈ [*a lucida* ♈]	*50° 20⅓′*
from the bright star of the Vulture [*a lucida Vulturis*]	*56° 52′*
its declination [*Declinationem eius*]	*10° 46′ south* [*M.*]
Then set the distance of Jupiter and Mars [*Pone tunc diſt.* ♃ *&* ♂]	*56° 18¾′*
on account of the motion of each. [*propter motum vtriusque.*]	

After the operations, apply the refractions both to Mars and to Jupiter. [*Poſt operationes adhibe refractiones tam in ♂ quam ♃.*]

For the place of Mars on the same day, from which Jupiter too was observed, for a further comparison to establish its acronychal place. [Pro loco ♂ ad eundem diem ex quo etiam ♃ pro vlteriori collatione eius loci acronychij ſtabiliendi obſeruabatur.]

At 1½^h after midnight, apparent distance of Mars [H. 1½ P. M. N. Diſt. viſa ♂]	
from the bright star of ♈ [a lucida ♈]	50° 21′
from the Vulture [a Vulture]	56° 52′
Declination of the bright star of ♈ [Declinatio lucidæ ♈]	21° 30¾′ north [B.]
of the Vulture [Vulturis]	7° 52½′ north [B.]
Right ascension of the bright star of ♈ [Aſc. Recta lucidæ ♈]	26° 6′ 50″
of the Vulture [Vulturis]	292° 43′
Angular difference of ascension [Angulus differ. aſc.]	
of the bright star of ♈ [lucidæ ♈]	39° 21′ 0″
of the Vulture [Vulturis]	53° 59′ 50″
Therefore the right ascension of Mars from the bright star of ♈ [Ergo Aſc. R. ♂ a luc. ♈]	346° 45⅚′
from the Vulture [a Vulture]	346° 42′ 50″
limited [limitata]	346° 44⅓′

2 July [DIE 2 JULIJ.]

Hours, minutes [H. M.]	Distance between Jupiter and Mars [Diſt. ♃ & ♂]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Vulture, west [Vultur occ.]
12^h 45^m	57° 33½′	10° 31⅚′	10° 24′	
12^h 10^m corrected [corr.]		10° 32′		
1^h 0⅚^m	57° 33½′			5 39
12^h 25⅔^m corrected [corr.]				
1^h 7⅗^m	57° 33⅔′		12° 47′	
12^h 32^m corrected [corr.]				

Afterwards we observed Mars from the fixed stars in this way. [Poſtea ♂ a fixis hoc modo obſeruauimus.]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Vulture, west [Vultur occ.]
1^h 21^m 30^s [1 21 30″]	49° 34′	10° 32½′		
12^h 46^m corrected [corr.]		10° 32′		
1^h 28^m	49° 34½′		14° 20′	12 24
12^h $52¾^m$ corrected [corr.]				
1^h $43⅝^m$	49° 34⅔′			
1^h 9^m corrected [corr.]				
	Distance of Mars from the bright star of the Vulture [Diſt. ♂ a luc. Vult.]			
1^h $50⅓^m$	57° 38¼′	10° 33½′	16° 38′	
1^h 15^m corrected [corr.]		10° 33⅔′		
2^h $1⅙^m$	57° 37⅚′			
1^h 26^m corrected [corr.]				
2^h $7⅓^m$	57° 38⅓′	10° 34′	18° 0′	21 54
1^h 30^m 50^s corrected [corr.]		10° 34⅓′		

This evening it was quite clear and the air was calm, but the brightness of the Moon, because of its nearness, was something of a hindrance. [Fuit hac veſpera ſatis ſerenum & aër tranquillus, ſed ☾ ſplendor ob vicinitatem nonnihil impedimento fuit.]

One should observe the declination of some star near its rising, in the position in which Mars is, for examining the armilla: for instance of the bright star of ♈, or of another nearer to it. [*Oportet obſeruare alicuius ſtellæ circa ortum in eo ſitu quo ♂ eſt declinationem pro examinanda armilla, vtpote lucidæ ♈ vel alterius illi propioris.*]

22 July [DIE 22 JULIJ.]

In the morning Mars was observed about its first retrogradation according to Copernicus, in the manner that follows. [Mane obſeruabatur ♂ circa primam retrogradationem iuxta Copernicum in modum qui ſequitur.]

Hours, minutes [H. M.]	Distance from the left shoulder of ♒ [Diſt. a ſin. hum. ♒]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The bright star of the Vulture, west [Luc. Vult. occ.]
2^h $15\frac{2}{3}^m$	33° 14⅚′	10° 9¼′	22° 0′	38 56
1^h 23^m corrected [corr.]	good [bona]			
	Distance from the bright star of ♈ [Diſt. a luc. ♈]			
3^h $11\frac{1}{4}^m$	46° 47′			53 2
2^h 19^m corrected [corr.]		Among clouds passing across, since Mars was not far from the meridian. [Inter nubes trans-currentes, cum ♂ non longe abeßet a meridiano.]		
3^h 17^m	46° 45½′			
2^h 25^m corrected [corr.]				
3^h 18^m 30^s	46° 45½′			

3^h 31^m	Meridian altitude of Mars by the steel instrument [Alt. merid. ♂ per Chal.]	23° 56⅙′
2^h 40^m corrected [corr.]	by the revolving quadrant [per Vol.]	23° 55⅚′
3^h 36^m	Declination of Mars [Decl. ♂]	10° 10′
		10° $10\frac{2}{3}$′

For the place of Mars from the preceding observations added here. [Pro loco ♂ ex adiunctis præcedentibus obſeruationibus.]

At 1^h 23^m, distance of Mars from the left [H. 1 M. 23 Diſt. ♂ a ſin.]	
shoulder of ♒ [hum. ♒]	33° 15′ 0″
Declination of the left shoulder of ♒, south [Declin. hum. ſin. ♒ M.]	7° 17′ 0″
Its right ascension [Aſcens. R. eius]	317° 30′ 20″
Declination of Mars [Declin. ♂]	10° 9′ 30″
Angular difference of ascension, computed [Angulus diff. aſc. ſupput.]	33° 32′ 5″
Therefore the right ascension of Mars [Ergo Aſcenſio R. ♂]	351° 2′ 25″

At 2^h 25^m, distance of Mars from the bright [H. 2 M. 25 Diſt. ♂ a luc.]		
star of ♈, limited [♈, limit.]	46° 46¼′	
Declination of the bright star of ♈ [Declin. lucidæ ♈]	21° 30½′	
Right ascension of the bright star of ♈ [Aſc. R. luc. ♈]	26° 6′ 40″	
Angular difference between Mars and [Ang. diff. inter ♂ &]		
the bright star of ♈, computed [luc. ♈ ſupp.]	35° 3′ 40″	
Therefore from this the right ascension of Mars [Ergo hinc Aſc. R. ♂]	351° 3′ 0″	
At 2^h 0^m, limited right ascension of Mars [H. 2 M. 0 Aſc. R. ♂ limitata]	351° 2′ 40″	
Resp. longitude [Reſp. Longitudo]	17° 45′ 45″ ♓	
Latitude [Latitudo]	5° 46′ 15″ south [M.]	
Copernican longitude [Copern. Long.]	14° 48½′ ♓,	latitude [Lat.] 5° 30′ south [M.]
Alphonsine [Alphonſ.]	22° 44′ ♓	5 29 south [M.]

25 July [DIE 25 JULIJ.]

In the morning Mars was observed in the manner that follows. [Mane obſeruabatur ♂ in hunc qui ſequitur modum.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Vulture, west [Vultur occ.]
1^h 13^m 40^s	33° 23′	10° 14½′	22° 0′	39 25
1^h $12⅓^m$ corrected [corr.]		with one [vno]		
1^h 24^m 0^s	33° 24′			
1^h 29^m 0^s corrected [corr.]	33° 23½′			43 16
1^h $34½^m$	33° 23⅚′	10° 14½′ with one [vno]		

During these observations it was quite clear in the western part of the sky, and both Mars and the shoulder of ♒ were at so high an altitude that they were subject to no refraction. [Inter hæc obſeruandum fuit ſatis ſerenum ab occid. parte cœli & tam ♂ quam hum. ♒ in tam ſublimi altit. fuerunt, vt nulli refractioni eßent obnoxij.]

1 49⅚	Vice versa, from the bright star of ♈ [Vice Verſa a luc. ♈]	46° 43⅔′ among clouds [inter nubes.]

Afterwards the sky, covered over with dense and watery clouds, cut off from us every further opportunity of observing. [Poſtea cœlum denſis &

aquoſis nubibus ſubductum omnem vlterius obſeruandi opportunitatem nobis interclusit.]

Investigation of the place of Mars from the preceding observations. [Inveſtigatio loci ♂ ex præcedentibus obſeruationibus.]

At 1^h 29^m, distance of Mars from the left shoulder of ♒ [H. 1 M. 29 Diſt. ♂ ab hum. ſin. ♒]	33° 23½′
Declination of Mars [Declin. ♂]	10° 14½′
Angular difference of ascension, computed [Ang. differ. aſcenſ.$^{a\,l\,ſ}$ ſupput.]	33° 40′ 30″
Hence the right ascension of Mars [Hinc Aſcenſ. R. ♂]	351° 10′ 50″

At 1^h 50^m, distance of Mars from the bright star of ♈ [H. 1 M. 50 Diſt. ♂ a luc. ♈]	46° 43′ 40″
Angular difference of ascension [Ang. diff. aſcenſionalis]	34° 55′ 30″
Hence the right ascension of Mars [Hinc Aſcenſ. R. ♂]	351° 11′ 10″
At 1^h 40^m, limited right ascension [H. 1 M. 40 Aſc. R. limitata]	351° 11′ 0″
Resp. longitude [Reſp. Longitudo]	17° 51′ 20″ ♓
Latitude [Latitudo]	5° 54′ 0″ south [M.]

So the star Mars was carried forward from the 22nd to the 25th, over the three days that elapsed, by 4¾′ in the order of the signs, although according to the Prutenic calculation it should have become retrograde on the 21st, while the Alphonsine agrees that it still moves direct up to the 27th. [*Promota itaque eſt ♂ ſtella a die 22 in 25 per triduum interlapſum 4¾′ in conſequentia, cum tamen iuxta calculum Prutenicum debuißet die 21 fieri retrogradus, Alphonſino aſtipulante, quod adhuc directe incedat vſque in diem 27.*]

31 July [DIE 31 JULIJ.]

In the morning Mars was observed near the meridian in the following manner. [Mane obſeruabatur ♂ in modum ſequentem circa meridianum.]

Hours, minutes [H. M.]	Distance from the mouth of Pegasus [Diſt. ab ore Pegaſi]	Declination of Mars [Decl. ♂]	The bright star of the Vulture, west [Luc. Vult. occ.]
1^h 8½^m	35° 12⅔′	10° 31′ with one [vno]	
1^h 19½^m	35° 13′		47 20
1^h 32⅙^m	35° 12⅚′	10° 30⅔′	50 37
		10° 30¼′	
	Vice versa, Mars from the bright star of ♈ [Vice verſa ♂ a luc. ♈]		
1^h 49^m	47° 0½′		
1^h 55½^m	46° 59⅚′		
2^h 0^m	47° 0⅓′		

2^h $4^2/_3{}^m$	Meridian altitude of Mars by the steel instrument [Altit. ♂ merid. per Chal.]	23° 35¼′
2^h 6½^m corrected [corr.]	by the revolving quadrant [per Vol.]	23° $35^1/_{12}$′

Hours, minutes [H. M.]	Distance from the mouth of Pegasus [Diſt. ab ore Pegaſi]	Declination of Mars [Decl. ♂]	The bright star of the Vulture, west [Luc. Vult. occ.]
2^h 7^m		10° 31¼′	Mars, west [♂ occid.]
		10° $30^5/_6$′	0 30

Around the time these observations were taken it was quite clear, and the fixed stars from which Mars was observed in the distances were conspicuous, although near the horizon a denser exhalation of vapours obscured the stars of ♒ and those nearer the horizon, as if wrapped in mists. [Circa has obſeruationes acceptas fuit ſatis ſerenum, & ſtellæ fixæ a quibus ♂ in diſtantijs obſeruatus eſt conſpicuæ, licet circa horizontem denſior vaporum exhalatio ſtellas ♒ & horizonti viciniores nebulis quaſi inuolutas obſcurarit.]

For the place of Mars from the immediately preceding observations. [Pro loco ♂ e proximis antecedentibus obſeruationibus.]

At 1^h 37^m, distance of Mars from the mouth of Pegasus [H. 1 37′ Diſt. ♂ ab ore Pegaſi]	35° 12⅚′
Declination of Mars [Declinatio ♂]	10° 30⅓′
Angular difference of ascension of Mars from the mouth [Ang. diff. aſc. ♂ ab ore] of Pegasus, computed [Peg. ſupp.]	30° 4′
Right ascension of the mouth of Pegasus [Aſc. R. oris Peg.]	321° 4½′
Declination [Declinatio]	8° 3′ north [B.]

At 1^h 57^m, distance of Mars from the bright star of ♈ [H. 1 57′ Diſt. ♂ a luc. ♈]	47° 0′ 0″
Angular difference of ascension of Mars from the bright star of ♈ [Ang. diff. aſc. ♂ a luc. ♈]	35° 3′ 10″
At 1^h 45^m, right ascension of Mars [H. 1 45 Aſc. R. ♂]	
from the mouth of Pegasus [ab ore Peg.]	351° 8′ 30″
from the bright star of ♈ [a luc. ♈]	351° 3′ 30″
Set the limited right ascension of Mars, keeping closer [Pone Aſc. ♂ limitatam adhærendo]	
to the bright star of ♈ [magis Lucidæ ♈]	351° 5′ 0″
Resp. longitude [Reſp. Longitudo]	17° 39½′ ♓
Latitude [Latitudo]	6° 6′ 15″ south [M.]

Alphonsine longitude [Long. Alph.]	22° 46′ ♓	Copernican [Copern.] 13° 57′ ♓
Latitude [Lat.]	5° 46′ south [M.]	6° 0′ south [M.]

11 August [DIE 11 AUGUSTI.]

Mars was observed in the morning in the following manner. The cord on the clock's weight had broken, and so the clock was of no use here; you can therefore work out the times from the equatorial distances written beside the individual observations. [Obſeruabatur ♂ Mane in modum ſequentem. Funis in pondere horologij fractus fuit, ideoque horologij hic nullus fuit vſus; potes igitur tempora ex diſtantijs æquatorijs ſingulis obſeruationibus adſcriptis inueſtigare.]

Declination of Mars by the armillae [Decl. ♂ per Armill.]	Meridian altitude of Mars [Alt. ♂ Merid.]	The outermost of the wing of Pegasus, east [Ext. alæ Peg. or.]	Resp. time [Reſp. Tempus]
11° 17⅓′	by the steel instrument [per Chal.] 22° 47⅓′	8 56	1^h $16¼^m$ [$1^H16¼'$]
11° 17⅔′	by the revolving quadrant [per Vol.] 22° 47½′		
	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]		
	32° 3′	5 49	1^h $28¾^m$
	32° 2⅚′	3 40	1^h $37⅓^m$
	32° 3¼′	1 10	1^h $47⅓^m$

During these observations it was moderately clear, but the brightness of the Moon was something of a hindrance; the shoulder of ♒ here was also quite well placed with respect to the horizon when Mars was observed from it. [Fuit inter hæc obſeruandum mediocriter ſerenum, ſed ☾ ſplendor nonnihil impedimento fuit; erat item hic humerus ♒ ſatis bene diſpoſitus reſpectu horizontis, quando ab hoc ♂ obſeruatus eſt.]

Vice versa [Vice Verſa]

Distance from the bright star of the jaw of the Whale [Diſt. a luc. mandib. Ceti]	Mars, west [♂ occ.]	Resp. time [Reſp. Tempus]
52° 8½′	11 47	2^h 5^m [2^H 5′]
uncertain because of clouds [incerta propter nubes]		
52° 8′	13 40	2^h $12½^m$
52° 7½′	20 39	

Here it was quite clear. [Fuit hic ſatis ſerenum.]

Most of these were observed among clouds passing across, where the brightness of the Moon, because of its nearness, was also a greater hindrance. You

can, however, safely use the last distance, or the middle one, as it best fits. [Hæc pleraque obſeruata ſunt inter tranſcurrentes nubes, vbi etiam ☾ ſplendor ob eius vicinitatem maiori impedimento fuit. Potes tamen poſtrema diſtantia tuto vti vel media prout maxime quadret.]

To test the sextant that we used here, there was observed the distance in- [Pro examinando Sextante quo hic vſi ſumus, obſeruabatur diſtantia in-] between the bright star of ♈ and Aldebaran: 35° 32½′. [ter lucidam ♈ & Aldeboram 35 32½.] From this it is clear that no fault is found in that instrument. [Vnde patet penes inſtrumentum illud nullum vitium reperiri.]

Set the distance from the shoulder of ♒ [*Pone diſtantiam ab humero* ♒]	
left, at $1^h\ 45^m$ [*ſiniſtro H. 1 M. 45*]	*32° 3′*
from the bright star of the jaw of the Whale [*a luc. mand. Ceti*]	*52° 8′*
its declination [*declinationem eius*]	*11° 18′*

The place of Mars comes out as follows. [*Prouenit locus ♂ vt ſequitur.*]

Investigation of the longitude and latitude of Mars from the immediately preceding observations. [Inveſtigatio longitudinis & latitudinis ♂ ex proximis præcedentibus obſeruationibus.]

At $1^h\ 45^m$, distance of Mars [H. 1 M. 45 Diſt. ♂]	
from the left shoulder of ♒ [a ſin. hum. ♒]	32° 3′
Declination of Mars, south [Declinatio ♂ M.]	11° 18′
Declination of the left shoulder of ♒ [Decl. ſin. hum. ♒]	7° 17′
Right ascension of the left shoulder of ♒ [Aſc. R. ſin. hum. ♒]	317° 30′ 25″
Angular difference of ascension, from this [Angul. diff. aſc. hinc]	
computed [ſupputatus]	32° 14′ 20″
Therefore the right ascension of Mars [Ergo Aſcenſio Recta ♂]	349° 44′ 45″
At $2^h\ 10^m$, distance of Mars [H. 2 M. 10 Diſt. ♂]	
from the bright star of the jaw of the Whale [a luc. mandib. Ceti]	52° 8′
Its declination [Declinatio eius]	2° 27¼′ north [B.]
Its right ascension [Aſc. R. eius]	40° 18′ 50″
Angular difference of ascension [Ang. diff. aſc.]	
computed from this [hinc ſupputatus]	50° 34′ 14″
Therefore from this the right ascension of Mars [Ergo hinc Aſc. R. ♂]	349° 44′ 36″
Let there therefore be kept, for $1¾^h$ [Retineatur igitur ad H. 1¾]	
right ascension of Mars [Aſc. R. ♂]	349° 44¾′
Declination from the meridian altitude [Declin. ex altit. merid.]	11° 18′
Resp. longitude [Reſp. Longitudo]	16° 7½′ ♓
Latitude [Latitudo]	6° 18′ 52″ south [M.]

Calculation [Calculus]	Longitude [Long.]	Difference [Differ.]	Latitude [Lat.]	Difference [Differ.]
Copernican [Copernic.]	12° 0′ ♓	4 7½	6° 30′	11′
Alphonsine [Alphonſ.]	21° 26′	5 18½	6° 0′	about 19 [19 fere]

N.B. As to longitude, Mars now seems not to come as close to the Copernican calculation as before, but gradually to draw nearer to the Alphonsine calculation, so that here it is, as it were, intermediate, though nearer to the Copernican calculation, by very nearly one degree. [*N. B. Nunc videtur* ♂ *quoad longitudinem non tam prope accedere ad calculum Copernici vt antea, ſed calculo Alphonſino ſenſim plus appropinquare, ita vt ſit hic quaſi intermedius, propior tamen Copernici calculo per vnum gradum proxime.*]

As to latitude, however, it changes it more slowly than the Copernican reckoning holds. For over the ten days that elapsed since the last observation it changed its latitude by about 13′, which agrees very closely with the Alphonsine calculation, which requires 14′; but the Copernican reckoning demands half a degree, that is, twice as much. [*Atquoad latitudinem eam tardius mutat quam fert Copernicæa ratio. Nam per interlapſum decendium ab vltima obſeruatione mutauit latitudinem quaſi 13′, quod cum Alphonſino calculo proxime conſentit, qui 14′ requirit; at Copernici ratio dimidium gradum* ♋*: duplo plus efflagitat.*]

18 August, morning [DIE 18 AUGUSTI, MANE.]

Observation of the acronychal Mars in the following manner. [Obſeruatio ♂ acronychij in modum ſequentem.]

Hours, minutes [H. M.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, west [Prima alæ Peg. occ.]
$0^h\ 9½^m$	30° 35⅙′	11° 54′ 11° 54½′	21° 47′	
$0^h\ 22^m$	30° 37⅙′			0 46
$0^h\ 23^m$ corrected [corr.]	Here it was not very clear. [Hic non fuit bene ſerenum.]			
$0^h\ 41½^m$	30° 36½′			

$0^h\ 50^m$	Mars crossed the meridian, having an altitude [Tranſiuit ♂ merid. habens alt.]	
	by the revolving quadrant [per Volub.]	22° 11½′
	by the steel instrument [per Chalyb.]	22° 11¼′

Hours, minutes [H. M.]	Distance of Mars from the left shoulder of ♒ [Dist. ♂ a sin. hum. ♒]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, west [Prima alæ Peg. occ.]
				The outermost of the wing of Pegasus, east [Extrema alæ Peg. or.]
1h 2½m	30° 35⅓′			
1h 3m corrected [corr.]				6 2
1h 9m	30° 35⅓′ Vice versa, distance of Mars from the bright star of the jaw of the Whale [Vice Versa. Dist. ♂ a luc. mandib. Ceti]	11° 55′ with one [vno]		
1h 19m	20♑53° 42⅔′			1 47
1h 25m	20♑53° 42′	Here and afterwards it was quite clear and the air was calm. [Fuit hic & postea satis serenum & aër tranquillus.]		
				west [occid.]
1h 33m	53° 42′			1 39
1h 39½m	53° 42⅙′ Vice versa, from the bright star of ♈ [Vice versa a luc. ♈]			3 19
1h 49m	20♑50° 1′	11° 55½′		
		11° 54⅚′		
1h 57m	49° 59⅔′			
1h 59m	20♑50° 1′			
2h 2m	50° 0⅔′			

N.B. This evening, as we watched carefully, the apparent diameter of Mars appeared larger by a perceptible amount than the diameter of Jupiter itself, as far as the eyes could discern; Mars was also very ruddy. [N. B. Hac vesperi diligenter intendentibus nobis apparuit diameter ♂ apparens sensibili portione maior diametro ipsa ♃ quantum oculis discernere licuit, fuit etiam ♂ admodum rutilans.]

Inquiry into the place of Mars from the preceding observations. [Inquisitio loci ♂ ex præcedentibus obseruationibus.]

At 0h 45m, distance of Mars [H. 0 M. 45 Dist. ♂] from the bright left shoulder of ♒ [a luc. sin. humero ♒]	30° 36½′
Declination of Mars from the meridian altitude [Decl. ♂ ex alt. merid.]	11° 54′
Angular difference of ascension, computed [Ang. diff. ascens. supputatus]	30° 40′ 50″

Right ascension of the left shoulder of ♒ [Aſc. R. ſin. hum. ♒]	317° 30′ 30″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	348° 11′ 20″

At 1^h 25^m, distance of Mars from the bright star of the jaw of the Whale [H. 1 25 Diſt. ♂ a luc. mand. Ceti]	53° 42′
from this, angular difference of ascension [hinc ang. diff. aſcenſ.]	52° 4⅔′
Right ascension of the jaw of the Whale [Aſc. R. mandibulæ Ceti]	40° 18′ 50″
Therefore the right ascension of Mars from this [Ergo Aſc. R. ♂ hinc]	348° 14′ 10″
At 2^h 0^m, distance of Mars from the bright star of ♈ [H. 2 0 Diſt. ♂ a lucida ♈]	50° 0′ 40″
from this, angular difference of ascension [hinc ang. diff. aſcenſ.]	37° 54′ 52″
Right ascension of ♈ [Aſc. R. ♈]	26° 6′ 45″
Therefore the right ascension of Mars from this [Ergo Aſc. R. ♂ hinc]	348° 11′ 53″

With all these limited (relying chiefly on those that are derived from the shoulder of ♒ and the bright star of ♈), there is set: [His omnibus limitatis (nitendo potißimum ijs quæ ab humero ♒ & lucida ♈ deriuantur) ponitur]

At 1^h 0^m, limited right ascension of Mars [H. 1 0 Aſc. R. ♂ limitata]	348° 12′ 10″
Resp. longitude [Reſp. Longitudo]	14° 29$\frac{1}{12}$′ ♓
Latitude [Latitudo]	6° 16′ 7″ south [M.]

Copernican calculation [Calculus Copernici]		Difference [Differ.]	Alphonsine [Alphonſ.]	Difference [Differ.]
Longitude [Long.]	10° 11′ ♓	4 18	19° 38′ ♓	5 9
		minus		plus
Latitude [Lat.]	6° 40′ south [M.]	24	6° 6′ south [M.]	10
		plus		minus [min.]

21 August, morning [DIE 21 AUGUSTI, MANE.]

Mars was observed approaching opposition to the Sun, in the following manner. [Obſeruabatur ♂ ☍ ☉ appropinquans in modum ſequentem.]

At 0^h 36^m [$0^H36'$], altitude of Mars near the meridian [Altit. ♂ circa Mer.]	
by the steel instrument [per Chal.]	21° 56′
by the revolving quadrant [per Volub.]	21° 55⅚′
The azimuth of Mars was then west [Fuit tunc Azim. ♂ occ.]	1⅙
Declination of Mars around this [Declin. ♂ circa hoc]	12° 9⅚′
time [tempus]	12° 10′

	Distance of Mars from the right shoulder of ♒ [Diſt. ♂ a dext. hum. ♒]	Declination of Mars [Decl. ♂]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
0 56⅓	23° 17′		4 15
Here it was moderately clear. [Hic fuit mediocriter ſerenum.]			
1 4	23° 16¼′	12° 10′ with both [vtroque]	
			Mars, west [♂ occid.]
1 10⅚	23° 16′		10 8

For this one and the immediately preceding one it was not very clear. [In hoc & prox. præced. non fuit bene ſerenum.]

More observations of Mars could not be made this morning because of the darkness of the sky and the clouds thickening more and more. Nor indeed was it clear enough in the earlier ones, for the stars were seen through thinner small clouds as if hemmed in by vapours, and these vapours were afterwards gathered into denser clouds. [Plures in ♂ obſeruationes hoc mane fieri nequibant propter cœli obſcuritatem & nubes magis magiſque condenſatas. Neque enim in ſuperioribus fuit ſatis ſerenum. Viſæ enim ſunt ſtellæ per rariores nubeculas quaſi vaporibus circumſeptæ, qui vapores poſtea in denſiores nubes cogebantur.]

Investigation of the place of Mars from the preceding observations. [Inveſtigatio loci ♂ ex præcedentibus obſeruationibus.]

At 1^h 0^m, distance of Mars from the right shoulder of ♒ [H. 1 0 Diſt. ♂ a dextro hum. ♒]	23° 16⅔′
Meridian declination of Mars [Declin. ♂ Merid.]	12° 9½′
South declination of the right shoulder of ♒ [Declin. M. dext. hum. ♒]	2° 14′ 45″

Angular difference of ascension [Ang. differ. aſcenſionalis]	21° 15′ 30″
Right ascension of the right shoulder of ♒ [Aſc. R. dext. hum. ♒]	326° 13′ 35″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	347° 29′ 5″
Resp. longitude [Reſp. Longitudo]	13° 44′ ♓
Latitude [Latitudo]	6° 14′ south [M.]

Copernican calculation [Calculus Copernici]		Difference [Diff.]	Alphonsine [Alphon.]	Difference [Diff.]
Longitude [Long.]	9° 16′ ♓	4 28	18° 46′	5 2
Latitude [Lat.]	6° 30′ south [M.]	16 plus	6° 10′	4
				minus

21 August [DIE 21 AUGUSTI.]

Before midnight Mars was observed in the following manner. [Ante mediam noctem obſeruabatur ♂ in modum ſequentem.]

Hours, minutes [H. M.]	Distance of Mars from the end of the tail of ♍ [Diſt. ♂ ab extr. caudæ ♍]	Declination of Mars [Decl. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
$11^h\ 52½^m$	25° 45′ doubtful [dub.]	12° 15′	2 32
		12° 15′	
$11^h\ 57^m\ 40^s$	25° 48½′		
$0^h\ 0^m$	25° 48½′		west [occid.]
$0^h\ 2^m\ 40^s$	25° 47½′		0 13
	Vice versa, distance from the left shoulder of ♒ [Vice Verſa Diſt. a hum. ſin. ♒]		
$0^h\ 7½^m$	29° 39⅙′		Mars, east [♂ orient.]
$0^h\ 10^m$	29° 38⅔′		3½
$0^h\ 12½^m$	29° 38¾′		
$0^h\ 27^m\ 20^s$		12° 15⅓′	
$0^h\ 28^m$ corrected [corr.]		12° 15½′	

Meridian altitude of Mars by the steel instrument [Alt. ♂ Merid. per Chalyb.]	21° 51′ 25″
by the revolving quadrant [per Volub.]	21° 51⅓′

Hours, minutes [H. M.]	Distance of Mars from the end of the tail of ♍ [Diſt. ♂ ab extr. caudæ ♍]	Declination of Mars [Decl. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
	Distance of Mars from the bright star of the jaw of the Whale [Diſt. ♂ a luc. mandib. Ceti]		
$0^h\ 38^m$	54° 45⅔′		
$0^h\ 40^m\ 40^s$	54° 44′		
$0^h\ 43^m$	54° 45′		The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
$0^h\ 45^m\ 20^s$	54° 45′		6 13

Hours, minutes [H. M.]	Distance of Mars from the end of the tail of ♍ [Diſt. ♂ ab extr. caudæ ♍]	Declination of Mars [Decl. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
	Distance from the bright star of the knot of ♓ [Diſt. a luc. nodi ♓]		
$0^h\ 50^m$	40° 1′		5 1
$0^h\ 55½^m$	39° 59⅔′	12° 15′ with both [vtroq.]	
$1^h\ 3^m$	40° 0½′		
	Distance from the bright star of ♈ [Diſt. a luc. ♈]		
$1^h\ 7½^m$	50° 59′		
$1^h\ 9½^m$	50° 59⅔′		0 18
$1^h\ 11½^m$	50° 59¾′		
	Distance from the mouth of Pegasus [Diſt. ab ore Peg.]		
$1^h\ 20^m$	32° 59⅓′	among clouds [inter nubes.]	
$1^h\ 34½^m$	32° 59′		

From this time on no further opportunity of observing was given on this day, because of clouds rising from the western horizon. [Ex hoc tempore huius diej nulla oportunitas obſeruandi amplius data eſt propter nubes ab occiduo horizonte exorientes.]

Inquiry into the longitude and latitude of Mars from the immediately preceding observations. [Inquiſitio Longitudinis & Latitudinis ♂ ex ſuperioribus obſeruationibus proximis.]

At $0^h\ 0^m$, distance of Mars from the following one of the tail of ♍ [H. 0 0′ Diſt. ♂ a ſeq. caudæ ♍]	25° 47½′
Declination of the same [Declin. eiuſdem]	17° 53′ south [M.]
Right ascension of the same [Aſc. R. eiuſdem]	321° 9′
Southern declination of Mars [Declin. ♂ merid.]	12° 14′
Angular difference of ascension, computed [Ang. diff. aſcenſ. ſupput.]	26° 5′
Therefore the right ascension of Mars from this [Ergo hinc Aſc. R. ♂]	347° 14′
0 10, distance of Mars from the left shoulder of ♒ [0 10 Diſt. ♂ a ſin. hum. ♒]	29° 39′
Its declination [Declin. eius]	7° 17′
Right ascension of the same [Aſc. R. eiuſdem]	317° 30′ 35″
Angular difference of ascension, computed [Ang. diff. aſcenſ. ſupput.]	29° 41′
Therefore the right ascension of Mars from this [Ergo hinc Aſc. R. ♂]	347° 11′ 35″
0 45, distance of Mars from the bright star of the jaw [0 45 Diſt. ♂ a luc. mandib.]	54° 45′
Declination of the jaw of the Whale, north [Decl. mandib. Ceti B.]	2° 27′ 30″
Right ascension of the same [Aſc. R. eiuſdem]	40° 18′ 50″
Angular difference of ascension, computed [Ang. diff. aſcenſ. ſupput.]	53° 6′ 3″
Therefore the right ascension of Mars from this [Ergo hinc Aſc. R. ♂]	347° 12′ 47″
1 0, distance of Mars from the bright star of the knot of ♓ [1 0 Diſt. ♂ a luc. nodi ♓]	40° 0′
Its declination, north [Declin. eius B.]	0° 46⅔′

Right ascension [Aſc. R.]	25° 15′ 45″
Angular difference of ascension, computed [Ang. diff. aſcenſ. ſupput.]	38° 6′ 5″
From this, the right ascension of Mars [Hinc Aſc. R. ♂]	347° 9′ 40″
At 1⅙h, distance of Mars from the bright star of ♈ [H. 1⅙ Diſt. ♂ a luc. ♈]	50° 59½′
Its right ascension [Aſc. R. eius]	26° 6′ 45″
Angular difference of ascension, computed [Ang. diff. aſcenſ. ſupput.]	38° 56′ 56″
From this, the right ascension of Mars [Hinc Aſc. R. ♂]	347° 9′ 50″

Collection of all the right ascensions of Mars, and reduction to one time. [Collectio omnium aſcenſionum R. ♂ & ad vnum tempus diductio.]

At 0½h [H. 0½]	from the following tail of ♍ [a ſequente cauda ♍]	347° 13′ 40″
	from the left shoulder of ♒ [a ſiniſtro humero ♒]	347° 11′ 25″
	from the bright star of the jaw of the Whale [a lucid. mandib. ceti]	347° 12′ 50″
	from the knot of ♓ [a nodo ♓]	347° 10′ 5″
	from the bright star of ♈ [a lucida ♈]	347° 10′ 20″

With all these limited among themselves, there is set: the right ascension of Mars at 0½h [Limitatis hiſce omnibus inter ſe ponitur aſcenſ. recta ♂ H. 0½]	347° 11′ 30″
declination [declinatio]	12° 14′ 10″ south [M.]
Resp. longitude [Reſp. Longitudo]	13° 26½′ ♓
Latitude [Latitudo]	6° 11′ 35″ south [M.]

Calculation [Calculus]	Longitude [Longitudo]	Latitude [Latitudo]
of Copernicus [Copernici]	8° 58′ ♓	6° 43′ south [M.]
Alphonsine [Alphonſin.]	18° 29′ ♓	6° 12′ south [M.]

22 August [DIE 22 AUGUSTI.]

Before midnight Mars was observed in the following manner. [Ante Mediam Noctem obſeruabatur ♂ in modum ſequentem.]

Hours, minutes [H. M.]	Distance of Mars from the lower horn of ♍ [Diſt. ♂ ab infer. cornu ♍]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
10h 11½m	46° 2′	12° 17½′	16° 15′	28 15
	twice [bis]	12° 17⅔′		

Hours, minutes [H. M.]	Distance of Mars from the lower horn of ♉ [Diſt. ♂ ab infer. cornu ♉]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
$10^h\ 24^m\ 20^s$	46° 2′			

The lower horn of ♉ was almost level with Mars with respect to the horizon, but yet a little lower. [Erat inf. cornu ♉ fere in æquilibrio horizontis cum ♂ ſed paulo tamen depreßius.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
$10^h\ 32^m\ 40^s$	29° 24′	12° 18′ 12° 17¾′	17° 40′	23 5
$10^h\ 43^m$	29° 24½′		18° 20′	
$10^h\ 49½^m$	29° 24′		18° 50′	
$10^h\ 55^m$	29° 23 11/12′		19° 4′	
	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]			
$11^h\ 11½^m$	51° 12⅝′			
$11^h\ 15^m$	51° 13⅛′			20 14
$11^h\ 21½^m$	51° 13½′			
	Distance of Mars from the bright star of the knot of ♓ [Diſt. ♂ a luc. nodi ♓]			The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
$11^h\ 37^m$	40° 15′ nearly [fere]			24 20
$11^h\ 42^m$	40° 15⅛′			23 5
$11^h\ 49^m\ 20^s$	40° 15¼′			21 16
	Distance of Mars from the bright star of the jaw of the Whale [Diſt. ♂ a luc. mandib. Ceti]			
$11^h\ 57½^m$	55° 1¼′			19 15
$0^h\ 2^m\ 20^s$	55° 1′ among clouds [inter nubes]			

These are doubtful, inasmuch as they were observed among clouds. [Hæ ſunt dubiæ vtpote inter nubes obſeruatæ.]

N.B. The calculation from this distance does not agree, by 2 minutes. [N.B. Non reſpondet calculus ex hac diſtantia in 2 minutis.]

	Distance of Mars from the outermost of the wing of Pegasus [Diſt. ♂ ab extr. alæ Peg.]	Declination of Mars [Decl. ♂]	Mars, east [♂ orient.]
0 20	27° 34′		
0 23½	27° 34¾′		1 47
0 30½		12° 19½′	
0 20⅔ corrected [corr.]		12° 19⅔′	

Meridian altitude of Mars by the steel instrument [Alt. mer. ♂ per Chal.]	21° 47¾′
by the revolving quadrant [per Vol.]	21° 47½′

	Distance of Mars from the outermost of the wing of Pegasus [Diſt. ♂ ab extr. alæ Peg.]	Declination of Mars [Decl. ♂]	Mars, east [♂ orient.]
0 57	27° 35′		Mars, west [♂ occid.]
10			
1 1½	27° 34½′		7 31
	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Pegaſi]		
1 8½	32° 49′		
1 10	32° 49⅓′		
50			
1 14	32° 49′		10 37

This evening it was exceptionally clear (except where noted) and the air calm. Mars, moreover, somewhat exceeded Jupiter itself in its visible diameter, and did not appear of so glowing-red a colour, but nevertheless somewhat redder than Jupiter. [Fuit hac veſpera apprime ſerenum (niſi vbi notatum eſt) & aër tranquillus, ♂ autem in diametro ſua viſibili ipſum ♃ aliquanto ſuperabat, nec ita rutilanti colore apparuit, ſed ♃ tamen aliquanto rubicundior.]

Set, at 10½ʰ, the distance of Mars from the horn of ♉ [*Pone H. 10½ diſt. ♂ a cornu ♉*]	*46° 2′*
from the left shoulder of ♒ [*a ſin. hum. ♒*]	*29° 24′*
11½ from the bright star of ♈ [*11½ a lucida ♈*]	*51° 13¼′*
from the bright star of the knot of ♓ [*a luc. nodi ♓*]	*40° 15′*
12 0 from the bright star of the jaw of the Whale [*12 0 a luc. mand. ceti*]	*55° 1′*
from the outermost of the wing of Pegasus [*ab extr. alæ Peg.*]	*27° 34′ 30″*
1⅙ from the outermost of the wing of Pegasus [*1⅙ ab extr. alæ Peg.*]	*27° 34½′*
from the mouth of Pegasus [*ab ore Pegaſi*]	*32° 49′*

But all of these are afterwards to be reduced to the times of transit through the meridian. [*Sed redigenda ſunt poſtea omnia ad tempora tranſitus per Merid.*]

23 August, evening [DIE 23 AUGUSTI, VESPERI.]

Namely, on the last day preceding the opposition of Mars with the simple Sun. [Vltimo videlicet die ☍ ♂ cum ſimplici ☉ præcedente.]

Before observing was begun, the clock was corrected. [Antequam inceptum eſt obſeruare corrigebatur horologium.]

Hours, minutes [H. M.]	Distance of Mars from the lower horn of ♉ [Diſt. ♂ ab inf. cornu ♉]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
$10^h\ 24^m$	45° 45¾′	12° 23′		23 20
		12° 22½′		
$10^h\ 34⅓^m$	45° 45⅔′		18° 13′	
10^h 47 2/[?]^m	45° 45½′			
	From the left shoulder of ♒ [Ab hum. ſin. ♒]			
$10^h\ 54⅚^m$	29° 9′	12° 23′	19° 23′	15 42
		12° 22⅔′		
$11^h\ 5¾^m$	29° 8⅚′			
$11^h\ 8⅓^m$	29° 9¼′			

Vice versa, from the eastern part of the sky [Vice verſa ab orientali parte cœli]

Hours, minutes [H. M.]	Distance of Mars from the lower horn of ♉ [Diſt. ♂ ab inf. cornu ♉]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]			Mars, east [♂ orient.]
$11^h\ 20^m$	51° 28′			
$11^h\ 33⅔^m$	51° 27⅚′			11 51
$11^h\ 39^m$	51° 28½′			
	Distance of Mars from the bright star of the knot of ♓ [Diſt. ♂ a luc. nodi ♓]			
$11^h\ 48^m$	40° 31½′			8 6
$11^h\ 56½^m$	40° 31⅚′			6 2
$12^h\ 1⅙^m$	40° 32′			
	Distance of Mars from the bright star of the jaw of the Whale [Diſt. ♂ a luc. mandib. ceti]			
$12^h\ 6⅔^m$	55° 17⅔′			3 31
$12^h\ 11^m$	55° 17⅔′			
$12^h\ 20^m$	55° 17¾′			1 56
$12^h\ 22⅓^m$	Mars passed [Tranſijt ♂]			

through the meridian, having an altitude [per meridianum habens altit.]	
by the steel instrument [per Chalyb.]	21° 42′ 30″
by the revolving quadrant [per Volub.]	21° 42′ 15″

Hours, minutes [H. M.]	Distance of Mars from the lower horn of ♍ [Diſt. ♂ ab inf. cornu ♍]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
		12° 24⅓′		
		12° 24½′		

Hours, minutes [H. M.]	Distance of Mars from the lower horn of ♍ [Diſt. ♂ ab inf. cornu ♍]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]			
12h 28½m	32° 39⅙′			
12h 43m	32° 38⅚′			
12h 46⅙m	32° 39⅙′ *Set here 32° 39′* [*Pone hic 32 39*]			
	Distance of Mars from the outermost of the wing of Pegasus [Diſt ♂ ab extr. alæ Peg.]			Mars, west [♂ occid.]
12h 55⅙m	27° 45⅓′			8 19
1h 0½m	27° 45′			
1h 3m	27° 45⅙′			
1h 8m	27° 45½′ *Set here 27° 45¼′* [*Pone hic 27 45¼*]			

Distance between the mouth of Pegasus [Diſt. inter os Pegaſi]	36° 42′
and the outermost of the wing [& extremam alæ]	36° 41⅔′

(These are not to be relied on: among little clouds.)[1] [(his non eſt fidendum, inter nubeculas)[1].]

This night too it was very clear and quite calm, with the east wind blowing gently, inclining toward the south. [Fuit etiam hac nocte admodum ſerenum & ſatis tranquillum, flante leniter Euro ad Meridiem inclinato.]

24 August [DIE 24 AUGUSTI.]

Mars was observed, when it was as nearly as possible opposite the simple Sun, in the manner that follows. [Obſeruabatur ♂ quando erat quam proxime in oppoſito ſimplicis ☉ in modum hunc qui ſequitur.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the lower horn of ♍ [Diſt. ♂ ab inf. cornu ♍]	Declination of Mars [Declin. ♂]	The first of the wing of Pegasus, east [Prima alæ Pegaſi or.]
10h 7½m	45° 29′		8 38
10h 11m	45° 31′	12° 27′	

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the lower horn of ♉ [Diſt. ♂ ab inf. cornu ♉]	Declination of Mars [Declin. ♂]	The first of the wing of Pegasus, east [Prima alæ Pegaſi or.]
		12° 27½′	Mars, east [♂ orient.]
$10^h\ 16^m\ 40^s$	45° 30′	12° 27½′	31 50
$10^h\ 8^m\ 10^s$ corrected [corr.]		12° 28′	
$10^h\ 20^m\ 40^s$	45° 29½′ *Set 45½* [*Pone 45½*]		
	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a hum. ſin. ♒]		The left shoulder of ♒, west [Hum. ſin. ♒ occ.]
$10^h\ 25^m$	28° 53⅝′		
$10^h\ 28^m\ 40^s$	28° 52′ doubtful [dubia]		
$10^h\ 30½^m$	28° 53⅝′		0 30
$10^h\ 32^m\ 50^s$	28° 54′		1 10
	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]		
$10^h\ 39½^m$	51° 43½′		
$10^h\ 45½^m$	51° 43′	Altitude of Mars [Altit. ♂]	
$10^h\ 49½^m$	51° 43′	19° 0′	5 17
$10^h\ 40^m$ corrected [corr.]			
$10^h\ 53½^m$	51° 43½′		
$10^h\ 56^m$	51° 43⅙′		
	Distance of Mars from the outermost of the wing of Pegasus [Diſt. ♂ ab extr. alæ Peg.]		
$11^h\ 2½^m$	27° 54½′		
$11^h\ 5^m\ 20^s$	27° 54½′		
$11^h\ 9^m$	27° 55′		
	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Pegaſi]		
$11^h\ 16^m\ 40^s$	32° 29⅓′		
$11^h\ 21^m\ 50^s$	32° 29¾′		
$11^h\ 28½^m$	32° 29⅓′		

[1] These were added afterwards in another hand. [Hæc poſtea alia manu adſcripta ſunt.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the lower horn of ♉ [Diſt. ♂ ab inf. cornu ♉]	Declination of Mars [Declin. ♂]	The first of the wing of Pegasus, east [Prima alæ Pegaſi or.]
	Vice versa, from the left shoulder of ♒ [Vice Verſa a hum. ſin. ♒]		Mars, east [♂ orient.]
$11^h\ 32^m$	28° 53¼′		13 0
$11^h\ 38^m\ 40^s$	28° 52⅝′		
$11^h\ 41½^m$	28° 53′		10 34

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the lower horn of ♉ [Diſt. ♂ ab inf. cornu ♉]	Declination of Mars [Declin. ♂]	The first of the wing of Pegasus, east [Prima alæ Pegaſi or.]
	Distance of Mars from the bright star of the knot of ♓ [Diſt. ♂ a luc. nodi ♓]		
$11^h\ 54½^m$	40° 48½′		
$11^h\ 57½^m$	40° 49′		
$0^h\ 3^m\ 10^s$	40° 48⅔′		5 9
	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]		
$0^h\ 9½^m$	51° 44′		
$0^h\ 12¾^m$	51° 43½′		
$0^h\ 15^m$	51° 43½′		2 10
$0^h\ 17½^m$	51° 44′		The first of the wing of Pegasus, west [Prima alæ Peg. occ.]
$0^h\ 24^m$	Mars passed through the meridian [Tranſijt ♂ per Merid.]		5 10
$0^h\ 15½^m$ corrected [corr.]	having an altitude [habens altit.]		

by the mural quadrant [per Muralem]	21° 37⅚′
by the steel instrument [per Chalyb.]	21° 38′ 25″
by the revolving quadrant [per Volub.]	21° 37¾′
Declination [Declin.]	12° 27¼′
	12° 28′

It was not very clear while the declination was being observed. [Non erat bene ſerenum cum declinatio obſeruaretur.]

The clock therefore ran 8½ more than it should everywhere, which is to be corrected. [Mouebatur itaque horologium vbique 8½ plus iuſto, quod corrigatur.]

29 August, evening [DIE 29 AUGUSTI, VESPERI.]

Observation of Mars a few days after the opposition with the simple Sun. [Obſeruatio ♂ paucis diebus poſt ☍ cum ſimplici ☉.]

The clock was corrected at $9⅓^h$. [Horologium corrigebatur H. 9⅓.]

Hours, minutes [H. M.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a hum. ſin. ♒]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Vulture, west [Vultur occid.]
$9^h\ 58½^m$	27° 36¼′	12° 46¼′	17° 25′	24 13
		12° 46½′		
$10^h\ 8^m$	*27° 36½′*		*18° 0′*	

Hours, minutes [H. M.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a hum. ſin. ♒]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Vulture, west [Vultur occid.]
	Between the bright star of the Vulture and Mars [*Inter luc. Vult. & ♂*]			
10h 13m	*55° 54′*		*18° 22′*	*28 5*
10h 17m	*55° 53⅔′*	*12° 47⅓′*	*18° 36′*	*29 1*
		12° 47½′		
	Mars from the bright star of ♈ [♂ a luc. ♈]			The first of the wing of Pegasus, east [Prima alæ Peg. or.]
10h 33½m	52° 55¾′			14 11
				The Vulture, west [Vult. occ.]
10h 39⅔m	52° 56⅔′		20° 0′	36 4
10h 48m	52° 56¾′		20° 23′	
11h 8⅔m	52° 56⅓′	12° 48′		
		12° 47⅚′		
11h 30⅔m	Mars was passing through the meridian [Tranſibat ♂ per merid.]			

among clouds, having an altitude [inter nubes, habens altit.]
by the steel instrument [per Chalyb.] 21° 18¼′
by the revolving quadrant [per Volub.] 21° 17⅚′

Investigation of the place of Mars for 22 August from the observations recorded above for that same day. [Inueſtigatio loci ♂ ad diem 22 Auguſti ex obſeruationibus eidem diej ſupra adſcriptis.]

At 10¼h, distance of Mars [H. 10¼ Diſt. ♂]	
from the lower horn of ♉ [ab infer. cornu ♉]	46° 2′
Declination of the lower horn of ♉ [Declin. infer. cornu ♉]	15° 57½′ south [M.]
Right ascension of the same [Aſc. R. eiusdem]	299° 31¾′
Angular difference of ascension [Angulus differ. aſcenſionalis]	47° 24′ 55″
Therefore the right ascension of Mars [Ergo Aſcenſio recta ♂]	346° 56′ 40″
Declination of Mars, south [Decl. ♂ M.]	12° 18′
At 10½h, distance of Mars [H. 10½ Diſt. ♂]	
from the left shoulder of ♒ [a ſiniſt. hum. ♒]	29° 24′
Angular difference of ascension, computed [Angulus differ. aſc. ſupput.]	29° 25′
Therefore the right ascension of Mars [Ergo Aſc. recta ♂]	346° 55′ 35″
At 11⅙h, distance of Mars from the bright star of ♈ [H. 11⅙ Diſt. ♂ a lucida ♈]	51° 13′
Angular difference of ascension, computed [Ang. diff. aſc. ſupput.]	39° 11′ 43″
Therefore the right ascension of Mars [Ergo Aſc. recta ♂]	346° 55′ 3″

At 11½^{h}, distance of Mars from the bright star of the knot of ♓ [H. 11½ Diſt. ♂ a luc. nodi ♓]	40° 15′
Angular difference of ascension [Angulus diff. aſcenſ.]	37° 41′ 10″
from this, the right ascension of Mars [hinc Aſcenſ. R. ♂]	346° 54′ 35″

Collection of all the right ascensions for Mars on this day, and of their reduction to its transit through the meridian. [Collectio omnium aſcenſionum rectarum in ♂ hoc die earumque ad tranſitum eius per Meridianum reductarum.]

At 0⅓^{h} [H. 0⅓]	Right ascension of Mars [Aſcenſ. R. ♂]	
	from the lower horn of ♑ [ab inf. cornu ♑]	346° 55′ 20″
	from the left shoulder of ♒ [a ſin. hum. ♒]	346° 55′ 5″
	from the bright star of ♈ [a luc. ♈]	346° 54′ 45″
	from the bright star of the knot of ♓ [a luc. nodi ♓]	346° 54′ 20″

With all these limited to 0⅓^{h} [Hiſce omnibus limitatis ad horam 0⅓]	
after midnight, the right ascension of Mars is set [P. M. N. ponitur Aſcenſ. R. ♂]	346° 55′ 0″
Meridian declination [Decl. Merid.]	12° 18′ 0″
Resp. longitude [Reſp. Longitudo]	13° 10¼′ ♓
Latitude [Latitudo]	6° 8⅚′ south [M.]

Inquiry into the place of Mars from all the more select observations made on 23 August. [Inquiſitio loci ♂ ex omnibus obſeruationibus ſelectioribus habitis die 23 Auguſti.]

At 10½^{h}, distance of Mars from the lower horn of ♑ [H. 10½ Diſt. ♂ ab inf. cornu ♑]	45° 45½′
Angular difference, computed [Angulus diff. ſupput.]	47° 8′ 42″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	346° 40′ 27″
Declination of Mars from the meridian altitude [Decl. ♂ ex altit. merid.]	12° 23′
At 10⅚^{h}, distance of Mars from the left shoulder of ♒ [H. 10⅚ Diſt. ♂ a ſin. hum. ♒]	29° 9′
Angular difference of ascension, computed [Ang. diff. aſc. ſupputatus]	29° 8′ 53″
Therefore the right ascension of Mars [Ergo Aſcenſio R. ♂]	346° 39′ 35″
At 11¼^{h}, distance of Mars from the bright star of ♈ [H. 11¼ Diſt. ♂ a luc. ♈]	51° 28′
Angular difference of ascension [Angulus diff. aſc.]	39° 27′ 25″
Right ascension of Mars [Aſc. R. ♂]	346° 39′ 20″
At 11¾^{h}, distance of Mars from the bright star of the knot of ♓ [H. 11¾ Diſt. ♂ a luc. nodi ♓]	40° 31¾′
Angular difference of ascension [Ang. diff. aſc.]	38° 37′ 35″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	346° 38′ 10″

At 12¼^{h}, distance of Mars [H. 12¼ Diſt. ♂]	
from the bright star of the jaw of the Whale [a luc. mand. ceti]	55° 17′ 45″
Angular difference of ascension [Angulus diff. aſcenſ.]	53° 38′ 32″
Therefore the right ascension of Mars [Ergo Aſcenſ. R. ♂]	346° 40′ 20″

Reduction of all the right ascensions to 11^{h} complete. [Reductio omnium aſcenſionum rectarum ad H. 11 completam.]

At 11^{h} complete, the right ascension of Mars from [H. 11 compl. Aſc. R. ♂ a]	the lower horn of ♍ [Cornu infer. ♍]	346° 40′ 7″
	the left shoulder of ♒ [Sin. hum. ♒]	346° 39′ 28″
	the bright star of ♈ [Lucida ♈]	346° 39′ 30″
	the knot of ♓ [Nodo ♓]	346° 38′ 40″
	the bright star of the jaw [Luc. mand.] of the Whale [Ceti]	346° 41′ 0″

With all these limited among themselves as far as could be done, while trusting rather those that came from the bright star of ♈ and the left shoulder of ♒, the right ascension for this same hour, 11^{h} complete, is set without perceptible error at 346° 39½′. [Hiſce omnibus inter ſe vti fieri potuit limitatis, fidendo tamen potius ijs quæ a lucida ♈ & ſiniſtro humero ♒ prouenerunt, aſcenſio recta ponitur ad hanc eandem 11 horam completam absque ſenſibili errore 346 39½]

Declination, south [Declinatio M.]	12° 23′
Resp. longitude [Reſp. Longitudo]	12° 54⅓′ ♓
Latitude [Latitudo]	6° 7½′ south [M.]

For the longitude and latitude of Mars for the same day, 23 August, from the observation from the stars of Pegasus. [Pro longitudine & latitudine ♂ ad eundem diem 23 Auguſti ex obſeruatione a ſtellis Pegaſi.]

At about 12⅚^{h}, distance [Circa H. 12⅚ Diſt.]	
from the mouth of Pegasus [ab ore Pegaſi]	32° 39′
from the outermost of the wing of Pegasus [ab extr. alæ Pegaſi]	27° 45¼′
Longitude of the mouth of Pegasus [Oris Peg. Longit.]	26° 15′ 35″ ♒
Latitude [Latit.]	22° 8′ 0″ north [B.]
Longitude of the outermost of the wing [Extr. alæ Longit.]	3° 31′ 45″ ♈

Latitude [Latit.]	12° 35′ 0″ north [B.]
Angular difference of longitude from the outermost of the wing [Ang. diff. long. ab extr. alæ]	20° 36′ 56″
Therefore by this reasoning [Ergo per hanc ratiocinationem]	
there results for Mars the longitude [reſultat ♂ Long.]	12° 54⅚′ ♓
Latitude [Lat.]	6° 8¼′ south [M.]

Computation of the place of Mars from the observations assigned to 24 August. [Supputatio loci ♂ ex obſeruationibus diej 24 Auguſti aßignatis.]

At 10^h 0^m, distance of Mars [H. 10.0 Diſt. ♂]	
from the lower horn of ♑ [ab inf. cornu ♑]	45° 29′
Declination of Mars [Declin. ♂]	12° 27½′
Angular difference of ascension [Angulus differ. aſcenſ.]	46° 52′ 20″
Therefore the right ascension of Mars [Ergo Aſcenſio R. ♂]	346° 24′ 5″
At 10^h 20^m, distance of Mars from the left shoulder of ♒ [H. 10.20 Diſt. ♂ a ſin. hum. ♒]	28° 53′ 50″
Angular difference of ascension [Angul. diff. aſcenſ.]	28° 52′ 40″
Therefore the right ascension of Mars [Ergo aſcenſio R. ♂]	346° 23′ 15″
At 10^h 40^m, distance of Mars from the bright star of ♈ [H. 10.40 Diſt. ♂ a luc. ♈]	51° 43′
Angular difference of ascension [Angul. differentiæ aſcenſ.]	39° 43′ 54″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	346° 22′ 51″
At 11^h 46^m, distance of Mars from the bright star of the knot of ♓ [H. 11.46 Diſt. ♂ a luc. nodi ♓]	40° 48½′
Difference of ascension [Differ. aſcenſ.]	38° 54′ 40″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	346° 21′ 5″

Collection of all the right ascensions of Mars, and reduction to $10½^h$ (where there would be no parallax of longitude). [Collectio omnium aſcenſionum rectarum ♂ & ad H. 10½ reductio (vbi nulla longitudinis parallaxis eßet)]

At $10½^h$, the right ascension of Mars from [Hora 10½ Aſc. recta ♂ a]	the lower horn of ♑ [cornu ♑ infer.]	346° 23′ 45″
	the shoulder of ♒ [humero ♒]	346° 23′ 10″
	the bright star of ♈ [lucida ♈]	346° 22′ 58″
	the knot of ♓ [nodo ♓]	346° 22′ 58″

With 15″ added for the parallax. With all these limited, there comes out for $10½^h$: [Additis 15″ pro parallaxi. Limitatis his omnibus prouenit ad horam 10½]

Limited right ascension of Mars [Aſc. R. ♂ limitata]	346° 23⅙′

Declination of Mars, south [Declin. M. ♂]	12° 27½′
Resp. longitude [Reſp. Longitudo]	12° 37′ 50″ ♓
Latitude [Latitudo]	6° 5′ 25″ south [M.]

For the longitude and latitude of the same Mars for the 24th day, by the usual method of triangles, from the distance from the mouth of Pegasus and the outermost of the wing of Pegasus. [Pro eiusdem ♂ longitudine & latitudine ad 24 diem per vſitatum modum triangulorum ex diſtantia ab ore Pegaſi & extrema alæ Pegaſi.]

At 11^h 0^m, distance of Mars [H. 11.0 Diſt. ♂]	
from the mouth of Pegasus [ab ore Pegaſi]	32° 29½′
from the outermost of the wing [ab extrema alæ]	27° 54½′
Angular difference of longitude from the outermost of the wing [Ang. diff. long. ab extr. alæ]	20° 51′ 27″
So at 11^h, by this reasoning, the longitude of Mars was [Fuit itaque H. 11 per hanc ratiocinationem ♂ Longitudo]	12° 40′ 15″ ♓
Latitude [Latitudo]	6° 6′ 8″ south [M.]

In longitude, however, the ones above are rather to be trusted. The latitude, however, can be increased a very little by these. [Fidendum autem eſt potius ſuperioribus in longitudine. Latitudo autem paululum per hæc poteſt augeri.]

Computation for the place of Mars on 29 August from the observations recorded just above. [Supputatio pro loco ♂ die 29 Auguſti ex proximis aſcriptis obſeruationibus.]

At 10^h 5^m, distance of Mars [H. 10 M. 5 Diſt. ♂]	
from the left shoulder of ♒ [a ſin. hum. ♒]	27° 36⅓′
Angular difference of ascension [Angulus differentiæ aſcenſ.]	27° 29′ 30″
From this, the right ascension of Mars [Hinc Aſc. R. ♂]	345° 0′ 5″
At $10¼^h$, distance of Mars from the bright star of the Vulture [H. 10¼ Diſt. ♂ a luc. Vultur.]	55° 53′ 45″
Declination of the bright star of the Vulture [Declin. luc. Vulturis]	7° 51½′ north [B.]
Its right ascension [Aſcenſ. R. eius]	292° 43′ 20″
From this, the right ascension of Mars [Hinc Aſc. R. ♂]	345° 0′ 20″
For the angular difference of ascension is [Nam ang. differ. aſc. eſt]	52° 17′ 0″
At $10⅔^h$, distance of Mars from the bright star of ♈ [H. 10⅔ Diſt. ♂ a luc. ♈]	52° 56¾′
Angular difference of ascension [Angulus differ. aſcenſ.]	41° 5′ 40″
Therefore from this, the right ascension of Mars [Ergo hinc Aſc. R. ♂]	345° 1′ 5″
At $10⅓^h$, set the limited right ascension of Mars [H.10⅓ pone Aſc. rectam ♂ lim.]	345° 0′ 25″
and the declination [Declinationem vero]	12° 47′ 30″

Resp. longitude [Reſp. Longitudo]	11° 15⅔′ ♓
Latitude [Latitudo]	5° 52¼′ south [M.]

For the opposition of Mars with the simple Sun. [Pro oppoſitione ♂ cum ſimplici ☉.]

I. The daily motion about the opposition is set at 16′ 45″, for no greater one can be drawn out, its investigation having been made from the most select observations near the opposition. [I. Ponitur motus diurnus circa ☍ 16 M. 45 S, neque enim maior elici poteſt, facta eius inquiſitione ex ſelectißimis obſeruationibus iuxta ☍.]

II. For the 24th day at 10½^{h} [II. Ad diem 24 hora 10½]	Our simple Sun [Noſter ſimplex ☉$^{l_{is}}$]	♍ 12° 55′ 0″
	True longitude of Mars [Longit. ♂ vera]	♓ 12° 37′ 50″
	Difference [Differentia]	0 17 10

The opposition of Mars with the simple Sun therefore took place on 24 August at 5^{h} 4^{m} in the afternoon; and at that time, according to the daily motion supposed earlier, there was: [Facta igitur eſt ☍ ♂ cum ſimplici ☉$^{l_{is}}$ Die 24 Auguſti hora 5 M. 4 pomerid., fuit autem tum iuxta motum diurnum prius ſuppoſitum]

Apparent longitude of Mars [♂ Longitudo viſa]	12° 41⅔′ ♓
Apparent latitude [Latitudo viſa]	6° 6′ south [M.]
True latitude [Vera latitudo]	6° 3′
The parallax is assumed [Parallaxis aßumitur]	3

Collection of the phenomena [Greek: φαινομένων (phainomenōn, "of the appearances, of the phenomena")] of Mars observed this year, together with a comparison of the calculation of Copernicus and of Alfonso. [Collectio φαινομένων ♂ obſeruatorum hoc anno vna cum collatione Calculi Copernici & Alphonſi.]

From the observations [Ex obſeruat.]		From the Copernican calculation [Ex Calculo Copern.]		From the Alphonsine calculation [Ex Calculo Alphonſ.]	
Longitude [Long.]	Latitude [Lat.]	Longitude [Long.]	Latitude [Lat.]	Longitude [Long.]	Latitude [Lat.]

	From the observations [Ex obſeruat.]	From the Copernican calculation [Ex Calculo Copern.]		From the Alphonsine calculation [Ex Calculo Alphonſ.]	
July [Julius]					
21d 14h 0m	17° 45¾′ ♓	5° 46¼′ south [M]	14° 48½′ ♓	5° 30′ south [M]	22° 44′ ♓	5° 29′ south [M]
24 13 40	17° 51⅓′	5° 54′ 0″			
30 13 45	17° 39½′	6° 6¼′	13° 57′	6° 0′	22° 46′	5° 46′
August [Auguſtus]					
10 13 45	16° 7½′	6° 18′ 52″	12° 0′	6° 30′	21° 26′	6° 0′
17 13 0	14° 29′ 5″	6° 16′ 7″	10° 11′	6° 40′	19° 38′	6° 6′
20 13 0	13° 44′ 0″	6° 14′ 0″	9° 16′	6° 30′	18° 46′	6° 10′
21 12 30	13° 26′ 30″	6° 11′ 36″	8° 58′	6° 43′	18° 29′	6° 12′
22 12 20	13° 10′ 15″	6° 8′ 50″	8° 39′	6° 43′	18° 11′	6° 14′
23 11 0	12° 54′ 20″	6° 7′ 30″	8° 21′	6° 40′	17° 53′	6° 15′
24 10 30	12° 37′ 50″	6° 5′ 30″	7° 4′	6° 37′	12° 35′	6° 16′
29 10 20	11° 15′ 25″	5° 52¼′	6° 42′	6° 21′	15° 59′	6° 22′

It is worth considering that Mars had its greatest southern latitude about 10 August and afterwards decreased, so that on the 24th, at the opposition, it had come back almost ¼ of a degree nearer to the ecliptic; which, however, the Canons by no means show, even with the place of greatest latitude corrected to 18° ♒, however the greatest latitude may be assumed there. The cause of this must be studiously investigated.[1] [*Conſideratione dignum eſt quod ♂ circa 10 diem Auguſti habuerit maximam latitudinem auſtrinam & poſtea decreuerit, ita vt die 24 in ♌ quaſi ¼ gradus propior Eclipticæ redditus ſit, quod tamen Canones etiam correcto latitudinis maximæ loco in 18 ♒ nequaquam exhibent, quomodocunque aſſumatur illic maxima latitudo, cuius rei cauſa ſtudioſe inquirenda venit*[1].]

8 September [DIE 8 SEPTEMBRIS.]

In the evening, about the meridian, Mars was observed after the opposition with the simple Sun, in the manner that follows. [Veſperi circa Meridiem obſeruabatur ♂ poſt ♌ cum ſimplici ☉lie in modum qui ſequitur.]

Hours, minutes [H. M.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]	Declination of Mars [Decl. ♂]	The right shoulder of ♒, west [Dext. hum. ♒ occ.]
10h 11m	25° 18⅓′	13° 6⅓′ with one [vno]	1 4

Hours, minutes [H. M.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]	Declination of Mars [Decl. ♂]	The right shoulder of ♒, west [Dext. hum. ♒ occ.]
$10^h\ 18^m$	25° 19⅙′		
$10^h\ 21½^m$	25° 18⅓′		
$10^h\ 26^m$	25° 18¼′	13° 7½′	4 33
		13° 7′	

Hours, minutes [H. M.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]	Declination of Mars [Decl. ♂]	The right shoulder of ♒, west [Dext. hum. ♒ occ.]
	Vice versa. From the bright star of the knot of ♓ [Vice verſa. A luc. nodi ♓]		
$10^h\ 49½^m$	44° 35⅙′		
$10^h\ 52½^m$	44° 36′	Some defect clung to the pinnule. [Vitium aliquod pinnacidio adhæſit]	
$10^h\ 56^m$	44° 35⅚′		
$10^h\ 59½^m$	44° 35¼′		
$11^h\ 2^m\ 20^s$	44° 35⅔′		
$11^h\ 14½^m$	Transit of Mars through the meridian, having [Tranſitus ♂ per merid. habens]		

altitude by the steel instrument [alt. per Chalyb.]	20° 58′ 30″
by the revolving quadrant [per Volub.]	20° 58′ 15″

Time on the equator: the first in the outpouring of the water, 4° 31′ from the meridian. [Tempus in Æquatore: Prima in effuſione aquæ 4 31 a merid.]

[1] Compare Vol. V, p. 335, and the Appendix to the observations of this year. [Cfr. T. V p. 335 et Appendicem ad obſervationes hujus anni.]

20 SEPTEMBER, EVENING [DIE 20 SEPTEMBRIS, VESPERI.]

N.B. Mars near the second station, beginning to become direct. [*N.B.* ♂ *iuxta ſtationem alteram incipiens dirigi.*]

10 55½	Declination of Mars [Decl. ♂]	12° 50½′ with one pinnule, [vno pinn.,]
	among clouds [inter nubes]	
	Meridian altitude by the steel instrument [Alt. merid. per Chal.]	21° 14¾′
	by the revolving quadrant [per Vol.]	21° 14⅔′

11 10½	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]	23° 31′
	The first of the wing of Pegasus [Prima alæ Pegaſi]	3 7 east [or.]

Moderately good. These were observed among clouds passing across. There was also a strong storm from the west. [Mediocriter bona. Hæc obſeruata ſunt inter transcurrentes nubes. Valida etiam erat tempeſtas ab occaſu.]

21 September [DIE 21 SEPTEMBRIS.]

In the evening. The clock was corrected at 3^h in the afternoon. [Veſperi. Horologium corrigebatur hora 3 pomerid.]

Hours, minutes [H. M.]	Distance of Mars from the left shoulder of ♒ [Diſt. ♂ a ſin. hum. ♒]	Declination of Mars [Decl. ♂]	The left shoulder of ♒, west [Hum. ſin. ♒ occ.]
$9^h\ 9^m$	23° 26¼′		4 55
$9^h\ 14½^m$	23° 26⅓′ twice [bis]		
$9^h\ 19½^m$	23° 26¼′		
	Vice versa, Mars from the bright star of the Vulture [Vice Verſa ♂ a luc. Vult.]		
$9^h\ 26½^m$	51° 55⅚′	12° 47′ with one [vno]	9 9
$9^h\ 32^m\ 40^s$	51° 55⅚′	12° 47′	
		12° 46¾′	
$9^h\ 36^m$	51° 55⅔′		
	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]		
$9^h\ 50^m$	56° 15½′		14 54
$9^h\ 54^m$	56° 15⅔′		
$10^h\ 8⅔^m$	56° 15½′		
$10^h\ 11^m$	56° 15⅚′		
	Distance of Mars from the bright star of the knot of ♓ [Diſt. ♂ a luc. nodi ♓]		The first of the wing of Pegasus, east [Prima alæ Peg. or.]
$10^h\ 15^m\ 50^s$	46° 17′		2 18
$10^h\ 20^m$	46° 17′	12° 47⅙′	
		12° 47′	
$10^h\ 24^m$	*Mars crossed the meridian* [*Tranſiuit ♂ meridianum*]		
	having an altitude [*habens altit.*]		

by the steel instrument [*per Chalyb.*]		*21° 19¾′*	
by the revolving quadrant [*per Volub.*]		*21° 19¼′*	
$10^h\ 35^m$, declination of Mars [*10 35 Decl. ♂*]		*12° 46½′*	*the better ones* [*meliores*]
		12° 46¾′	

N.B. About these days Mars should have been stationary according to the Prutenic calculation, on 21 September, *which, however, does not agree; for it changed its distance from the left shoulder of ♒ since yesterday by about 5′, which agrees more correctly with the Alphonsine calculation, which puts its station about 28 September. See the following observations of Mars.* [*N.B. Circa hos dies debuit ♂ eße ſtationarius iuxta calculum Prutenicum* die 21 Septembris, *quod tamen non concordat; mutauit enim diſtantiam a ſiniſtro humero ♒ ab heſterna die per 5. Min. fere, quod rectius quadrat Alphonſino calculo, qui ſtationem eius facit iuxta diem 28 Septembris. Vide ſequentes ♂ obſeruationes.*]

For the place of Mars from the observations on 21 September.[1] [Pro loco ♂$^{ti^s}$ ex obſeruationibus ad diem 21 Septembris[1].]

At 9⅔^h, distance of Mars from the left shoulder of ♒ [H. 9⅔ Diſt. ♂ a ſiniſtro hum. ♒]	23° 26¼′
from the bright star of ♈ [a lucida ♈]	56° 15⅔′
Declination of Mars [Declin. ♂]	12° 46′ south [M.]
Left shoulder of ♒ [Sin. hum. ♒]	7° 18′ south [M.]
Bright star of ♈ [Luc. ♈]	21° 31′ south [M.]
Right ascension of the shoulder of ♒ [Aſcenſ. Recta hum. ♒]	317° 30′ 50″
of the bright star of ♈ [luc. ♈]	26° 7′ 15″
By triangular computation [Per ſupputationem triangularem]	
Angular difference of ascension from the shoulder of ♒ [Angulus diff. Aſc. a hum. ♒]	23° 9′ 2″
from the bright star of ♈ [luc. ♈]	45° 27′ 45″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	340° 39′ 40″
Declination [Decl.]	12° 46′
Resp. longitude [Reſp. Longitudo]	7° 20⅙′ ♓
Latitude [Latitudo]	4° 13¾′ south [M.]
True longitude in its own orbit [Longit. vera in proprio orbe]	7° 15′ ♓

26 September [DIE 26 SEPTEMBRIS.]

In the evening Mars was observed in the following manner. [Veſperi obſeruabatur ♂ in modum ſequentem.]

Hours, minutes [H. M.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur occ]
8^h 59½^m	51° 38¾′	12° 25⅙′ with one [vno]	
9^h 5^m	51° 39′		37 38
9^h 9½^m	51° 40′ twice [bis]		
9^h 16^m	51° 40′		39 43

Hours, minutes [H. M.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur occ]
9^h $28½^m$		12° 25⅙′ with one [vno]	
9^h $51½^m$	Mars crossed [Tranſijt ♂] through the meridian, having [per merid. habens]		47 50

altitude by the steel instrument [alt. per Chal.]	21° 41⅓′
by the revolving quadrant [per Volub.]	21° 41′

Hours, minutes [H. M.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur occ]
	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]		
10^h $1½^m$	56° 11¼′		
10^h 8^m	56° 11½′		
10^h $14½^m$	56° 11¼′		
10^h 22^m	56° 11′		
10^h 33^m 20^s	56° 11⅔′		
10^h 38^m 40^s	56° 12′		Altitude of Mars [Altit. ♂] 21° 7′

Set the distance of Mars from the bright star of ♈ at 56° 11½′, from the bright star of the Vulture at 51° 40′. [*Pone diſtantiam ♂ a lucida ♈ 56 11½, a lucida Vult. 51 40.*]

N. B. Mars was nearly at the second station itself. [*N. B. Erat Mars fere circa ipſam ſtationem ſecundam.*]

[1] From codex K alone. [E codice K ſolo.]

28 September [DIE 28 SEPTEMBRIS.]

In the evening Mars was observed in this manner. [Veſperi obſeruabatur ♂ hoc modo.]

Mars stationary according to the Alphonsines. [*♂ ſtationarius apud Alphonſinos.*]

In the observations of Mars, set at about 10^h its distance [*In obſeruationibus ♂ pone circa horam 10 diſtantiam eius*]

from the bright star of ♈ [*a lucida ♈*]	*56° 4′*
from the bright star of the Vulture [*a lucida Vulturis*]	*51° 35′*
and the southern declination [*& declinationem auſt.*]	*12° 13½′*

It seems, however, to be no longer retrograde, but rather direct, although the Alphonsine calculation establishes it as stationary on this day. [*Videtur autem non amplius retrogradus, ſed potius directus, quamvis calculus Alphonſinus ſtatuit eum hoc die ſtationarium.*]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur occid.]
$8^h\ 26^m\ 40^s$	56° 5⅔′ doubtful [*dub.*]	12° 12¾′	25 17
		12° 13¼′	
$8^h\ 30^m\ 10^s$	56° 3⅓′		
$8^h\ 34^m$	56° 3′		
$8^h\ 36^m\ 40^s$	56° 4′		
$8^h\ 40½^m$	56° 3⅔′		
$8^h\ 42^m\ 10^s$	56° 3⅔′		
$8^h\ 49^m$	56° 3⅓′		
$8^h\ 52^m\ 40^s$	56° 3⅓′	12° 14′ with one [vno]	
	Distance of Mars from the bright star of the Vulture [Diſt. ♂ a Luc. Vult.]		
$9^h\ 6^m\ 50^s$	51° 35½′		
$9^h\ 11^m\ 10^s$	51° 35′		
$9^h\ 29^m$	51° 35′		
$9^h\ 43^m$		12° 14′	
		12° 13′	
$9^h\ 47^m\ 20^s$	51° 35½′		
	Vice versa, Mars from the bright star of ♈ [Vice Verſa ♂ a luc. ♈]		*The Vulture, west* [*Vultur occ.*]
$9^h\ 50^m$	56° 4½′		*45 40*
$9^h\ 59^m$	Mars crossed [Tranſijt ♂]		47 52
	through the meridian, having an altitude [per merid. habens altit.]		

by the steel instrument [per Chal.]	21° 52⅙′
by the revolving quadrant [per Vol.]	21° 51′ 50″

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur occid.]
$10^h\ 5^m\ 20^s$	56° 3⅔′		
$10^h\ 13½^m$	56° 4′	12° 14′ with both [vtroque]	

3 October, in the evening[1] [DIE 3 OCTOBRIS, VESPERI[1].]

The observations of Mars about the last station follow in this manner. [♂ obſeruationes circa ſtationem vltimam ſequuntur in hunc modum.]

Hours, minutes [H.M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]		
$7^h\ 39½^m$	55° 33′	Altitude of Mars [Altit. ♂]	18° 10′
	Distance from the Vulture [Diſt. a Vulture]		
$7^h\ 47^m$	51° 39′	The left shoulder of ♒, west [Hum. ſin. ♒ occ.]	4 2
$7^h\ 56½^m$	51° 39⅚′		

Hours, minutes [H.M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]		
$8^h\ 0⅔^m$	51° 40′	Declination of Mars [Decl. ♂]	11° 42′
			11° 42⅓′
	Again from the bright star of ♈ [Rurſus a luc. ♈]		
$8^h\ 22^m$	55° 32¾′	The outermost of the wing of Pegasus, east [Extrema alæ Peg. or.]	19 17
		I think it was among clouds [puto fuiße inter nubes]	
$8^h\ 47½^m$	55° 32⅚′	The Vulture, west [Vultur occ.]	35 15
$9^h\ 40^m\ 20^s$	Mars crossed through the meridian, having [Tranſijt ♂ per merid. habens] an altitude, among clouds, [alt. inter nubes,]		

by the steel instrument [per Chal.]	22° 24′
by the revolving quadrant [per Vol.]	22° 23½′
Declination in the armillae [Decl. in armillis]	11° 42⅓′
	11° 43′

12 October [DIE 12 OCTOBRIS.]

In the evening Mars was observed, about the middle digression of its annual orb, in the following manner. [Veſperi obſeruabatur ♂ circa mediam annui orbis ſui digreßionem in ſequentem modum.]

The clock corrected shortly before. [Horologium paulo ante correctum.]

Hours, minutes [H. M.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur occ.]
$8^h\ 16^m$	52° 23⅔′		38 46
$8^h\ 23^m$	52° 23⅔′	10° 32′	
		10° 31⅔′	
$8^h\ 33^m$	52° 23⅚′		43 26

Hours, minutes [H. M.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur occ.]
	Vice versa from the bright star of ♈ [Vice Verſa a luc. ♈]		
$8^h\ 43^m$	53° 53⅚′		44 30
$8^h\ 49½^m$	53° 53⅔′		45 47
$8^h\ 55⅔^m$	53° 53⅓′		
$9^h\ 5⅓^m$	Mars crossed [Tranſijt ♂] through the meridian, having an altitude [per Merid. habens alt.]		

by the steel instrument [per Chalyb.]	23° 34¾′	
by the revolving quadrant [per Volub.]	23° 34½′	
Declination [Decl.]	10° 32′ with both [vtroq.]	49 16

This evening the sky was moderately clear, and the condition of the air exceptionally calm. Moreover, Mars was about 26° from the perigee of the annual orb, where the Copernican hypothesis puts the greatest excess, on account of its variation in the eccentric. These observations therefore serve both for correcting this excess and for duly examining and restoring the motion of Mars about the middle distance between the perigee of the annual orb and the midpoint of the same. [Erat hac veſpera mediocriter ſerenum, & aëris conſtitutio apprime tranquilla. Fuit autem ♂ circa 26 gr. a perigæo annui orbis, vbi maximum exceßum ob variationem eius in Eccentrico hypotheſis Copernicæa ponit. Conducunt itaque hæ obſeruationes tum ad exceßum hunc corrigendum, tum ♂ti^s motum circa mediam diſtantiam inter perigæum annui orbis & medietatem eiuſdem rite examinandam & reſtituendam.]

[1] The codex has Day 1. Compare above, pp. 269 and 281. [Codex habet Die 1. Cf. ſupra pp. 269 et 281.]

29 October [DIE 29 OCTOBRIS.]

In the evening Mars was observed about the greatest digression of the annual orb. [Veſperi obſeruabatur ♂ circa maximam digreßionem annui orbis.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Vulture, west [Vultur occ.]
$6^h\ 34^m$	55° 40⅚′	7° 36′		31 10
		7° 36½′		
$6^h\ 42^m\ 40^s$	55° 40¾′		24° 23′	33 48
$6^h\ 49^m\ 50^s$	55° 40¾′	7° 36½′		34 31
	Vice versa, Mars from the bright star of ♈ [Vice Verſa ♂ a luc. ♈]			

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Vulture, west [Vultur occ.]
$7^h\ 3^m\ 50^s$	48° 41⅔′ among clouds [inter nubes]			38 47
$7^h\ 15^m\ 30^s$		7° 36½′ with both [vtroq.]		41 45
$7^h\ 22^m\ 4^s$	48° 41½′ Again from the bright star of the Vulture [Denuo a luc. Vult.]			43 21
$7^h\ 28^m\ 20^s$	55° 41⅙′ Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]	7° 37′ with both [vtroq.]		44 43
$7^h\ 38^m\ 50^s$	48° 39′ among clouds [inter nubes]			47 23
$7^h\ 47^m\ 20^s$	48° 40¾′ good [bona]	7° 36⅓′ with one [vno]		50 37
$8^h\ 4^m\ 30^s$	Mars was crossing [Tranſibat ♂] through the meridian, having an altitude [per Merid. habens alt.]			

by the steel instrument [per Chal.]	26° $29\frac{11}{12}$′
by the revolving quadrant [per Vol.]	26° 30′

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The Vulture, west [Vultur occ.]
		7° 37′		53 43
		7° 36½′		

This evening it was not clear enough, especially in the eastern part of the sky and around the south. [Hac veſpera non erat ſatis ſerenum, præcipue ab orientali cœli parte & circa meridiem.]

For the place of Mars from the preceding observations.[1] [Pro loco ♂ ex obſeruationibus antecedentibus[1].]

At $7^h\ 0^m$, distance of Mars from the bright star of the Vulture [H. 7 0 Diſt. ♂ a lucida Vult.]	55° 41′
from the bright star of ♈ [a lucida ♈]	48° 41′
Declination of Mars, south [Declin. ♂ M.]	7° 35′ 30″
From these the limited right ascension of Mars, which agrees well [Ex his Aſc. R. ♂ limitata quæ bene]	

with both [vtrique conuenit]	346° 21′
Resp. longitude [Reſp. Longitudo]	14° 29⅚′ ♓
Latitude [Latitudo]	1° 35⅔′ south [M.]

30 October [DIE 30 OCTOBRIS.]

In the evening Mars was observed again about the meridian. [Veſperi obſeruabatur denuo ♂ circa Meridianum.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur. occ.]
$7^h\ 13^m\ 50^s$	55° 57½′		
$7^h\ 17^m\ 50^s$	55° 57⅔′	7° 24′	46 43
		7° 24⅓′	
$7^h\ 26^m\ 50^s$	55° 57½′		48 56

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur. occ.]
	Vice versa from the bright star of ♈ [Vice Verſa a luc. ♈]		
$7^h\ 33^m\ 40^s$	48° 18¼′	7° 24⅓′ altitude of Mars [Alt. ♂]	50 36
		7° 24½′ by the steel instrument [per Chal.]	
$7^h\ 40^m\ 30^s$	48° 17′ among clouds [inter nubes]		26 41
$7^h\ 47^m\ 10^s$	Mars crossed through the meridian, having [Tranſijt ♂ per Merid. habens]		
$8^h\ 4^m\ 45^s$	corrected [corr.]		54 0

altitude by the steel instrument [alt. per Chal.]	26° 41⅓′
by the revolving quadrant [per Vol.]	26° 41⅓′

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the Vulture [Diſt. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur. occ.]
		7° 25′	
		7° 24½′	
	Distance from the bright star of ♈ [Diſt. a luc. ♈]		

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the Vulture [Dist. ♂ a Vulture]	Declination of Mars [Decl. ♂]	The Vulture, west [Vultur. occ.]
$7^h\ 54^m\ 50^s$	48° 18⅓′		
$7^h\ 58^m\ 20^s$	48° 17′		
$8^h\ 4^m\ 30^s$	48° 18′	Not very certain, because of the nearness of the Moon. [Non admodum certæ ob vicinitatem ☾.]	
$8^h\ 7^m\ 10^s$	48° 17⅚′		
$8^h\ 14^m\ 20^s$	48° 17′		
$8^h\ 18^m\ 20^s$	48° 17′		The mouth of Pegasus, west [Os Peg. occ.]
$8^h\ 22^m\ 40^s$		7° 23⅚′	33 33
		7° 24′	

25 November [DIE 25 NOUEMBRIS.]

In the evening Mars was observed about the eastern trine with the Sun, where the prosthaphaeresis [Greek: προσθαφαίρεσις (prosthaphairesis, "prosthaphaeresis")] of the annual orb is greatest. [Veſperi obſeruabatur ♂ circa △ ☉ orient., vbi maxima annui orbis προσθαφαίρεσις eſt.]

Hours, minutes, seconds [H. M. S.]	Distance from the mouth of Pegasus [Dist. ab ore Peg.]	The mouth of Pegasus, west [Os Pegaſi occ.]
$6^h\ 32^m\ 20^s$	37° 17¾′	
$6^h\ 36½^m$	37° 17′	30 37
$6^h\ 40^m\ 50^s$	37° 17½′	31 26
	Distance from the right shoulder of ♒ [Dist. a dext. hum. ♒]	
$6^h\ 53^m\ 30^s$	30° 51′ uncertain because of the Moon [incerta propter ☾am]	
$6^h\ 58^m\ 40^s$	*Mars crossed the meridian* [*Tranſiuit ♂ per meridianum*]	
The time is quite good [*Tempus ſatis bene ſe habet*]	*and then had an altitude* [*habuitque tunc altit.*]	

by the revolving quadrant [*per Volub.*]	*32° 21′*
by the steel instrument [*per Chalyb.*]	*32° 20⅔′*
The mouth of Pegasus was then [*Fuit tunc os Pegaſi*]	
west [*occid.*]	*36 4*
Declination by the largest armillae, [*Decl. per arm. max.,*]	
with one [*vno*]	*1° 45½′*
with the other [*alt.*]	*1° 45⅔′*

Hours, minutes, seconds [H. M. S.]	Distance from the mouth of Pegasus [Diſt. ab ore Peg.]	The mouth of Pegasus, west [Os Pegaſi occ.]
	Distance from the left shoulder of ♒ [Diſt. ab hum. ſin. ♒]	
$7^h\ 8^m\ 40^s$	30° 53¾′	38 32
$7^h\ 12^m\ 50^s$	30° 54′ good [bona]	39 26
	Vice versa, distance of Mars from the bright star of the knot of ♓² [Vice Verſa Diſt. ♂ a luc. nodi ♓²]	
$7^h\ 20^m\ 20^s$	32° 41¼′ doubtful because of the Moon's brightness [dub. pp. ☾ ſplend.]	41 38
$7^h\ 23^m\ 50^s$	32° 43′ approximately [fere]	
$7^h\ 27^m\ 50^s$	32° 42⅚′	

[1] From codex K. [E codice K.] [2] Afterwards there is written: "There is doubt about these observations, whether in fact it is the bright star of the knot of ♓, for they do not agree with the others." [Poſtea adſcriptum eſt: »Dubitatur de his obſervat., an enim lucida nodi ♓ ſit, nam non reſpondent cum ceteris«.]

Hours, minutes, seconds [H. M. S.]	Distance from the mouth of Pegasus [Diſt. ab ore Peg.]		The mouth of Pegasus, west [Os Pegaſi occ.]
	From the bright star of ♈ [A luc. ♈]		
$7^h\ 33^m\ 30^s$	36° 38⅓′	In these distances the Moon was not much of a hindrance [In his diſtantijs ☾ non magnopere fuit impedimento]	44 2
$7^h\ 37^m\ 30^s$	36° 38½′		
$7^h\ 42^m\ 40^s$	36° 38½′		46 43
$7^h\ 48^m\ 10^s$	36° 38⅔′	Declination [Decl.] 1° 45½′	47 52
		1° 45′	

This evening it was very clear while these were being observed, though the Moon was shining. [Fuit hac veſpera bene ſerenum dum hæc obſeruarentur, ſplendente tamen ☾.]

26 November, in the evening [DIE 26 NOUEMBRIS, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]	Declination of Mars [Decl. ♂]	The mouth of Pegasus, west [Os Pegaſi occid.]
$6^h\ 22^m\ 50^s$	37° 39⅓′		
$6^h\ 25^m\ 50^s$	37° 39′		24 50
$6^h\ 36^m\ 10^s$	37° 38¾′	1° 32½′ with one [vno]	26 37
	Vice versa, from the bright star of ♈ [Vice Verſa a luc. ♈]		Mars, east [♂ orient.]
$6^h\ 55^m\ 50^s$	36° 11⅙′		4 52
$6^h\ 59^m\ 50^s$	36° 11⅙′		4 15

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]	Declination of Mars [Decl. ♂]	The mouth of Pegasus, west [Os Pegaſi occid.]
$7^h\ 2^m\ 50^s$	36° 11¼′	1° 31⅓′	
	among mists [inter nebulas]	1° 32′	The mouth of Pegasus, west [Os Peg. occ.]
$7^h\ 14^m\ 20^s$	Mars crossed [Tranſijt ♂] through the meridian and had an altitude [per Merid. habuitque alt.]		36 10

by the steel instrument [per Chalyb.]	32° 35′
by the revolving quadrant [per Volub.]	32° 35¼′

It was not possible to observe more of Mars this evening because of the mists.[1] [Plura obſeruare in ♂ hoc veſperi propter nebulas non concedebatur[1].]

27 November, in the evening [DIE 27 NOUEMBRIS, VESPERI.]

		The mouth of Pegasus, west [Os Peg. occ.]
$7^h\ 2^m\ 20^s$	Mars crossed [Tranſijt ♂] through the meridian, having an altitude [per Merid. habens alt.]	
by the steel instrument [per Chalyb.]	32° 49½′	
by the revolving quadrant [per Volub.]	32° 49¼′	
Declination of Mars, with one [Declin. ♂ vno]	1° 15½′	37 0
	Distance from the mouth of Pegasus [Diſt. ab ore Peg.]	
7 22 0	38° 2′	41 37
7 24 40	38° 2¾′	
7 29 40	38° 3′	43 22

Because of the opposing brightness of the Moon these stars were seen and observed with difficulty. [Propter oppoſitum ☾ ſplendorem hæ ſtellæ difficulter ſunt viſæ & obſeruatæ.]

		The mouth of Pegasus, west [Os Peg. occ.]
	From the right shoulder of ♒ [A dext. hum. ♒]	
7 36 20	31° 50⅓′	45 0
7 39 20	31° 50⅔′	45 46
7 43 30	31° 50⅔′	47 27

			The mouth of Pegasus, west [Os Peg. occ.]
	Vice versa, distance of Mars from the bright star of ♈ [Vice Verſa Diſt. ♂ a luc. ♈]		
7 56 0	36° 20¾′ among clouds [inter nubes]		49 32
8 4 30	36° 20⅔′		
8 7 0	36° 20½′	Declination [Decl.] 1° 16′	
		1° 16⅓′	

1 December [DIE 1 DECEMBRIS.]

In the evening Mars was observed at about its almost greatest digression, or parallax, which arises through the annual orb. [Veſperi obſeruabatur ♂ circa maximam pene digreßionem ſeu parallaxin quæ fit per orbem annuum.]

7^h 1^m 30^s, declination of Mars [Decl. ♂]	0° 19′ 40″ with one [vno.]	
Meridian altitude of Mars [Altit. ♂ merid.]		
by the steel instrument [per Chalyb.]	33° 45¾′	The mouth of Pegasus, west [Os Peg. occ.]
by the revolving quadrant [per Volub.]	33° 46⅙′	38 47

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]		
7^h 15^m 20^s	39° 39⅔′ doubtful [dubia]		
7^h 19^m 40^s	39° 40¾′		43 0
7^h 23^m 10^s	39° 40¾′		43 42
7^h 29^m 40^s	39° 40⅔′		44 57
	Vice versa, distance from the bright star of ♈ [Vice Verſa Diſt. a luc. ♈]		
7^h 39^m 50^s	33° 38½′		47 24
7^h 50^m 30^s	33° 39′	Declination of Mars [Declin. ♂]	
8^h 0^m 10^s	33° 38⅚′	0° 19′	51 21
		0° 19½′	

This evening the sky was moderately clear and the air calm. [Erat mediocriter ſerenum hac veſpera & aër tranquillus.]

N.B. This evening Mars was almost in a straight line with the outermost of the wing of Pegasus and the head of Andromeda, but a little farther on in the order of the signs [in conſequentia], by an amount almost imperceptible to the eye. It likewise formed an equilateral square with the first of the wing of Pegasus, the head of Andromeda and [N. B. Fuit hac veſpera ♂ fere in recta linea cum extrema alæ Pegaſi & capite Andromedæ, ſed paululum in

conſequentia remotior, quantum inſenſibiliter fere ad viſum; conſtituit item quadratum æquilaterum cum prima alæ Pegaſi & capite Andromedæ &]

Diagram. A small figure of five stars, each drawn as an asterisk, set inside the right-column paragraph between "capite Andromedæ &" and "ſuprema in lino ♓". The stars stand at the corners of a square with one at its centre, as the paragraph describes. Labels, as printed:

- top left: "nodus" with the sign ♓ above the star — the knot of ♓
- top right: "Caput Andr." — the head of Andromeda
- centre: "Extrema alæ Peg." — the outermost of the wing of Pegasus
- bottom left: "♂" beside the star — Mars
- bottom right: "prima alæ." below the star — the first of the wing

the uppermost in the northern cord of ♓, in the middle of which the outermost of the wing of Pegasus stood in the place of the centre; and so these 5 stars formed exactly the figure of a cross in this manner. [ſuprema in lino ♓ boreo in cuius medio extrema alæ Pegaſi centri loco extitit, ideoque crucis figuram in hunc modum hæ 5 ſtellæ exacte formabant.]

[1] In codex E there is written: "N.B. These distances of Mars from each fixed star were entered in reverse order through carelessness. Therefore set the true distance from the mouth of Pegasus as 37° 39⅓′, from the bright star of ♈ 36° 11⅙′, etc." (They had been entered as 38° 20⅔′, 37° 48⅚′, etc.) [In codice E adſcriptum eſt: »N. B. Diſtantiæ hæ ♂ ab vtraque fixa ordine præpoſtero ſunt numeratæ per incuriam. Veram igitur diſtantiam ab ore Pegaſi pone 37° 39⅓, a luc. ♈ 36° 11⅙ &c.« (Numeratæ fuerant 38° 20⅔′ 37° 48⅚′ &c.).]

7 December [DIE 7 DECEMBRIS.]

In the evening Mars was observed, having passed a little beyond the south, in this manner. [Veſperi obſeruabatur ♂ paululum transgreßus Meridiem in hunc modum.]

Hours, minutes, seconds [H. M. S.]	Between Mars and the following bright star of ♓, southern [Inter ♂ & ſeq. luc. ♓ auſt.]	Declination of Mars [Decl. ♂]	Mars, west [♂ occ.]
$7^h\ 12^m\ 20^s$	18° 50¼′	1° 7½′ with one [vno]	11 10
$7^h\ 27^m\ 40^s$	18° 51⅓′		The eye of ♉, east [Ocul. ♉ or.]
$7^h\ 31^m\ 30^s$	18° 51½′		45 0
$7^h\ 40^{m1}\ 40^s$	18° 51⅙′		43 33
	Vice versa, from the bright star of the jaw of the Whale [Vice Verſa a luc. mand. Ceti]		
$7^h\ 52^m\ 30^s$	37° 28¾′		41 50
$7^h\ 59^m\ 10^s$	37° 29′		
$8^h\ 4^m\ 50^s$	37° 28⅚′	1° 10′ doubtful because of the beam [dubia propter tignum]	

Hours, minutes, seconds [H. M. S.]	Between Mars and the following bright star of ♓, southern [Inter ♂ & ſeq. luc. ♓ auſt.]	Declination of Mars [Decl. ♂]	Mars, west [♂ occ.]
	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]		
$8^h\ 16^m\ 40^s$	30° 28′		35 5
$8^h\ 23^m\ 0^s$	30° 27⅔′		34 20
$8^h\ 31^m\ 30^s$	30° 27⅚′	1° 8′	32 36
		1° 8⅓′	

This evening it was clear and moderately calm. You can therefore safely use these observations (the declination being corrected from comparisons of the preceding meridian altitudes), since Mars is about the greatest digression of the annual orb, as it now is, for investigating the parallax and the measure of the semidiameter of the orb. [Erat hac veſpera ſerenum & mediocriter tranquillum, potes itaque tuto his vti obſeruationibus (Declinatione ex collationibus præcedentium altitudinum Meridianarum correcta) Marte circa maximam vti nunc eſt digreßionem annui orbis exiſtente, pro inquiſitione parallaxeos & ſemidiametri orbis menſuræ.]

8 December [DIE 8 DECEMBRIS.]

In the evening Mars was observed at the greatest remoteness of the annual orb. [Veſperi obſeruabatur ♂ in maxima remotione annui orbis.]

Hours, minutes, seconds [H. M. S.]	Distance between Mars and the mouth of Pegasus [Diſt. inter ♂ & os Peg.]	Declination of Mars [Decl. ♂]	The mouth of Pegasus, west [Os Pegaſi occid.]
$5^h\ 46^m\ 50^s$	42° 37½′ doubtful [dubia]		
$5^h\ 49^m\ 20^s$	42° 38⅓′ twice [bis]		
$5^h\ 57^m\ 40^s$	42° 38½′	1° 21½′	33 13
$5^h\ 50\frac{1}{6}^m$ corrected [corr.]		with one [vno]	
	Distance from the right shoulder of ♒ [Diſt. ab hum. dext. ♒]		
$6^h\ 8^m\ 20^s$	37° 17′		35 38
$6^h\ 11^m\ 30^s$	37° 16⅚′		36 24
$6^h\ 2\frac{1}{4}^m$ corrected [corr.]			
$6^h\ 14^m\ 10^s$	37° 17′ approximately [fere]		37 32
	Vice versa, distance of Mars from the bright star of ♈ [Vice Verſa Diſt. ♂ a luc. ♈]		
$6^h\ 20^m\ 10^s$	30° 1⅔′		38 28
$6^h\ 11^m\ 10^s$ corrected [corr.]			

Hours, minutes, seconds [H. M. S.]	Distance between Mars and the mouth of Pegasus [Diſt. inter ♂ & os Peg.]	Declination of Mars [Decl. ♂]	The mouth of Pegasus, west [Os Pegaſi occid.]
$6^h\ 25^m\ 30^s$	30° 1⅝′		
$6^h\ 29^m\ 50^s$	30° 1½′	1° 22¼′ with the other pinnule [altero pin.]	

Hours, minutes, seconds [H. M. S.]	Distance between Mars and the mouth of Pegasus [Diſt. inter ♂ & os Peg.]	Declination of Mars [Decl. ♂]	The mouth of Pegasus, west [Os Pegaſi occid.]
$6^h\ 37^m\ 0^s$	Mars crossed through the meridian [Tranſiuit ♂ per merid.] having an altitude [habens alt.]		

by the steel instrument [per Chalyb.]	35° 28′
by the revolving quadrant [per Volub.]	35° 28$\frac{1}{12}$′

Hours, minutes, seconds [H. M. S.]	Distance between Mars and the mouth of Pegasus [Diſt. inter ♂ & os Peg.]	Declination of Mars [Decl. ♂]	The mouth of Pegasus, west [Os Pegaſi occid.]
		1° 22½′	42 9
		1° 22⅓′	
	Distance from the bright star of the jaw of the Whale [Diſt. a luc. mandib. Ceti]		
$6^h\ 50^m\ 40^s$	37° 0′ approximately [fere]		
$6^h\ 55^m\ 50^s$	36° 59½′		46 42
$6^h\ 44^m$ corrected [corr.]			

N.B. The observations of Mars this evening are very good for investigating the semidiameter of the annual orb. For it was about that digression which causes the greatest parallax, and moreover at almost the middle place between the apogee and the perigee in the eccentric. And while these were being observed it was quite clear and the air calm. [N. B. Obſeruationes huius veſperi in ♂ ſunt admodum bonæ pro ſemidiametro annui orbis inquirenda, erat enim circa digreßionem illam quæ maximam parallaxin cauſatur, & præterea medio fere loco inter Apogæum & Perigæum in Eccentrico, fuit autem dum hæc obſeruarentur ſatis bene ſerenum & aër tranquillus.]

10 December [DIE 10 DECEMBRIS.]

Better observations of Mars with another sextant. [*Obſeruationes alio Sextante in ♂ meliores.*]

$6^h\ 24^m\ 20^s$, Mars crossed through the meridian [Tranſiuit ♂ per meridianum]	
having an altitude by the steel instrument [habens alt. per Chalyb.]	35° 58′
by the revolving quadrant [per Volub.]	35° 57½′
The mouth of Pegasus, west [Os Pegaſi occ.]	43[2] 42

	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Pegaſi]		The mouth of Pegasus, west [Os Peg. occ.]
6 46 40	43° 32′		48 40
6 56 10	43° 31½′		50 51
7 0 0	43° 32′		
	Vice versa [Vice Verſa]		
	Distance from the bright star of the jaw of the Whale [Diſt. a luc. mandib. Ceti]		
7 8 20	35° 57⅙′		53 46
7 15 20	35° 56⅙′		
7 21 40	35° 56′		
7 36 0	35° 55⅚′	Declination of Mars [Decl. ♂]	
8 2 40		1° 52½′ with one pinnule [vno pinn.] *doubtful observation* [*dubia obſeruatio*]	
	Distance from the bright star of ♈ [Diſt. a luc. ♈]		The bright foot of Orion, east [Luc. pes Orion. or.]
8 14 0	28° 52⅓′		41 29
8 27 0	28° 52½′	1° 53′	
	Distance from the eye of ♉ [Diſt. ab oculo ♉]		
8 42 10	59° 29⅔′		
8 49 0	59° 31′		

These distances of Mars from Aldebaran [Aldeboran] are uncertain because of the excessive distance of these stars from each other on the sextant. This evening the sky was quite clear. [Hæ diſtantiæ ♂ ab Aldeboran ſunt incertæ ob nimiam in Sextante diſtantiam harum ſtellarum ab inuicem. Erat hac veſpera ſatis bene ſerenum.]

[1] The codex has 60. [Codex habet 60.] [2] The codex has 35. [Codex habet 35.]

For the place of Mars from the immediately preceding observations. [Pro loco ♂ ex proximis præcedentibus obſeruationibus.]

On 10 December at 6^h 45^m, distance of Mars [Die 10 Dec. H. 6 M. 45 Diſt. ♂]		
from the mouth of Pegasus [ab ore Pegaſi]	43° 32′	
Declination of Mars, north [Declinatio ♂ B.]	1° 52½′	
Declination of the mouth of Pegasus [Declin. oris Pegaſi]	8° 3½′	
Hence the angular difference [Hinc angulus diff.]		
of ascension, computed [aſcenſ. ſupput.]	43° 17′ 5″	
Right ascension of the mouth of Pegasus [Aſcenſio Recta oris Pegaſi]	321° 4′ 45″	
Therefore the right ascension of Mars [Ergo Aſcenſ. recta ♂]	4° 21′ 50″	
At 7^h 20^m, distance of Mars [H. 7 M. 20 Diſt. ♂]		
from the jaw of the Whale [a mand. Ceti]	35° 56′	
Declination of the jaw of the Whale [Declin. mandib. ceti]	2° 27½′	
Right ascension of the jaw of the Whale [Aſc. R. mandib. ceti]	40° 18′ 50″	
Angular difference of ascension, computed [Angulus diff. aſcenſ. ſupput.]	35° 57′ 20″	
Therefore the right ascension of Mars [Ergo Aſcenſ. R. ♂]	4° 21′ 30″	
At 7^h complete, the limited right ascension of Mars [H. 7 completa Aſc. R. ♂ limit.]	4° 21⅔′	
Declination, north [Declin. B.]	1° 52½′	
Resp. longitude [Reſp. Longit.]	4° 44′ 0″ ♈	1′ added [1^m add.]
Latitude [Latit.]	0° 1′ 0″ south [M.]	1′ 45″ subtracted [1 45″ ſubt.]
		parallax [parallax.]

True place of Mars from the observation [Ex obſeru. verus locus ♂]		From the Copernican calculation [Ex calc. Cop.]	From the Alphonsine [Ex Alphonſ.]
Longitude [Longit.]	4° 45′ ♈	4° 30′ ♈	6° 9′ ♈
Latitude [Latit.]	0° 0′ 45″ north [B.]	0° 30′ south [M.]	0° 1′ 30″ north [B.]

13 December [DIE 13 DECEMBRIS.]

In the evening Mars was observed near the limit of the annual orb, where the parallax is greatest, and that with the Sun standing as close as possible to the perigee of its eccentric. [Veſperi obſeruabatur ♂ iuxta terminum annui orbis, vbi maxima parallaxis eſt, idque ☉le circa perigæum eccentrici ſui quam proxime verſante.]

The clock was corrected a little before. [Horologium paulo antea corrigebatur.]

6^h 16^m 50^s, Mars crossed the meridian, having [Tranſiuit ♂ merid. habens]	
an altitude by the steel instrument [alt. per Chalyb.]	36° 41′ 20″
by the revolving quadrant [per Volub.]	36° 41′

		The mouth of Pegasus on the equator [Os Peg. in æquat]
Declination of Mars [Declin. ♂]	2° 36¼′	
	2° 36⅙′	44° 48′
	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]	
6 27 40	44° 53⅙′	47° 22′
6 29 50	44° 53′	
6 34 0	44° 52⅚′	48° 38′
6 38 10	44° 53′	49° 58′
	Distance from the first of the wing of Pegasus [Diſt. a prima alæ Pegaſi]	
6 41 40	26° 34⅙′	50° 41′
6 43 40	26° 34⅙′	51° 17′
6 45 30	26° 34′	

			The mouth of Pegasus on the equator [Os Peg. in æquat]
	Vice versa, Mars from the bright star of ♈ [Vice Verſa ♂ a luc. ♈]		
6 50 50	27° 20′		
6 52 40	27° 20′		
6 54 20	27° 20′		
	Distance from Aldebaran [Diſt. ab Aldeb.]		
6 57 30	57° 54⅓′		54° 29′
7 0 10	57° 54¼′	Declination of Mars [Decl. ♂]	
7 2 50	57° 54⅓′	2° 36¼′	
		2° 36½′	

These observations were carefully taken and are very good for investigating the semidiameter of the annual orb of Mars. It was moderately clear, although the state of the air was somewhat more turbulent and unsteady. [Hæ obſeruationes ſunt diligenter acceptæ & admodum bonæ pro inquirenda ſemidiametro orbis annui ♂, erat autem mediocriter ſerenum, licet aëris ſtatus aliquanto turbulentior & intranquillior.]

Computation of the place of Mars from the immediately preceding observations [Supputatio loci ♂ ex proximis antecedentibus obſeruationibus]

At 6^h 30^m, distance of Mars [H. 6 30′ Diſt. ♂]

from the mouth of Pegasus [ab ore Pegaſi]	44° 53′
Declination of Mars [Declinatio ♂]	2° 36′
Declination of the mouth of Pegasus [Declin. oris Pegaſi]	8° 3′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſionalis] computed [ſupput.]	44° 46′ 20″
Right ascension of the mouth of Pegasus [Aſc. Recta oris Pegaſi]	321° 4′ 20″
Therefore the right ascension of Mars [Ergo Aſc. Recta ♂]	5° 50′ 40″
At 7^h 0^m, distance of Mars [H. 7 0′ Diſt. ♂] from Aldebaran [ab Aldebora]	57° 54⅓′
Declination of Aldebaran [Declin. Aldeboræ]	15° 38′ north [B.]
Right ascension of the same [Aſc. R. eiuſdem]	63° 10′ 20″
Hence the right ascension of Mars [Hinc Aſc. R. ♂]	5° 49′ 40″
Therefore at $6¾^h$ the ascension of Mars [Ergo H. 6¾ Aſcenſ. ♂] limited [limitata]	5° 50⅙′
Declination of Mars, north [Declin. ♂ B.]	2° 35′ 40″
Resp. longitude [Reſp. Longitudo]	6° 23′ 0″ ♈
Latitude [Latitudo]	0° 3¼′ north [B.]
Parallax of Mars [Parallaxis ♂]: longitude [Longit.]	1′ 10″ added [add.]
latitude [Lat.]	1 40 added [add.]
Therefore the true longitude [Ergo vera Long.]	6° 24⅙′ ♈
Latitude [Lat.]	0° 5′ 0″ north [B.]

19 December [DIE 19 DECEMBRIS.]

In the evening Mars was observed around the meridian. [Veſperi obſeruabatur ♂ circa meridianum.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]	Declination of Mars [Decl. ♂]	The eye of ♉, east [Oculus ♉ or.]
5^h 30^m 40^s	47° 42′		64 5
5^h 33^m 30^s	47° 42⅚′		63 20
5^h 37^m 10^s	47° 42′		
5^h 39^m 10^s	47° 42¼′	4° 41⅚′ with both [vtroq.]	

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]	Declination of Mars [Decl. ♂]	The eye of ♉, east [Oculus ♉ or.]
	Vice versa, Mars from Aldebaran [Vice verſa ♂ ab Aldeb.]		the eye of ♉, east [oculus ♉ or.]
5^h 51^m 0^s	54° 35⅓′		59 48
5^h 56^m 20^s	54° 34⅚′		58 17
6^h $1½^m$	54° 34⅔′		57 35
5^h $46½^m$ corrected [corr.]			
6^h $5½^m$	54° 34⅔′		56 24
6^h 14^m 50^s		4° 4¾′	
		4° 4⅚′	54 18

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]	Declination of Mars [Decl. ♂]	The eye of ☿, east [Oculus ☿ or.]

Mars crossed the meridian, having an altitude [Tranſiuit ♂ merid. habens alt.]	
by the steel instrument [per Chal.]	38° 10′
by the revolving quadrant [per Vol.]	38° 9½′

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]	Declination of Mars [Decl. ♂]	The eye of ☿, east [Oculus ☿ or.]
	Distance of Mars from the first of the wing of Pegasus [Diſt. ♂ a prima alæ Peg.]		
$6^h\ 30^m\ 0^s$	28° 50′		51 8
$6^h\ 32^m\ 50^s$	28° 50⅓′		50 13
$6^h\ 15^m$ corrected [corr.]			
$6^h\ 37^m\ 40^s$	28° 50½′		49 11
	Distance from the bright star of ♈ [Diſt. a luc. ♈]		
$6^h\ 44^m\ 20^s$	24° 7⅚′		47 45
$6^h\ 50^m\ 10^s$	24° 7⅔′		46 30
$6^h\ 30^m\ 0^s$ corrected [corr]		Declination of Mars [Decl. ♂]	
$6^h\ 54^m\ 10^s$	24° 7⅔′	4° 4⅔′	45 25
		4° 5′	

Computation of the place of Mars observed, from the last observations. [Supputatio loci ♂ obſeruati ex vltimis obſeruationibus.]

At $5^h\ 26^m$, distance of Mars from the mouth of Pegasus [H.5 M.26 Diſt. ♂ ab ore Peg.]	47° 42⅓′
Declination of Mars from the meridian altitude [Decl. ♂ ex altit. merid.]	4° 4¼′
Angular difference of ascension [Ang. diff. aſc.$^{a^l i^s}$]	47° 49¾′
Therefore the right ascension of Mars [Ergo aſc. recta ♂]	8° 54′ 5″
At $5¾^h$, distance of Mars from Aldebaran [H. 5¾ Diſt. ♂ ab Aldebora]	54° 34′ 50″
Declination of Aldebaran [Declin. Aldeboræ]	15° 38′
Angular difference of ascension [Angul. diff. aſcenſ.]	54° 18′ 27″
Therefore the right ascension of Mars [Ergo Aſcenſ. R. ♂]	8° 51′ 53″
At $5^h\ 35^m$, the ascension of Mars [H. 5 M. 35 Aſc. ♂]	
right, limited [recta limitata]	8° 52½′
Declination, north [Declinatio B.]	4° 4¼′
Mars [♂]: longitude [Longitudo]	9° 45′ 6″ ♈
latitude [Latitudo]	0° 12′ 36″ north [B.]

Another investigation of the same place of Mars, but by the familiar method, in the triangle from the first of the wing of Pegasus and the bright star of ♈. [Eiuſdem loci ♂ Inveſtigatio alia ſed familiari methodo in triangulo a prima alæ Pegaſi & Lucida ♈.]

At 6^h 20^m, distance of Mars [H. 6 M. 20 Diſt. ♂]	
from the first of the wing of Pegasus [a prima alæ Pegaſi]	28° 50¼′
from the bright star of ♈ [a Lucida ♈]	24° 7¾′
Place of the bright star of ♈ [Locus Lucidæ ♈]: longitude [Long.]	1° 59′ 45″ ♉
latitude [Lat.]	9° 57′ north [B.]
Of the first of the wing of Pegasus [Primæ alæ Peg.]: longitude [Long.]	17° 50¾′ ♓
latitude [Lat.]	19° 26′ north [B.]
From which the complement of the latitude of Mars [Vnde complem. Latit. ♂]	89° 46′ 10″

Angular difference of longitude between [Ang. diff. longit. inter]	
the bright star of ♈ and Mars [Luc. ♈ & ♂]	22° 13′ 50″
Therefore at 6^h 20^m the longitude of Mars [Ergo H. 6 M. 20 Longit. ♂]	9° 45′ 55″ ♈
Latitude of Mars [Latit. ♂]	0° 13′ 50″ north [B.]

Now when this time was reduced to the observations made earlier from the mouth of Pegasus and Aldebaran [Aldeboran], and to the place of Mars that emerged from them by limitation, which was 9° 45′ 6″ ♈, this place of Mars, reduced by the daily motion for 34 M., comes out as 9° 44′ 55″ ♈, so that the difference in longitude is only 11″, which is imperceptible. In latitude, however, the difference is about 1⅙′, which needs to be limited, provided the latitude deduced from the meridian altitude is not preferred. [Reducto autem hoc tempore ad obſeruationes prius ex ore Pegaſi & Aldeboran factas & locum ♂ per limitationem ex his emerſum qui fuit 9°45′6″ ♈, prouenit hic locus ♂ per motum diurnum 34 M. reductus 9° 44′ 55″ ♈, ita vt differentia in longitudine ſaltem ſit 11 ſecundorum, quæ inſenſibilis eſt; in latitudine autem differentia eſt quaſi 1⅙ M., quæ limitanda venit, ſi modo illa, quæ ex altitudine meridiana deducta eſt, non præferatur.]

For the parallax of Mars at a meridian altitude of about 38° [38^G], resp. 2′ [reſp. 2 M.]. [Pro parallaxi ♂ circa Merid. altitud. 38^G reſp. 2 M.]

Therefore the parallax [Ergo parallaxis]: longitude [Longit.]	0′ 50″ added [add.]
latitude [Latit.]	1 50 added [add.]

And so at $5\frac{3}{5}^{h}$ the true place of Mars, limited [Itaque H. 5⅗ verus locus ♂ limitatus]	
Longitude [Longitudo]	9° 45′ 50″ ♈
Latitude [Latitudo]	0° 15′ 0″ north [B.]

		According to Copernicus [Iuxta Copern.]	Alphonsine [Alphonſ.]
At $5\frac{3}{4}^{h}$ [H. 5¾]	Longitude [Long.]	9° 33′ ♈	11° 8′ ♈
	Latitude [Lat.]	0° 14′ south [M.]	0° 12′ north [B.]

29 December, in the evening [DIE 29 DECEMBRIS, VESPERI.]

$5^{h}\ 10^{m}\ 0^{s}$, Mars crossed the meridian, having [Tranſiuit ♂ Merid. habens]	
an altitude by the steel instrument [alt. per Chalyb.]	40° 37⅔′
by the revolving quadrant [per Volub.]	40° 47⅚′
Declination of Mars [Declin. ♂]	6° 32½′
	6° 32¼′

	Distance of Mars from the first of the wing of Pegasus [Diſt. ♂ a prima alæ Peg.]		The bright shoulder of Orion, east [Luc. hum. Orion. or.]
5 22	33° 12⅔′		66 0
5 25	33° 12½′		
5 32	33° 12¾′		63 32
	Vice versa, Mars from Aldebaran [Vice verſa ♂ ab Aldeb.]		
5 53 40	48° 47′		60 22
5 55 50	48° 47¼′		59 26
5 57 30	48° 47½′		58 42
6 1 50	47° 47⅙′	6 32⅔ 6 32½	

It was not clear enough, and the air was unsteady. [Non fuit ſatis ſerenum & aër intranquillus.]

30 December, in the evening [DIE 30 DECEMBRIS, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Pegaſi]		The bright shoulder of Orion, east [Luc hum. Orion. or.]
$5^h\ 49^m\ 40^s$	53° 13⅝′		74 42
$5^h\ 54^m\ 30^s$	53° 13⅓′		73 30
$5^h\ 59^m\ 40^s$	53° 13½′		72 19
	Distance of Mars from the eye of ♉ [Diſt. ♂ ab oculo ♉]	Vice versa [Vice verſa]	
$6^h\ 7^m\ 40^s$	48° 12⅓′		70 31
$6^h\ 13^m\ 0^s$	48° 12′		
$6^h\ 16^m\ 20^s$	Mars crossed the meridian, having [Tranſiuit ♂ merid. habens]		
$5^h\ 46^m\ 20^s$ corrected [corr.]	an altitude by the revolving quadrant [alt. per Vol.] 40° 52⅙′		
		Declination [Decl.] 6° 47½′ 6° 48′	68 29
$6^h\ 39^m\ 0^s$	48° 12′		63 17
	Distance of Mars from the first of the wing of Pegasus [Diſt. ♂ a prima alæ Peg.]		
$6^h\ 45^m\ 50^s$	33° 41′		
$6^h\ 47^m\ 50^s$	33° 41′		
$6^h\ 50^m\ 10^s$	33° 41′		

It was moderately clear, but the air was more unsteady. [Fuit mediocriter ſerenum ſed aër intranquillior.]

For the place of Mars from the last observations, for the day of 30 December. [Pro loco ♂ ex vltimis obſeruationibus ad diem 30 Decembris.]

At $5^h\ 20^m$, distance of Mars [H. 5 M. 20 Diſt. ♂]		
from the mouth of Pegasus [ab ore Pegaſi]	53° 13½′	
Declination of Mars, north [Declin. ♂ ſept.]	6° 46⅔′	
Angular difference of ascension, computed [Angulus diff. aſcenſ. ſupput.]	53° 41¾′	
Therefore the right ascension of Mars [Ergo Aſcenſio R. ♂]	14° 46′	
At $5⅔^h$, distance of Mars from Aldebaran [H. 5⅔ Diſt. ♂ ab Aldeb.]	48° 12′	
Difference of ascension, computed [Diff. aſcenſ. ſupput.]	48° 24′ 54″	
Therefore, from this, the right ascension of Mars [Ergo hinc Aſc. R. ♂]	14° 45′ 26″	
Therefore set, at $5½^h$, the limited right ascension of Mars [Pone ergo H. 5½ Aſc. R. ♂ limit.]	14° 45⅗′	
the declination [Declinationem]	6° 46⅔′	
Resp. longitude [Reſp. Longitudo]	16° 2′ 23″ ♈	The parallax is included here [Includitur hic parallaxis]

Latitude [Latitudo]	0° 24′ 40″ north [B]

Longitude of Copernicus [Long. Copernici]	16° 4′ ♈
Latitude [Lat.]	0° 0′
Alphonsine [Alphonſ.]	17° 17′ ♈ 0 22 north [B.]

OBSERVATIONS OF VENUS [OBSERUATIONES VENERIS.]

16 JANUARY, IN THE EVENING [DIE 16 JANUARIJ, VESPERI.]

At 4^{h} 55^{m}, Venus, west, on the equator 45° 20′, for the clock. [4ᴴ 55′ ♀ occid. in æquat. 45 20 pro horologio.]

	Distance of Venus from the bright star of the tail of the Whale [Diſt. ♀ a luc. caud. Ceti]	Declination of Venus [Decl. ♀]	Altitude of Venus by the lesser quadrant [Alt. ♀ per min. Q.]	The eye of ♉, east [Ocul. ♉ or.]
5 exactly [5 præciſe]		11° 7′	14°	
		11° 7½′		
5 48⅖	28° 53½′	11° 3½′	7° 40′	
		11° 3′		
5 56⅓	28° 52′		6⅔°	24 56

The tail of the Whale, with respect to the horizon, was not raised much above it. [Erat cauda Ceti reſpectu horizontis non multum eleuata ſupra.]

	Distance of Venus from the bright star of the tail of the Whale [Diſt. ♀ a luc. caud. Ceti]	Declination of Venus [Decl. ♀]	Altitude of Venus by the lesser quadrant [Alt. ♀ per min. Q.]	The eye of ♉, east [Ocul. ♉ or.]
				Altitude of the tail of the Whale [Alt. caud. Ceti]
6 3⅖	28° 54½′	11° 1′	5¾°	9° 0′
6 9½	28° 52¼′	11° 0′	4⅚°	
		11° 0⅙′		the eye of ♉, east [Oc. ♉ or.]
6 16⅓	28° 53′		4° 0′	19 55
6 25	28° 53′	10° 57′	2⅔°	

To test the old sextant with which these distances of Venus and Mercury were observed: [Pro examinando Sextante veteri quo hæ diſtantiæ ♀ & ☿ obſeruatæ ſunt:]

Distance between the bright star of ♈ [Diſt. inter lucidam ♈]	35° 33′
and Aldebaran [& Aldeb.]	35° 33⅓′

It is therefore clear that the sextant instrument agrees quite well with the other one, namely the new one, which it was not possible to use here because of the transverse placement of its pinnule. [Patet itaque inſtrumentum Sextantis ſatis bene cum altero quadrare, ſcilicet nouo, quo propter pinnacidij tranſuerſam locationem hic vti non licuit.]

The sky was exceptionally clear this evening, and the air was steady. [Erat hac veſpera apprime ſerenum & aër tranquillus.]

16 March, in the evening [DIE 16 MARTIJ, VESPERI.]

Venus was observed from Aldebaran in this way. [Obſeruabatur ♀ ab Aldeb. in hunc modum.]

Hours, minutes [H. M.]	Distance of Venus from Aldebaran [Diſt. ♀ ab Aldeb.]	Declination of Venus, north [Decl. ♀ B.]	Altitude of Venus by the lesser quadrant [Alt. ♀ per min. Quad.]	The Lesser Dog, west [Can. min. occ.]
$7^h\ 53^m$	19° 16¼′		19° 30′	
$8^h\ 5⅔^m$		17° 56′	17° 30′	18 27
		17° 56½′		
$8^h\ 10^m$	19° 14′	17° 56⅚′	16° 20′	19 38
		17° 57′		

22 April [DIE 22 APRILIS.]

In the evening Venus was observed *approaching the greatest distance from the Sun*, in this way. [Veſperi obſeruata eſt ♀ *appropinquans maximæ remotioni a* ☉ in hunc modum.]

Hours, minutes [H. M.]	Venus from the lower head of ♊ [♀ ab inf. Cap. ♊]	Declination of Venus [Decl. ♀]	Altitude by the lesser quadrant [Alt. per min. Quad]	Spica ♍, east [Spica ♍ or.]
$9^h\ 6^m$	20° 47¼′	26° 27⅔′	22° 0′	
		26° 27′		
$9^h\ 15⅔^m$	20° 47⅓′	26° 27′	21° 0′	
		26° 26⅚′		
$9^h\ 25^m$				19 59
$9^h\ 29⅔^m$	20° 46′	26° 27¼′	19° 30′	18 40
		26° 27⅔′		

The state of the air was clear and calm. Correct the clock from this equatorial distance; it had been set at will to the ninth hour around the beginning of the observation. [Erat conſtitutio aëris ſerena & tranquilla. Corrige horologium ex hac diſtantia æquatoria pro libitu ad nonam horam circa initium obſeruationis directum.]

27 April [DIE 27 APRILIS.]

The clock was corrected by the Sun at $2^h\ 0^m$. At the same time the declination of Venus was observed, 26° 30½′, with one pinnule. At $8^h\ 5^m$ Venus was in the nonagesimal degree, having an altitude of 32° 41⅔′ by the revolving quadrant. [Corrigebatur horologium ad ☉ hora 2 M. 0. Eodem tempore obſeruabatur Declin. ♀ 26 30½ vno pinn. H. 8 5′ fuit ♀ in nonageſ. gradu habens Alt. 32 41⅔ per Volub.]

By the clock [Iuxta horol.]	Distance of Venus from the lower head of ♊ [Diſt. ♀ ab inf. cap. ♊]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Spica, east [Spica or.]
$8^h\ 11^m$		26° 32⅔′		
		26° 32½′		
$8^h\ 59½^m$	15° 48½′		25° 48′	
$9^h\ 6^m$	15° 47′			
$9^h\ 9^m$		26° 33′	24° 25′	18 40
		26° 32½′	approximately [ἐν πλάτει]	
	Venus from cor ♌ [♀ a corde ♌]			
$9^h\ 19^m$	52° 4′		23½°	

Put 52 3 here instead. [*Pone hic potius 52 3.*]

By the clock [Iuxta horol.]	Distance of Venus from the lower head of ♊ [Diſt. ♀ ab inf. cap. ♊]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Spica, east [Spica or.]
$9^h\ 26^m$	*52° 2′*	*26° 33′*		*14 30*
		26° 33¼′		
$9^h\ 35^m$	*52° 2½′*		*21⅓°*	
$9^h\ 42^m$	*52° 1′*		*20⅓°*	*10 48*

It was not perfectly clear, especially in the later observations and the last. Around this 27 April Venus was as close as possible to the greatest evening distance from the Sun, which, however, is still to come within a few days. Approximately [Εν πλάτει], *by the distance from Regulus, Venus would have been in 2⅙° ♋; Prut. 1⅓° ♋, Alphonsine 2⅙° ♋.* [*Non fuit exquiſite ſerenum, præſertim in poſterioribus obſeruationibus atque vltima. Fuit ♀ circa hunc 27 Aprilis quam proxima remotioni a ☉ maximæ veſpertinæ, quæ tamen adhuc intra paucos dies reſtabit.* Εν πλάτει *per diſt. a Regulo fuiſſet ♀ in 2⅙ ♋; Prut. 1⅓ ♋, Alphonſ. 2⅙ ♋.*]

6 May, in the evening [DIE 6 MAIJ, VESPERI.]

From the preceding day until now it was not clear. The clock was corrected by the Sun, $7^h\ 12^m$. [A præced. die hucuſque non fuit ſerenum. Horologium corrigebatur ad ☉ 7^H12^M.]

Hours, minutes [H. M.]	Distance between Venus and Saturn [Diſt. inter ♀ & ♄]	Declination of Venus [Decl. ♀]	Altitude of Venus by the lesser quadrant [Alt. ♀ per min. Quad.]	Spica, east [Spica or.]
$8^h\ 53½^m$		26° 4⅔′	25° 0′	
		26° 5′		
$9^h\ 6½^m$	12° 2¾′		23¾°	
$9^h\ 19^m$	12° 2¾′	26° 4½′		4 57
		26° 4⅔′		
$9^h\ 24^m$	12° 2¼′			
$9^h\ 30^m$				1 43

Hours, minutes [H. M.]	Distance between Venus and Saturn [Diſt. inter ♀ & ♄]	Declination of Venus [Decl. ♀]	Altitude of Venus by the lesser quadrant [Alt. ♀ per min. Quad.]	Spica, east [Spica or.]
	Between Venus and cor ♌ [Inter ♀ & cor. ♌]			*Spica, west [Spica occ.]*
$9^h\ 35^m$	*43° 14½′*	*26° 4′*	*19½°*	
$9^h\ 40^m$	*43° 14⅓′*			*0 44*
$9^h\ 45^m$	*43° 14′*	*26° 6′*	*18⅓°*	*1 52*
	Venus from Capella [♀ a Capella]			
$9^h\ 59^m$	*31° 12⅓′*		*16°*	
$10^h\ 5^m$	*31° 12′*	*26° 5⅔′*	*15°*	*6 33*

We observed these things on Venus this evening, and it was near the greatest digression from the Sun, although it was now beginning to approach a little. On the intervening days, from 27 April until now, it was not clear. Therefore it was not possible meanwhile to have more observations of Venus near the greatest evening digression. [Hæc in ♀ hac veſpera obſeruauimus, eratque iuxta maximam a Sole digreſſionem, quamuis nunc aliquantulum accedere inciperet. Intermedijs diebus non erat ſerenum a die 27 Aprilis hucuſque. Igitur non licuit plures interea habere in ♀ obſeruationes iuxta maximam digreſſionem veſpertinam.]

15 May, in the evening [DIE 15 MAIJ, VESPERI.]

With the sky very clear. [Cælo bene ſereno.]

Hours, minutes [H. M.]	Distance of Venus from cor ♌ [Diſt. ♀ a corde ♌]	Declination of Venus [Decl. ♀]	Altitude of Venus, lesser quadrant [Alt. ♀ min. Quad.]	Spica, west [Spica occ.]
$9^h\ 17½^m$		24° 55⅓′	19½°	

Hours, minutes [H. M.]	Distance of Venus from cor ♌ [Diſt. ♀ a corde ♌]	Declination of Venus [Decl. ♀]	Altitude of Venus, lesser quadrant [Alt. ♀ min. Quad.]	Spica, west [Spica occ.]
		24° 56′		
9h 25m	35° 4′			
9h 29m	35° 3⅔′	24° 56′		9 34
		24° 55⅚′		
	Distance of Venus from the upper head of ♊ [Diſt. ♀ a ſup. cap. ♊]	for the latitude [pro latitudine]		
9h 45⅓m	8° 36′			13 36
9h 51¼m	8° 36½′		14½°	15 7
10h 0m	8° 35⅚′		14° 0′	17 15

1 September, in the morning [DIE 1 SEPTEMBRIS, MANE.]

5 8, distance of Venus from the Lesser Dog [5 8 Diſt. ♀ a Cane min.]	18° 26′	
Declination of Venus [Decl. ♀]	13° 30′	among clouds [inter nubes]
The right shoulder of Orion [Dexter hum. Or.]	25 26	

8 September, in the morning [DIE 8 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Venus from the bright star of the neck of ♌ [Diſt. ♀ a luc. ceruicis ♌]		The left shoulder of Orion [Sin. hum. Orion.]
4h 32⅙m	18° 19′		18 20
4h 34⅓m	18° 18′		
4h 36⅓m	18° 19′		
4h 45m corrected [corr.]			
	Vice versa, Venus from the bright foot of ♊ [Vice verſa ♀ a luc. pede ♊]	Declination of Venus [Decl. ♀]	The Greater Dog, east [Can. mai. or.]
4h 42½m	36° 23′	15° 8′	
		15° 7½′	

Hours, minutes [H. M.]	Vice versa, Venus from the bright foot of ♊ [Vice verſa ♀ a luc. pede ♊]	Declination of Venus [Decl. ♀]	The Greater Dog, east [Can. mai. or.]
4h 51⅙m	36° 23⅓′		26 24
4h 58¾m corrected [corr.]			
4h 53½m	46° 23⅔′		

Hours, minutes [H. M.]	Vice versa, Venus from the bright foot of ♊ [Vice verſa ♀ a luc. pede ♊]	Declination of Venus [Decl. ♀]	The Greater Dog, east [Can. mai. or.]
	from the Lesser Dog [a Cane min.]		
4^h $58\frac{1}{2}^m$	23° 18⅓′	15° 7½′	
		15° 6⅚′	
5^h $0\frac{1}{2}^m$	23° 18⅚′		

This star was seen with difficulty because of the dawn. [Difficulter hæc ſtella videbatur propter auroram.]

For the right ascension of Venus from the immediately preceding observations. [Pro Aſcenſione Recta ♀ ex antecedentibus proximis obſeruationibus.]

At $4\frac{3}{4}^h$, distance of Venus from the bright star of the neck of ♌ [H. 4¾ Diſt. ♀ a luc. ceruicis ♌]	18° 18¾′
Declination of Venus, north [Declinatio ♀ B.]	15° 7¾′
Declination of the neck of ♌, north [Decl. ceruicis ♌ B.]	21° 52¼′
Right ascension of the same [Aſc. Recta eiuſdem]	149° 20′
Angular difference of ascension [Angul. differ. aſcenſion.]	17° 58′ 33″
At 5^h, distance of Venus from the bright foot of ♊ [H. 5 Diſt. ♀ a luc. pede ♊]	36° 23½′
Declination of the foot of ♊ [Declinatio pedis ♊]	16° 40¼′
Right ascension of the same [Eiuſdem Aſc. Recta]	93° 30⅔′
Angular difference of ascension [Ang. differ. Aſcenſ.]	37° 52¼′
At 5^h, set the right ascension of Venus [Hora 5 pone Aſc. R. ♀]	131° 22′ 20″

25 September [DIE 25 SEPTEMBRIS.]

Venus was observed around its greatest morning digression from the Sun. [Obſeruabatur ♀ circa maximam digreßionem a ſole matutinam.]

Hours, minutes [H. M.]	Distance of Venus from the bright foot of ♊ [Diſt. ♀ a luc. pede ♊]	Declination [Decl.]	Altitude of Venus [Altit. ♀]	The Lesser Dog, east [Can. min. or.]
4^h 19^m	52° 16⅔′	12° 13½′	21° 7′	
		12° 14′		
4^h $27\frac{2}{3}^m$	52° 16½′	12° 13⅔′		29 56
		12° 13¼′		
4^h $33\frac{1}{2}^m$	52° 16⅚′		23° 8′	
	Vice versa, Venus from the bright star of the haunch of ♌ [Vice Verſa ♀ a luc. clunis ♌]			
4^h $46\frac{1}{2}^m$	18° 14′			
4^h $50\frac{2}{3}^m$	18° 15′			
4^h $54\frac{5}{6}^m$	18° 15⅓′			
4^h $58\frac{1}{6}^m$	18° 14¼′			
5^h 0^m	18° 14½′	12° 12′	27° 23′	22 18
		12° 12′		

This star of ♌ was almost level with Venus with respect to the horizon while they were being observed against each other, but a little higher. [Fuit hæc ſtella ♌ fere in æquilibrio horizontis cum ♀ dum inuicem obſeruarentur, verum paululum altior.]

This morning Venus had gone not far past conjunction [☌] with cor ♌. Its distance from cor ♌, however, we observed with the Radius at the end of these distances from the loin of ♌: from cor ♌ 1° 49′, 1° 50′. From this you will be able to reason about the latitude of Venus, assuming almost the same longitude as that of cor ♌, but a little greater than appears from the distances from the other fixed stars brought into the calculation. [Erat hoc mane ♀ non longe ☌ cum corde ♌ prætergreßa; diſtantia autem eius ab hoc per radium obſeruauimus ſub finem harum diſtantiarum a lumbo ♌, a corde ♌ 1ᵍ49′, 1ᵍ50′, hinc poteris de ♀ latitudine ratiocinari, ſuppoſita eadem fere longitudine quæ eſt Cordis ♌, paululum tamen maiori quam ex diſtantijs a reliquis fixis ſub calculum reuocatis pateſcat.]

Venus was near its greatest morning digression from the Sun, or had passed it by a little, by about three days at most. [♀ *erat iuxta maximam a Sole digreßionem eoam vel paululum eandem prætergreßa, quaſi per triduum ad ſummum.*]

30 October [*DIE 30 OCTOBRIS.*]

When cor ♌ *was near the meridian, I myself observed that Venus, to the eye, was on the straight line drawn from the other, following, star in the left wing of* ♍, *which is in 4½°* ♍ *with a latitude of 2⅚° north [B.], to Arcturus. In this very line it was distant from the aforementioned fixed star in* ♍ *by about two suns, that is, as far as sight goes, by almost one degree, as far as it was possible to discern by the eye's view alone.* [*Quando cor* ♌ *eßet prope meridianum ipſemet obſeruaui quod* ♀ *ad intuitum eßet in ea linea recta quæ ducebatur ab altera ſequente in ſiniſtra ala* ♍, *quæ eſt in 4½* ♍ *cum latitudine 2⅚ B. vſque in Arcturum, diſtabat vero in hoc ipſo ductu a prænominata fixa in* ♍ *quaſi ad duos ſoles, id eſt, quo ad viſum vno propemodum gradu, quantum ſolo intuitu oculari diſcernere licuit.*]

26 November, in the morning [DIE 26 NOUEMBRIS, MANE.]

Observation of Venus as a morning star approaching the Sun. The northern scale-pan of ♎ was here at almost the same altitude as Venus, though a little higher, so that in these distances the refraction can be insensible. [Obſeruatio ♀ eoæ ☉ appropinquantis. Fuit borea lanx ♎ hic in conſimili fere altitudine cum ♀, paulo tamen altior, vnde in his diſtantijs inſenſibilis refractio eße poteſt.]

Hours, minutes [H. M.]	Distance of Venus from the northern scale-pan of ♎ [Diſt. ♀ a bor. lance ♎]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Spica ♍, east [Spica ♍ or.]
7^h $13\frac{1}{3}^m$	10° 3⅙′			
7^h $15\frac{5}{6}^m$		11° 31′	15° 44′	19 26
		11° 30½′		Venus, east [♀ or.]

Hours, minutes [H. M.]	Distance of Venus from the northern scale-pan of ♎ [Diſt. ♀ a bor. lance ♎]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Spica ♍, east [Spica ♍ or.]
7^h $21\frac{5}{6}^m$	10° 3′			36 22
	Vice versa, Venus from Spica ♍ [Vice verſa ♀ a Spica ♍]			
7^h $28\frac{1}{3}^m$	18° 18½′	11° 30⅔′	16° 35′	34 50
		11° 30¼′		
7^h $35\frac{5}{6}^m$	18° 19′		17° 10′	Spica, east [Spica or.]
7^h $42\frac{1}{6}^m$	18° 19¼′		17° 37′	12 58
7^h $50\frac{1}{6}^m$	18° 19′	11° 31½′	18° 14′	
		11° 31⅙′		

27 November, in the morning [DIE 27 NOUEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Venus from the northern scale-pan of ♎ [Diſt. ♀ a bor. lance ♎]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	Cor ♌, west [Cor ♌ occ.]
7^h 41^m	9° 9⅓′	11° 55′	13° 40′	
		11° 54⅓′		
7^h 51^m	9° 9¼′		15° 30′	31 32
7^h 57^m	9° 8⅔′	11° 55⅓′	16° 30′	
		11° 56′	doubtful because of the dawn [dubia propter auroram]	
	Vice versa, Venus from Spica [Vice verſa ♀ a Spica]			
8^h 9^m	19° 27½′		17° 5′	35 48
8^h $15\frac{1}{2}^m$	19° 27¾′		17° 26′	37 32
8^h $21\frac{1}{2}^m$	19° 28⅙′	11° 56⅓′	17° 48′	
		11° 56′		

This morning it was quite clear, and the state of the air was calm. [Fuit hoc mane ſatis bene ſerenum & tranquilla aëris conſtitutio.]

For the place of Venus for the day of 6 May, from the observations. [Pro loco ♀ ad diem 6 Maij ex obſeruationibus.]

At $9\frac{2}{3}^h$, distance of Venus from cor ♌ [H. 9⅔ Diſtantia ♀ a corde ♌]	43° 14⅓′
Declination of Venus [Declinatio ♀]	26° 4′
Declination of cor ♌ [Declin. cordis ♌]	13° 56′
Right ascension of cor ♌ [Aſcenſ. R. cordis ♌]	146° 39′
Angular difference of ascension [Angulus diff. aſcenſ.]	44° 25¼′
Therefore the right ascension of Venus [Ergo Aſcenſio Recta ♀]	102° 14¼′
At 10^h, distance of Venus from Capella [H. 10 Diſt. ♀ a Capella]	31° 12⅙′
Declination of Capella [Declinatio Capellæ]	45° 29′

Angular difference of ascension [Angulus diff. aſcenſ.]	30° 36′ 50″
Right ascension of Capella [Aſcenſ. R. Capellæ]	71° 40′ 0″
Therefore the right ascension of Venus [Ergo Aſcenſio Recta ♀]	102° 16′ 50″
At 9⅝^{h}, set the right ascension of Venus, keeping closer to cor ♌, because the distance from it was subject to less refraction, [Hora 9⅝ pone Aſcenſionem rectam ♀, accedendo propius ad cor ♌ quod diſtantia ab hoc minori refractioni obnoxia erat,]	102° 15′ 0″
Resp. longitude [Reſp. Longitudo]	11° 0⅙′ ♋
Latitude [Latitudo]	2° 58¼′ north [B]

Refraction and parallax cancel each other out. [Refractio & parallaxis ſe mutuo elidunt.]

For the place of Venus on 25 September, in the morning. [Pro loco ♀ die 25 Septembris mane.]

At 4^{h} 20^{m}, distance of Venus [H. 4 M. 20 Diſt. ♀]	
from the bright foot of ♊ [a luc. pede ♊]	52° 16⅔′
Declination of Venus [Declinatio ♀]	12° 13½′ north [B.]
Declination of the lower foot of ♊ [Declin. inf. pedis ♊]	16° 40½′ north [B.]
Right ascension of the same [Aſcenſio R. eiuſdem]	93° 31′ 30″
Therefore the right ascension of Venus [Ergo Aſcenſio Recta ♀]	147° 28′
For by computation the angle of the ascensional difference was [Erat enim per ſupput. angulus differentiæ aſcenſionalis]	53° 56½′
On the same morning, at 4^{h} 50^{m} [Eodem mane H. 4 M. 50]	
Distance of Venus from the haunch of ♌, the bright star [Diſt. ♀ a clune ♌ luc.]	18° 14′
Declination of the same haunch [Declin. clunis eiuſdem]	22° 45½′
Angular difference of ascension [Ang. diff. aſcenſ.]	15° 38½′
Right ascension of the same [Aſc. R. eiuſdem]	
haunch of ♌ [clunis ♌]	163° 3′ 45″
Therefore the right ascension of Venus [Ergo Aſc. Recta ♀]	147° 25′ 15″
At 4^{h} 30^{m} [H. 4 M. 30]	
set the right ascension of Venus [pone Aſc. rectam ♀]	147° 28′
Altitude of Venus about 22° [Altit. ♀ 22^{g} circiter,]	
Declination [Decl.]	12° 13½′
Resp. longitude [Reſp. Longitudo]	25° 29′ 10″ ♌
Latitude [Latitudo]	0° 53′ 50″ south [M.]
Parallax of the altitude of Venus 4⅙, [Parallaxis altit. ♀ 4⅙,]	
resp. longitude [reſp. Long.]	3′ 20″
Latitude [Lat.]	2 30
True [Vera] longitude [Longitudo]	25° 26′ 50″ ♌
latitude [Latitudo]	0° 51′ 20″ south [M.]

Observations of Mercury [OBSERUATIONES MERCURIJ.]

16 January, in the evening [DIE 16 JANUARIJ, VESPERI.]

Observation of Mercury, first sighted this evening. [Obſeruatio ☿ hac veſpera primum conſpecti.]

Hours, minutes [H. M.]	Distance of Mercury from Venus [Diſt. ☿ a ♀]	Southern declination of Mercury [Decl. ☿ auſt.]	Altitude of Mercury [Alt. ☿]		
5^h $9\frac{1}{3}^m$	9° 53′ Vice versa [Vice Verſa]	13° 14′	5° 20′		
5^h $19\frac{3}{4}^m$	9° 57¾′	13° 13½′ 13° 13′	4¼°		
5^h $24\frac{1}{6}^m$	9° 57⅓′	13° 10⅔′ 13° 11′	3⅔°		
				Altitude of Venus [Alt. ♀]	The eye of ♂, æq. [Ocul. ♂ æq.]
5^h $30\frac{2}{3}^m$	9° 55′		2¾°	9½	31 26
5^h 36^m	9° 52′	13° 7′	2°		

It was not possible to observe Mercury further this evening, because, being nearer the horizon, it was caught up in a small cloud. You may, however, use the distance taken the second time, and so on by limiting, with sufficient safety, the refraction of this one and indeed of Venus being excluded together. [Vlterius hac veſpera ☿ obſeruare non dabatur quod horizonti vicinior nubeculæ cuidam implicabatur. Diſtantia autem ſecunda vice accepta, & ſic deinceps limitando ſatis tuto vti poteris, refractione huius & quidem ♀$^{ri^s}$ vna excluſa.]

Observations of the Fixed Stars [OBSERUATIONES STELLARUM FIXARUM.]

16 January [DIE 16 JANUARIJ.]

Distance between 14 of the Greater Bear and the upper head of ♊ (this one is below the right front knee), magnitude 5 [Diſtantia inter 14 Vrſæ maioris & ſuperius caput ♊ (hæc eſt infra genu dextrum anter.), magnit. 5]	26° 11′ twice [bis]
Between 15, in the right front knee of the Greater Bear, magnitude 5, and the upper head of ♊ [Inter 15 in genu dextro anteriore Vrſæ maioris mag. 5 & ſuper. caput ♊]	28° 35′ twice [bis]
Between the upper head of ♊ and the lowest in the hind foot of the Greater Bear [Inter ſuperius caput ♊ & infimam in pede poſteriori Vrſæ]	47° 0′ 50″
magnitude 4 [mai. mag. 4]	47° 1¼′
Between the upper, or 23, in the hind foot of the Greater Bear, magnitude 4 [Inter ſuperiorem ſeu 23 in poſteriore pedeVrſæ maioris mag. 4]	46° 39⅙′
and the upper head of ♊ [& ſuperius caput ♊]	46° 39⅓′

Declinations of the same [Declinationes earundem]

Declination of 14, below [Declin. 14 infra]		53° 12¼′	
the knee [genu]		53° 12′	
15, in the knee [15 in genu]	of the Greater Bear [Vrſæ maioris]	55° 39′	with one [vno]
24, in [24 in]		33° 51′	
the foot [pede]		33° 50⅙′	
23, in the foot [23 in pede]		35° 19′	
			with both pinnules [vtroque pinn.]

16 March, in the evening [DIE 16 MARTIJ, VESPERI.]

For the refractions. [Pro refractionibus.]

Minimum meridian altitude of the tail of the Swan [Altitudo merid. minima caudæ Cygni]	
by the steel instrument [per Chalyb.]	9° 51′
by the revolving quadrant [per Volub.]	9° 51⅙′
Distance of the tail of the Swan from [Diſtantia caudæ Cygni a]	44° 38¼′
the pole star below the pole [ſtella polari infra polum]	44° 38⅓′
Its altitude was then [Erat tunc eius altitudo]	10° 12½′
Distance of the pole star from the breast [Diſt. ſtellæ polaris a pectore]	49° 39¾′
of the Swan below the pole [Cygni infra polum]	49° 39⅚′
Altitude of the breast of the Swan [Altitudo pectoris Cygni]	6° 11¼′
Between Capella and the pole star above the pole [Inter Capellam & ſtellam polarem ſupra polum]	43° 25′ twice [bis]
The preceding of the two adjoining above the heart of Hydra was distant from the Lesser Dog [Præcedens ex duabus contiguis ſupra cor Hydræ diſtabat a Cane minore]	40° 35′
Its declination [Declinatio eius]	11° 7′
The following of the same, from [Sequens earundem a]	41° 29′
the Lesser Dog, was distant [Cane min. diſtabat]	41° 29½′
Declination of this [Declinatio huius]	10° 20½′

It was clear enough, but chasmata in the north. [Erat ſatis ſerenum ſed chasmata in ſeptentrione.]

17 March [DIE 17 MARTIJ.]

Distance of the breast of the Swan below [Diſtantia pectoris Cygni infra]	49° 41⅔′
the pole from the pole star [polum a ſtella polari]	49° 42′
Altitude [Altitudo]	5° 16′
Between the tail of the Swan and [Inter caudam Cygni &]	44° 39′
the pole star [ſtellam polarem]	44° 39⅙′

Its altitude [Altitudo eius]	9° 54′
Distance between the bright star in the last knot of the tail of the Dragon and the pole star below the pole [Diſtantia inter lucidam in vltimo nodo caudæ Draconis & ſtellam polarem infra polum]	27° 15½′ twice [bis]
Its altitude [Altitudo eius]	26° 51⅙′
Between 4 of the Crown and [Inter 4 Coronæ &]	55° 57′
the tail of ♌ [caudam ♌]	55° 56½′
.....[1]	59 38
	59 37

18 March, in the evening [DIE 18 MARTIJ, VESPERI.]

Between Lyra and the highest in the front square of the Lesser Bear [Inter Lyram & ſupremam in anteriori □ Vrſæ minoris]	43° 54⅚′
below the pole [infra polum]	43° 55⅙′
The altitude of Lyra was then [Altitudo Lyræ tunc erat]	8° 48′
Between the same in the square of the Lesser Bear and the bright star in the head [Inter eandem in □ Vrſæ minoris & lucidam in capite]	29° 33½′
of the Dragon below the pole [Draconis infra polum]	29° 33′
Its altitude was then [Altitudo eius tunc erat]	24° 0′
Between the breast of the Swan and the pole star [Inter pectus Cygni & ſtellam]	49° 41⅔′
below the pole [polarem infra polum]	49° 42′
Its altitude [Altitudo eius]	5° 48′
Between the tail of the Swan and the pole star [Inter caudam Cygni & ſtellam polarem]	44° 38¼′
below the pole [infra polum]	44° 38⅓′
Its altitude [Altitudo eius]	10° 26′

19 March, in the morning [DIE 19 MARTIJ, MANE.]

Between the bright side of Perseus and the pole star [Inter lucidum latus Perſei & ſtellam polarem]	39° 22¾′
below the pole [infra polum]	39° 23′
Its altitude [Altitudo eius]	15° 22½′
Between Lyra and the highest in the front square of the Lesser Bear, above [Inter Lyram & ſupremam in anteriori □ vrſæ minoris ſupra]	43° 57⅚′
the pole [polum]	43° 57¾′
Between the same in the square of the Lesser Bear and the bright star of the head in [Inter eandem in □ Vrſæ minoris & capitis lucidam in]	29° 34′
the Dragon above the pole [Dracone ſupra polum]	29° 34½′

[1] The names of the stars are missing in the codex. [Nomina ſtellarum deſunt in codice.]

Between the breast of the Swan and the pole star [Inter pectus Cygni & ſtellam]	49° 48⅙′
above the pole [polarem ſupra polum]	49° 48⅓′
Between the tail of the Swan and the pole star above the pole [Inter caudam Cygni & ſtellam polarem ſupra polum]	44° 42′ twice [bis]

6 MAY, IN THE EVENING [DIE 6 MAIJ, VESPERI.]

We observed these two stars in order to find the place of Saturn once observed at Augsburg [Auguſtæ Vindelicorum]. [Obſeruauimus has duas ſtellas pro ♄ loco olim Auguſtæ Vindelicorum obſeruati inueniendo.]

Distance between the right [Diſtantia inter dextrum]	19° 11⅓′
shoulder of Erichthonius[1] [humerum Erichtonij[1]]	19° 11′
and Arcturus [& Arcturum]	19° 12′
Vice versa, from Lyra [Vice verſa a Lyra]	
Distance of the same [Diſtantia eiusdem]	40° 34′ 0″ twice [bis]
Its meridian altitude [Altitudo eius meridiana]	68° 56′ 30″
Between cor ♌ and the lowest [Inter cor ♌ & infimam]	4° 46′ 50″
of the neck of ♌ [ceruicis ♌]	4° 46′ 30″
	4° 46′ 0″

[1] Thus in the codex, but it should be »Bootis«. Cf. T. X p. 33. [Sic in codice, ſed debet eße »Bootis«. Cf. T. X p. 33.]

Appendix to the observations of the year 1593 [APPENDIX AD OBSERUATIONES ANNI 1593.]

FOR DISENTANGLING THE LATITUDE OF MARS ABOUT THE ACRONYCHAL OPPOSITION, IN THE YEAR 1593[1] [PRO ♂ LATITUDINE EXTRICANDA CIRCA ☍ ACHRONYCHIAM A° 1593[1].]

In the year 1593[2], 10 August, at 12[h] p.m., latitude 6° 20′ [Anno 1593[2] Auguſti die 10 H. 12 p. m. latitudo 6.20]

24 August, 12[h] p.m., 6° 5′ [Auguſti die 24 12 p. m. 6. 5]

Recapitulation of all [Recapitulatio omnium]

	Distance from the node [Diſt. a nodo]	Proportional minutes [ſcrup. pr.]	Calculated latitude [lat. calc.]	Observed latitude [lat. obſ.]
1580	20° 10′	22 46	1° 44′	1° 40′
1582	60° 13′	53 20	4° 3½′	4° 6′
1585			4° 33′	4° 33′
1587	51° 40′	48 49	3° 43′	3° 38′
1589	12° 55′	14 30	1° 8⅓′	1° 7′

N.B. From here, with the latitude added, the reasoning … but[3] the little table, which was made by drawing a line from the centre of the eccentric of Mars, distant from the Earth 9½ of 60, as far as the former, but not yet sufficiently … degrees for obtaining the latitude. [N.B. Hinc adiecta latitudine ratiocinatio … at[3] tabellam quæ facta eſt ducta linea e centro eccentrici ♂ diſtante a terra 9½ de 60 vsque in priorem ſed nondum ſatis … gradus pro latitudine obtinenda.]

Make a trial by taking from the centre of the eccentric, and with a circle or quadrant drawn upon it. [Fac periculum accipiendo e centro eccentrici & ſuper hoc deducto circulo ſiue quadrante.]

Year 1580 [Anno 1580]	20 10	1582 60 13	1587 51 40	1589 12 55
The little table adds[4] [Tabella addit[4]]	1 45	2 4	2 20	1 15
Corrected distance [Diſt. emendata]	21° 55′	62 17	54 0	14 10
Resp. proportional minutes [Reſp. ſcrup. prop.]	22 22	53 6	48 31	14 40
Greatest northern latitude [Lat. bor. max.]	4° 34′	4 34	4 34	4 34
Resp. [Reſp.]	1 42 8	4 2 29	3 41 30	1 7 9

Recapitulation of all [Recapitulatio omnium]

	Distance from the node [Diſt. a nodo]	Corrected [Correcta]	Proportional minutes [Scr. prop.]	Computed latitude [Lat. ſup.]	Observed [obſeruata]	Difference from the computation [Diff. a ſupputatione]
1580	20° 10′	21 55	22 22	1° 42′	1 40	2 less [2 minus]
1582	60° 13′	62 17	53 6	4° 2½′	4 6	3½ more [3½ plus]
1587	51° 40′	54 0	48 31	3° 41½′	3 38½	3 less [3 minus]
1589	12° 55′	14 10	14 40	1° 7′	1 7	0 the same [0 idem]

On 24 August 1593, at the time of the opposition of Mars with the simple Sun [1593 Auguſti die 24 ad tempus ☍ ♂ cum ſimplici ☉]

longitude of Mars [long. ♂]	5 10 52 28
add [add.]	1 30
corrected longitude of Mars [long. ♂ corr.]	5 10 54 0

N.B. In the simple commutation of Mars in Copernicus 10½′ [M[ta] 10½] are lacking, to be added. [N. B. Deficiunt in commutatione ♂ ſimplici apud Copernicum M[ta] 10½ addenda.]

simple longitude of Mars [Long. ♂ ſimplex]	5 sex. 10° 54′ [5[ſex] 10[p] 54′]
place of the apogee [Apogæi locus]	1 55 26

eccentric anomaly [Anomalia eccentrici]	3 15 28
our Προσθαφ. [Greek: prosthaph., abbreviated, "prosthaphaeresis"] [Προσθαφ. noſtra]	3 31
	3 19 0

Add the 14th part of Copernicus's prosthaphaeresis [Adde Proſtaph. Copernici partem 14^{am}]; Copernicus's 3 17 [Copernici 3 17]

[1] From the Vienna codex 10689[48]. Cf. T. V p. 335 and p. 291 above. [E codice Vindob. 10689[48]. Cf. T. V p. 335 et ſupra p. 291.] [2] By a slip of the pen the codex has 1583. [Per lapſum calami codex habet 1583.] [3] Perhaps *verificat*. [Fortaße *verificat*.] [4] Cf. T. V p. 334. [Cf. T. Vp. 334.]

In the year 1593, in the course of August, on the day [Anno 1593 labente Auguſti die]

10, completed, at the following midnight [10 compl. in M. N. ſeq.]

Eccentric anomaly [An. eccent.]	Anomaly com. [An. com.]
both equated [ambo coæquata]	
3 sex. 10° 15′ [$3^{ſex}$ 10^{p} 15′]	2 sex. 55° 20′ [$2^{ſex}$ 55^{p} 20′]
add 6 45[1] [adde 6 45[1]]	
for the latitude [pro lat.]	
3 17 0	2 55 20
Resp. proportional minutes [Reſp. Scrup. prop.]	Resp. latitude [Reſp. lat.]
57′ 22″	6° 25′
	6° 8′ 6″

24, at $2¼^{h}$ p.m. [24 H. 2¼ p. m.]

Eccentric anomaly [An. ecc.]	Anomaly com. [An. com]
both equated [ambo coæquata]	
3 sex. 19° 0′ [$3^{ſex}$ 19^{p} 0′]	3 sex. 0° 0′ [$3^{ſex}$ 0^{p} 0′]
6 45	
3 25 45	3 0 0
Minutes [Scrup.]	
54′ 0″	6 50
	6 9

It is therefore evident that in both cases nearly the same latitude results, which, however, ought to be greater by ⅙ on the 10th and smaller by 1/12 on the 24th; this is to be reconciled. [Patet itaque quod vtrobique pene eadem euadat latitudo, quæ tamen die 10 maior eße debet ⅙ & die 24 minor $\frac{1}{12}$, quæ concilianda.]

A test by the corrected degrees of the eccentric anomaly, by our modern method. [Examen per gradus correctos Anomaliæ eccentrici noſtra neoterica ratione.]

3 sex. 17 [3$^{\text{fex}}$ 17]			3 25 45	
1 20			1 52	
3 18 20			3 27 37	
56′ 56″		6 25	53′ 6″	6 50
		6 6		6 2

Set the apogee 1° further on and make a trial. [Pone apogæum 1 gradum vlterius & fac periculum.]

Eccentric anomaly at the time of the opposition [Anomalia eccentrici ad tempus ☍]	6 18 0
distance for the latitude [diſt. pro lat.]	7° 45′
	6 25 45

Resp. [Reſp.]	56′ 36″	6 35	52 20	6 35
		6 12 37		6 6 20

In this way I brought it down to 6′ [6 minuta], but 6 more are still lacking. [Reduxi ſic ad 6 minuta, ſed deſiderantur adhuc 6 alia.]

Mars was in opposition to the true place of the Sun on 25 August at 14$^{\text{h}}$ p.m. If the commutation was then 6$^{\text{s}}$ 0° [6$^{\text{fig}}$ 0°], so that at the opposition to the true place of the Sun [☉$^{\text{lis}}$] there was none, [♂ fuit in ☍ veri loci ☉ Auguſti die 25 H. 14 p. m. Si tunc commutatio erat 6$^{\text{fig}}$ 0°, ita vt in ☍ veri loci ☉$^{\text{lis}}$ nulla fuerit,]

at the place of the mean opposition the longitude	5 10	
of Mars was [in loco Mediæ ☍ erat long. ♂]	52 28	
add for 1 day [adde pro die 1]	31 27	
for 11 hours [horis 11]	14 25	
	5 11 38	5 11 38 20
	20	
	1 55	0 28 9 40
	26	
	3 16	♂ 5 39 48 0
	12	
	3 31	41 50
	6 45	2 2 0
	3 26	the place of Mars was in 11° 50′ ♓ [locus ♂
	28	erat in 11 50 ♓]
	3 16	
	12	
	2 0	

true eccentric anomaly [Anomalia eccent. vera]	3 18 12	at the opposition itself, with the true place of the Sun [in ipſa ☍ cum vero loco ☉]
true commutation [Commutatio vera]	6 0 0	

Make trial I according to the equality in the Sun and the modern table. [Fac I periculum iuxta æqualitatem in ☉ & tabulam neotericam.]

17° gives [17 gradus facit]	19 0	26 gives [26 facit]	28 35
Resp. minutes [Reſp. ſcrup.]	56′ 44″	Resp. minutes [Reſp. ſcrup.]	52′ 40″
6 35	6 13 30	7° [7^{p}]	6 8 40

Difference 5′; it should be 13; 8′ are lacking. [Differentia 5′, debet eße 13, deſiderantur 8′.]

[1] 6° 45′ was the difference of longitude between the apogee and the place of greatest latitude. [6° 45′ erat differentia longitudinis inter apogæum et locum maximæ latitudinis.]

Set the apogee 2° further on, so that it is 3 27 30; Resp. latitude 6° 23′ and 6° 16′ 50″; difference 6′. [Pone apogæum 2 gradibus vlterius, vt ſit 3 27 30, reſp. latit. 6 23 & 6 16 50, differentia 6′.]

Let the apogee be 2° less, so that it is 3 23 30; Resp. latitude 6° 14′ 10″ and 6° 8′ 40″; difference 5′ 30″. [Sit apogæum 2 gradibus minus vt 3 23 30, reſp. latit. 6 14 10 & 6 8 40, differentia 5′ 30″.]

Otherwise, by a new little table proceeding from the eccentricity 12. [Aliter per nouam tabellam procedentem ab eccentricitate 12.]

	17		26
gives [facit]	2 25	gives [facit]	3 14
	19 25		29 14
	70 35		60 46
Resp. [Reſp.]	56′ 34″	Resp. [Reſp.]	52 20
6 35	6 12 24	7 0	6 6 20

Difference 6′ 0″. 6′ are still lacking. [Differentia 6′ 0″. Deſiderantur adhuc 6′.]

Add 1° to the apogee and take away (?) from... one. Resp. 6 8 10 and 6 1 40. Difference 7′. [Adde apogæo 1 gradum & aufer[?]ab... vnum. Reſp. 6 8 10 & 6 1 40. Differentia 7′.]

So in no way can it happen that the latitude is increased beyond 6 or 7 minutes in the 14 days before the opposition, although it ought then to be still twice as great. Therefore some other cause, not yet sufficiently understood, must underlie it, arising either from another motion of the apogee and of the

eccentricity, or from the opposition with the true place of the Sun. [Nulla itaque ratione fieri poteſt, vt vltra 6 vel 7 Minuta latitudo augeatur diebus 14 ante ☍, cum deberet tunc duplo adhuc maior eße. Oportebit itaque aliquam aliam adhuc non ſatis perſpectam ſubeße rationem, ſiue a motione alia apogæi & eccentricitatis, ſiue ex ☍ cum Solis vero loco proueniente.]

If the last entries in the table of southern latitude can proceed more slowly, everything will fit better, for instance thus. [Si vltima in tabula latitudinis auſtrinæ tardius procedere poterit omnia melius quadrabunt vtpote ſic.]

Set the greatest southern latitude [Pone maximam latitudinem auſtrinam]	6° 55′	30
and toward the end of the table [& iuxta finem tabulæ]	6 53	29
they will be slower in this way [tardius erunt hoc modo]	6 50	28
	6 47	27
	6 44	26
	6 40	25

Experiment [Experimentatio]

	17		26	
	12	9½	12	9½
	2 40	2 0	3 30	2 35
	17	17		
	19 40	19 0	29 30	28 35
Minutes [Scrup.]	56 36	56 44	52 11	52 40
	6 41	6 41	6 55	6 55
Latitude [Lat.]	6° 18′ 7″	6° 19′ 10″	6 0 56	6 4 17
		6 37		6 53
		6 15 22		6 2 31

The greatest southern latitude of Mars can be [Maxima latitudo auſtrina ♂ poteſt eße]	6° 53′	
But the table ought to proceed thus toward its end [Debet autem tabula iuxta finem ſic procedere]	6 53	30
	6 51	29
	6 48	28
	6 44	27
	6 40	26
	6 35	25
	6 29	24
	6 22	23
	6 14	22
	6 5	21
	5 55	20

Then everything will be right, with that limitation of the Canon applied which has 9½ in the eccentricity. For it gives, on the 24th, at the opposition, latitude of Mars 6° 2½′; the same on the 10th, 6° 14½′. This is right enough, and in both cases account is to be taken of a parallax of about 4 minutes, to be taken away from the observed latitude. [Tunc omnia recte ſe habebunt, adhibita illa limitatione Canonis quæ habet 9½ in eccentricitate. Nam præbet die 24 in ☍ lat. ♂ 6 2½ eandem die 10 6 14½ quod ſatis recte ſe habet & vtrobique habeatur ratio parallaxeos 4 circiter minutorum auferendorum ex obſeruata latitudine.]

For the other, southern latitude of Mars[1]: distance from the node 50°; it adds 1 22 26; Resp. 35 40 and 6° 53′ (gives) 4 2 23, which also agrees well enough with our observation. [Pro altera auſtrina ♂ latitudine[1]: diſt. a nodo 50, addit 1 22 26, reſp. 35 40 & 6°53′ [dat] 4 2 23, quod etiam cum noſtra obſeruatione ſatis quadrat.]

Set the latitudes of Mars as each table gives them, both the one that proceeds by 12 of 60 and the one by 9½ of 60, and see which method comes nearer in each latitude, northern as well as southern. [Pone latitudines ♂ prout præbet vtraque tabula tam quæ præcedit per 12 de 60 quam 9½ de 60, & vide vtra ratio propius accedat in vtraque latitudine tam borea quam auſtrina.]

I. For the northern latitudes of Mars, from the table that corresponds to the eccentricity 9½ of 60, taking the greatest northern latitude as 4° 34′. [I. Pro latitudinibus Borejs ♂ ex tabula quæ reſpondet eccentricitati 9½ de 60, aßumendo lat. max. boream 4° 34′.]

In the year 1580, opposition 6° 50′ ♊, latitude 1° 40′ north [Anno 1580 ☍ 6 50 ♊, lat. 1 40 B.]		
eccentric anomaly [anomalia eccentrici]	9 2 8 6	
προσθαφ. [Greek: prosthaph., abbreviated, "prosthaphaeresis"], add [προσθαφ. add.]	11 22 10	
	9 13 30 16	
From the distance from the apogee, add for the latitude [Ex diſt. ab ap. adde pro lat.]	6 45	
	9 20 15 16	
anomaly of latitude [Anom. latit.]	59	
gives correctly [facit correcte]	9 21 14	
Resp. from our table of proportional minutes [Reſp. e noſtra tabula ſcrup.prop.]		21 42 (greatest latitude) [[lat. max.]] 4° 34′
(computed latitude) [[Lat. ſupputata]]	1° 39′ 6″	observed [obſeruata] 1 40

1582 eccentric anomaly [1582 anomalia eccentrici]	10 16 12 39	
προσθαφ.	7 15 52 10 23 28 31	

for the latitude [pro latitudine]	6 45
	10 30 13 31
gives [facit]	60 14
add [add.]	1 46
anomaly of latitude [Anom. lat.]	62 0
Resp. [Reſp.]	52 58
	4 2 — observed 4 6, diff. 4′ [obſeruata 4 6, diff. 4′]

1585		1587		1589	
		opposition in 25 [☌ in 25]	5° ♍, latitude 3° 37⅙′ [5 ♍, lat. 3 37⅙]	opposition [☌]	3° 55′ ♏, [?], latitude 1° 7′ north [3 55 ♏ lat. 1 7 B.]
	11 27		1 8 4 12		2 21 29
	14 51				
	0 29		6 27 6		11 5
	32				
	11 27		1 1 37 6		2 10 24
	44 23				
	6 45		6 45		6 45
	0 4		1 8 22 6		2 17 9
	29 23				
	85 31		51 38		12 50
add [add.]	35	add [add.]	2 25	add [add.]	1 20
	86 6		54 3		14 10
Resp. [Reſp.]	59 51	Resp. [Reſp.]	48 32	Resp. [Reſp.]	14 40
(latitude) [[lat.]]	4° 33′ 19″		3 41 38		1 7
observed [obſ.]	4 33	observed [obſ.]	3 37½ perhaps more [3 37½ forſan plus]	observed [obſ.]	1 7
			to be added for the parallax [addendum pro parallaxi]		

[1] In the opposition of the year 1591. [In oppoſitione anni 1591.] Repeat from the Canon ▽ [Repete ex Canone ▽]

In the year 1580 [Anno 1580]	20 15	
the table adds [Tabula addit]	1 53	
	22 8	
Resp. proportional minutes 22′ 34″, latitude [Reſp. Scrup. prop. 22′ 34″, lat.]	1° 43′	3
the calculation gave [Calculus dedit]	1 43	
observation [Obſeruatio]	1 40	

N.B. But this observation is doubtful, for it was made only with the Radius, and perhaps not enough has been added for the parallax. [N. B. Sed hæc

obſeruatio eſt dubia, nam per radium ſolummodo facta & forte non ſatis pro parallaxi eſt additum.]

1582		1585		1587		1589	
	60 14		4 30		38 22		77 10
	2		85 30		51 38		12 50
	62 14		12		1 40		1 6
			85 42		53 18		13 56
Resp. [Reſp.]	53 5	Resp. [Reſp.]	59 40		48 5		14 36
	4 2		4 33		3 39		1 6 41
	25		14		35		
observed [obſ.]	4 6	which agrees [quod conſentit]		observed [obſ.]	3 37½	observed [obſ.]	1 7
difference [diff.]	3½	with the observation [cum obſeruat.]					

For the southern latitude of Mars [Pro latitudine ♂ auſtrina]

In the year 1593, opposition in [Anno 1593 ☍ in]	12° 35′ ♓	In the year 1591 [Anno 1591]	26° 40′ ♐
greatest latitude [Latitudo maxima]	17° 0′ ♒		16° 55′ ♒
distance from the southern limit [Diſt. a limite auſt.]	25° 35′		1 20
			15
	64 25		39 45
	2 6		2 57
	66 31		36 48
Resp. 53′ 0″, (greatest latitude) [Reſp. 53′ 0″, [lat. max.]]	6° 50′	Resp. 35′ 50″, (greatest latitude) [Reſp. 35′ 50″, [lat. max.]]	6° 50′
latitude [lat.]	6° 2′ 50″	latitude [lat.]	4° 4′ 52″

COLLECTION OF ALL THE LATITUDES OF MARS, NORTHERN AS WELL AS SOUTHERN, AND THEIR COMPARISON. [COLLECTIO OMNIUM LATITUDINUM ♂ TAM BOREALIUM QUAM AUSTRALIUM ET EARUNDEM COLLATIO.]

Northern latitudes [Latitudines Boreæ]

Year [Anno]	Observed latitude [Lat. obſeruata]	Calculated [Calculata]	Differences [Differentiæ]
1580	1° 43′[1]	1° 43′	plus[2]
1582	4° 3′[3]	4° 2½′	½ minus[4]
1585	4° 33′	4° 33′	0
1587	3° 38¼′	3° 39½′	1¼ plus
1589	1° 7′	1° 6¾′	0
1595	0° 5¼′	0° 5⅙′	0

Southern latitudes [Latitudines Auſtrinæ]

Year [Anno]	Observed latitude [Lat. obſeruata]	Calculated [Calculata]	Differences [Differentiæ]
1591	4° 2′	4° 5′	3 plus
1593	6° 2′	6° 3′	1 plus

[1] It was originally written "40 doubtful". [Primitus ſcriptum erat »40 dubia«.] [2] It was originally written "3 plus". [Primitus ſcriptum erat »3 plus«.] [3] It was originally written "6". [Primitus ſcriptum erat »6«.] [4] It was originally written "3½ minus". [Primitus ſcriptum erat »3½ minus«.]

N.B. For all the northern latitudes the greatest latitude was taken from the observation of the year 85, 4° 34′, the parallax, that is, having been applied; and I used our corrected table of proportional minutes, both by the little table which has this sign ▽[1], which presupposes an eccentricity of 9½ of 60, and the differences found in the table for the distance from each node were added, presupposing that in the year 1585, at the opposition with the Sun at the end of October[2], the northern node ☊ of Mars was at precisely 17° 0′ ♉, and therefore (3ˢ) 6° 40′ before the apogee. With the remainder thus collected, the proportional minutes were sought out in our renewed table and multiplied logistically into the greatest northern latitude, so that the latitude I have noted came out. In the southern latitude, however, I assumed the greatest as 6° 50′, because those two observed latitudes will not admit a smaller one[3]. Here, however, I used the table which has this sign ▽, subtracting the difference from the distance from the node, seeking the proportional minutes with the remainder, and proceeding as before. [N.B. In omnibus latitudinibus borealibus aßumta eſt maxima latitudo ex obſeruatione anni 85 p.4 M.34, adhibita videlicet parallaxi, et vſus ſum taqula ſcrupulorum proportionalium noſtra emendata tam per tabellam quæ hoc ▽ ſignum habet[1], quæ eccentricitatem præſupponit 9½ de 60, et additæ ſunt differentiæ inuentæ in tabula ad diſtantiam ab vtroque nodo, præſupponendo quod anno 1585 in ☍ cum ☉ in fine Octobris[2] fuerit nodus ♂ boreus ☊ in 17.0 ♉ præciſe, ideoque ante apogæum [3ˢ] p.6 M.40, cum reliquo vero ſic collecto ſcrupula proportionalia in noſtra renouata tabula ſunt conquiſita & in maximam latitudinem boream logiſtice multiplicata, vt euaderet ea latitudo quam annotaui. In auſtrina vero latitudine maximam aßumſi 6° 50′, eo quod binæ illæ latitudines obſeruatæ minorem[3] non ferent. Vſus autem hic ſum tabula quæ hoc ▽ habet ſignum, ſubtrahendo differentiam a diſtantia a nodo & cum reſiduo quærendo ſcrupula proportionalia & faciendo vt prius.]

[1] We have not found this table. [Hanc tabulam non invenimus.] [2] In the year 1585 the opposition of Mars with the Sun was at the end of January, but in the year 1595 it was at the end of October. [Anno 1585 oppoſitio Martis cum ſole erat in fine Januarii, Anno vero 1595 erat in fine Octobris.] [3] The codex has "maiorem" (greater). [Codex habet »maiorem«.]

Observations of the year 1594 [OBSERUATIONES ANNI 1594.]

Observations of the Sun [OBSERUATIONES SOLIS.]

14 January [DIE 14 JANUARIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	14° 54½′
carried past the meridian in the steel instrument [fuit tranſuectus merid. in chalyb.]	
by the revolving quadrant [per Volub.]	14° 55¼′
Declination, south [Declin. M.]	19° 9⅓′
	19° 9′

9 March [DIE 9 MARTIJ.]

Meridian altitude of the Sun, when near the equinox [Altit. ⊙ merid. cum prope æquinoctium eßet]	
by the mural quadrant [per Muralem]	33° 32⅔′
by the steel instrument [per Chalyb.]	33° 32¾′
by the revolving quadrant [per Volub.]	33° 32′
Declination in the armillae [Declin. in Armill.]	0° 35′ nearly [fere]
larger subterranean [maior. ſubt.]	0° 34⅚′

10 March [DIE 10 MARTIJ]

Very near the vernal equinox. [proximo æquinoctio verno.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	33° 56½′
by the revolving quadrant [per Volub.]	33° 56′
by the mural quadrant [per Mural.]	33° 56⅙′
Declination in the armillae [Declin. in Armillis]	0° 8⅔′
larger subterranean [mai. ſub.]	0° 9′ 0″

The sky was quite clear. [Fuit ſatis bene ſerenum.]

28 March [DIE 28 MARTIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	40° 54½′
by the revolving quadrant [per Volub.]	40° 52⅙′
Declination by the armillae [Declin. per Armillas]	6° 47¾′
	6° 47½′

7 June [DIE 7 JUNIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 32′
by the revolving quadrant [per Volub.]	57° 31⅓′
Declination of the Sun [Declin. ⊙]	23° 26⅓′
	23° 26′

It was very clear. [Fuit bene ſerenum.]

8 June [DIE 8 JUNIJ.]

Declination of the Sun in the armillae [Declin. ⊙ in Armillis]	23° 28⅓′
	23° 28½′

9 June [DIE 9 JUNIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	57° 34′
by the revolving quadrant [per Volub.]	57° 33⅓′
Declination of the Sun in the armillae [Declin. ⊙ in Armillis]	23° 29′
	23° 29½′

It was very clear. [Fuit bene ſerenum.]

12 July [DIE 12 JULIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	54° 28⅔′
by the revolving quadrant [per Volub.]	54° 27⅚′
Declination by the armillae [Declin. per Armillas]	20° 23′
	20° 23½′

The sky was quite clear. [Erat ſatis bene ſerenum.]

25 July [DIE 25 JULIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	51° 26⅝′
by the revolving quadrant [per Volub.]	51° 27⅓′
Declination of the Sun by the largest armillae [Declin. ⊙ per Armill. max.]	17° 22½′
	17° 23′

It was not clear enough. [Non fuit ſatis ſerenum.]

1 August [DIE 1 AUGUSTI.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	49° 30⅛′
by the revolving quadrant [per Volub.]	49° 28½′
Declination by the largest subterranean armillae [Declin. per Armill. max. ſubt.]	15° 24½′
	15° 25′

The sky was moderately clear. [Erat mediocriter ſerenum.]

24 August [DIE 24 AUGUSTI.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	41° 45′
by the revolving quadrant [per Volub.]	41° 44′
Declination by the largest armillae [Declin. per Armill. max.]	7° 40′
	7° 39′

It was not clear enough. [Non fuit ſatis ſerenum.]

25 August [DIE 25 AUGUSTI.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	41° 23′
by the revolving quadrant [per Volub.]	41° 22¼′

Declination [Declin.]	7° 16⅔′
	7° 16⅚′

It was very clear. [Fuit bene ſerenum.]

13 September [DIE 13 SEPTEMBRIS]

Near the equinox. [prope æquinoctium.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	34° 6½′
by the revolving quadrant [per Volub.]	34° 6⅙′

Declination of the Sun by the largest subterranean armillae [Declin.⊙perArmill.max.ſubt.]	0° 0′
	0° 0½′ south [M.]

It was very clear. [Fuit bene ſerenum.]

Here it appears that there is an error in the armillae around the equinoctial intersection. [Hic apparet Armillis circa æquinoctialem interſectionem errorem ineße.]

You will be able to use this observation of the Sun most conveniently for examining both the equinoctial point and the motion of the Sun. The quadrants were corrected exactly before the observation was made. [Commodißime hac ⊙lis obſeruatione vti poteris tam pro puncto æquinoctiali quam motu ⊙ examinando. Quadrantes ante obſeruationem factam ad amußim corrigebantur.]

15 September [DIE 15 SEPTEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	33° 19⅔′
by the revolving quadrant [per Volub.]	33° 19′
Declination by the largest armillae [Declin.perArmill.max.]	0° 47½′ with both [vtroque.]

It was not clear enough. [Non fuit ſatis ſerenum.]

17 September [DIE 17 SEPTEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	32° 33′
by the revolving quadrant [per Volub.]	32° 32⅚′
Declination by the largest subterranean armillae [Declin. per Armill. max. ſubt.]	1° 35′
	1° 35′

The sky was quite clear. [Fuit ſatis bene ſerenum.]

18 September [DIE 18 SEPTEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	32° 9′
by the revolving quadrant [per Volub.]	32° 9¾′
Declination by the largest subterranean armillae [Declin. per Armill. max. ſubt.]	1° 57′
	1° 57′

It was not quite clear. [Non fuit ſatis bene ſerenum.]

19 September [DIE 19 SEPTEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	31° 45½′
by the revolving quadrant [per Volub.]	31° 45⅔′
Declination by the armillae [Declin. per Armill.]	2° 21⅙′
	2° 21⅓′

It was very clear. [Fuit bene ſerenum.]

23 September [DIE 23 SEPTEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	30° 12′
by the revolving quadrant [per Volub.]	30° 12′
Declination by the armillae [Declin. per Armill.]	3° 55′
	3° 55½′

The sky was moderately clear. [Fuit mediocriter ſerenum.]

28 October [DIE 28 OCTOBRIS.]

The clock at the meridian was running 12^{m} faster than it should. [*Horolog. in merid. 12′ iuſto citius mouebatur.*]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	17° 49⅓′
by the revolving quadrant [per Volub.]	17° 50′
Declination of the Sun by the largest armillae [Declin. ⊙ per Armill. max.]	16° 16⅓′
	16° 16½′

It was very clear. [Fuit bene ſerenum.]

18 November [DIE 18 NOUEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	12° 47¼′
by the revolving quadrant [per Volub.]	12° 48′
Declination of the Sun by the armillae [Decl. ⊙ per Armill.]	21° 20′
	with both [vtroque]

It was not clear enough. [Non fuit ſatis ſerenum.]

19 November [DIE 19 NOUEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	12° 38¼′
by the revolving quadrant [per Volub.]	12° 38⅔′
Declination [Declin.]	21° 30½′
	21° 30′

It was not clear enough. [Non fuit ſatis ſerenum.]

29 November [DIE 29 NOUEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	11° 17′
by the revolving quadrant [per Volub.]	11° 17′
Declination of the Sun [Declin. ⊙]	22° 48½′
	22° 49′

It was not clear enough [Non fuit ſatis ſerenum]

The clock, from 4⅙^{h} in the morning, when it was corrected, had been running slower up to now, by 15^{m}. [Horologium ab hora 4⅙ matutina, quando correctum fuit, hucusque tardius mouebatur M. 15.]

8 DECEMBER [DIE 8 DECEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	10° 42⅓′
by the revolving quadrant [per Volub.]	10° 43⅙′
Declination by the armillae [Declin. per Armill.]	23° 23½′
	23° 23¾′

The sky was moderately clear. [Fuit mediocriter ſerenum.]

11 December [*DIE 11 DECEMBRIS.*]

When the Sun was near the winter solstice, and it was perfectly clear and calm. [*Cum ⊙ eßet iuxta Solſtitium hybernum & optime ſerenum & tranquillum.*]

Altitude in the meridian [Altit. in merid.]	
by the revolving quadrant [per Volub.]	10° 41′ 20″
by the steel instrument [per Chalyb.]	10° 41′ 10″
by the mural quadrant [per Mural.]	10° 41′ 0″
Declination by the largest armillae [Declin. per Armill. max.]	23° 26′ 15″
with the other pinnule [Altero pinnacidio]	23° 25′ 30″
12^{h} 8^{m}, the same repeated [12^{H} 8^{M} Repetita eadem]	23° 26′ 0″
with the other [Altero]	23° 26′ 20″
12 10, repeated a third time, with one [12 10 Tertio repetita, vno]	23° 25′ 45″
with the other [Altero]	23° 26′ 10″

From this it is clear that these armillae increase the southern declination near the meridian by two minutes more than they should. [*Hinc patet, quod Armillæ hæ in duobus minutis declinationem auſtralem iuxta meridianum plus iuſto adaugeant.*]

At 3^{h} 20¼^{m} the lower limb of the Sun was setting. [*H. 3 20¼′ Inferior limb. ⊙ occidebat.*]

3 25⅙: the upper limb of the Sun was setting. [*3 25⅙ Superior limb. ⊙ occidebat.*]

Observed altitude [Altitudo obſeruata]	10° 41′ 15″
	3 5
True altitude [Vera altitudo]	10° 44′ 20″
Altitude of the equator [Altit. æquatoris]	34° 5′ 30″

Apparent declination [Declinatio viſa]	23° 21′ 10″
Our place of the Sun [Locus ☉ noſter]	29° 28′ ♐
True declination [Declinatio vera]	23° 31′ 25″
The difference that measures [Differentia quæ metitur]	
the refraction [refractionem]	10 15
Our canon has [Canon noſter habet]	9 40
Difference at least [Differentia ſaltem]	0 35

For the refraction of the Sun, from the three preceding observations near the winter solstice, namely on 11, 15, 17 December. [*Pro refractione ☉ ex tribus antecedentibus obſeruationibus iuxta Solſtitium hybernum vtpote die 11, 15, 17 Decembris.*]

On the 11th, our place of the Sun [Die 11, Locus ☉ noſter]	29° 26½′ ♐
True declination of the Sun [Declinatio ☉ vera]	23° 31′ 25″
Apparent declination [Declinatio viſa]	23° 24′ 15″
Parallax of the Sun, subtracted [Parallaxis ☉ ſubtr.]	0 3 4
Declination without [Declin. absque]	
parallax [parallaxi]	23° 21′ 11″
Therefore the refraction [Ergo refractio]	10 14
Our tables give [Tabulæ noſtræ dant]	9 40
Difference exceeding [Differentia excedens]	
the tables [tabulas]	0 34

It was indeed clear enough, but the air was nonetheless somewhat thick. [*Erat quidem ſatis ſerenum, ſed aër craßiuſculus nihilominus.*]

On the 15th, our place of the Sun [Die 15, Locus ☉ noſter]	3° 32′ ♑
True declination [Vera declinatio]	23° 28′ 40″
Observed declination [Declinatio obſeruata]	23° 22′ 45″
Parallax of the Sun, subtracted [Parallaxis ☉ ſubt.]	0 3 3
Apparent declination without [Viſa declinatio citra]	23° 19′ 42″
Therefore the refraction of the Sun [Ergo refractio ☉]	0 9 0
The tables give [Tabulæ dant]	9 38
Difference by which the tables exceed [Diff. qua tabulæ ſuperant]	0 38

The sky was moderately clear, but the air was somewhat thicker near noon. [*Fuit mediocriter ſerenum, ſed aër aliquanto craßior iuxta meridiem.*]

On the 17th, our place of the Sun [Die 17, Locus ☉ noſter]	5° 34′ 40″ ♑
True declination [Declinatio vera]	23° 24′ 25″
Observed declination [Declinatio obſeruata]	23° 18′ 5″

Parallax [Parallaxis]	3 3
Apparent declination without [Viſa decl. absq.]	
parallax [parall.]	23° 15′ 2″
Therefore the refraction of the Sun [Ergo refractio ⊙]	0 9 23
The tables give [Tabulæ dant]	0 9 35
Difference, excess [Differentia exc.]	0 0 12

It is clear, therefore, that our canon of solar refractions is quite sound. In the first observation it falls short by as much as it exceeds in the second; in the third it agrees well enough. [*Patet itaque, quod Canon noſter refractionum ſolarium ſatis bene ſe habeat. In prima obſeruatione tantum deficit, quantum in altera abundat, in tertia ſatis quadrat.*]

15 December [DIE 15 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	10° 43′
by the revolving quadrant [per Volub.]	10° 42⅚′
by the mural quadrant [per Mural.]	10° 42⅔′
Declination by the subterranean armillae [Decl. per Armill. ſubterr.]	23° 23⅙′
	23° 23½′

The clock had been running faster than it should from 8^h P.M. of the previous day, by 15^m. [Horologium citius iuſto mouebatur ab H. 8 P. M. heſterni diej minuta 15.]

It was moderately well clear, but the air was thicker around noon. [Fuit mediocriter bene ſerenum, ſed aër craßior circa meridiem.]

17 December [DIE 17 DECEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	10° 47¼′
by the revolving quadrant [per Volub.]	10° 47½′
Declination by the largest armillae [Declin. per Armill. max.]	23° 18⅔′
	23° 18¾′

The sky was moderately clear. [Fuit mediocriter ſerenum.]

20 December [DIE 20 DECEMBRIS.]

At noon the clock was corrected, because it had run 14^m slower than it should from $2½^h$ A.M. [In meridie corrigebatur horologium, quod 14 M. iuſto tardius motum fuit ab hora 2½ A. M.]

Altitude of the Sun by the mural quadrant [Altitudo ⊙ per Mural.]	10° 58′
by the steel instrument [per Chalyb.]	10° 57⅔′
by the revolving quadrant [per Volub.]	10° 58½′
Declination by the armillae [Declin. per Armill.]	23° 8′
	23° 8¼′

The sky was at least moderately clear. [Fuit ſaltem mediocriter ſerenum.]

On the same day, around sunset, the declination and altitude of the Sun were taken, for determining the refraction for Venus in the observations above and those following.[1] [Eodem die circa occaſum ⊙ capiebatur declinatio & altitudo ⊙ pro ♀ refractione in ſuperioribus obſeruationibus & ſequentibus cognoſcenda[1].]

Hours, minutes [H. M.]	Declination of the Sun [Declinatio ⊙]		Altitude [Altitudo]
$2^h\ 37^m$	23° 6′	23° 5⅓′	4° 20′
$2^h\ 40^m\ 35^s$	23° 4¼′	23° 5′	4° 3′
$2^h\ 44½^m$	23° 3⅓′	23° 4′	3° 50′
$2^h\ 51^m$	23° 3′	23° 3½′	3° 20′
$2^h\ 57^m$	23° 1¼′	23° 0½′	2° 50′

After this the shadow of the Sun on the pinnules could not be observed distinctly, because the Sun near the horizon was wrapped in dense vapours. [Poſthac vmbra ⊙$^{l_{is}}$ in pinnacidijs diſcrete obſeruari haud potuit, quod is circa Horizontem denſis vaporibus implicabatur.]

22 December [DIE 22 DECEMBRIS.]

At noon, altitude of the Sun [In meridie Alt. ⊙]	
by the steel instrument [per Chalyb.]	11° 7¼′
by the revolving quadrant [per Volub.]	11° 7½′
Declination by the armillae [Declin. per Armill.]	22° 59⅙′
	22° 59¾′

From $4⅓^h$ in the morning the clock had been running faster than it should, by 6^m. [Horologium ab hora 4⅓ matutina mouebatur citius iuſto minutis 6.]

It was not clear enough, but passable. [Non fuit ſatis ſerenum ſed vtcunque.]

23 December [DIE 23 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]

by the steel instrument [per Chalyb.]	11° 11⅝′
by the revolving quadrant [per Volub.]	11° 11¾′
Declination by the largest armillae [Declin. per Armill. max.]	22° 55′
	22° 54¾′

The sky was quite clear. [Fuit ſatis bene ſerenum.]

26 December [DIE 26 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ merid.]	
by the steel instrument [per Chalyb.]	11° 30¼′
by the revolving quadrant [per Volub.]	11° 29⅔′
Declination by the armillae [Declin. per Armill.]	22° 36⅓′
	22° 36⅔′

From $9\frac{1}{2}^{h}$ A.M. the clock was going faster than it should, by one minute at least. The sky was moderately clear, but not enough, because of the rather scattered clouds appearing around the Sun. [Horologium vno ſaltem minuto celerius iuſto ibat ab H. 9½ A. M. Fuit mediocriter ſerenum, ſed non ſatis ob rariuſculas nubes circa ⊙ apparentes.]

After 2^{h} we observed the Sun in altitude and declination, on account of the observations of the Moon taken today. [Poſt H. 2 obſeruabamus ⊙ in altit. & declinatione propter ☾ obſeruationes hodie acceptas.]

Hours, minutes, seconds [H. M. S.]	Declination [Declinatio]		Altitude [Altit.]
$2^{h}\ 9^{m}\ 0^{s}$	22° 35′	with both [vtroque]	7° 0′
$2^{h}\ 19^{m}\ 0^{s}$	22° 33⅚′	22° 34′	6° 20′
$2^{h}\ 35^{m}\ 45^{s}$	22° 32¾′	with both [vtroque]	5° 0′
$2^{h}\ 43^{m}\ 50^{s}$	22° 32¼′	22° 32′	4° 20′
$2^{h}\ 54^{m}\ 20^{s}$	22° 30⅔′	22° 30′	3° 31′

Compare these with the preceding ones made before noon (which are written among the observations of the Moon) *in the observations of the Sun.* [*Confer hæc cum antecedentibus ante meridiem habitis* (quæ inter obſeruata in ☾ ſcripta ſunt) *in* ⊙ *obſeruationibus.*]

27 December [DIE 27 DECEMBRIS]

Before noon. [ante meridiem.]

At $9\frac{1}{3}^{h}$ A.M. the clock was corrected by the Sun; since noon yesterday it had advanced $7\frac{1}{2}^{m}$ slower than it should. [H. 9⅓ A. M. corrigebatur ad ⊙ horologium ab heſterno Meridie 7½ M. iuſto tardius promotum.]

Hours, minutes, seconds [H. M. S.]	Declination of the Sun [Declin. ⊙]	Azimuth of the Sun, east [Azim. ⊙ orient.]	Altitude [Altit.]	Equatorial distance from the meridian [Diſt. æquat. a merid.]
$9^h\ 22^m\ 55^s$	22° 24½′			
$9^h\ 27^m\ 20^s$	22° 25′	34° 50′	5° 15′	38° 5′
$9^h\ 31^m\ 10^s$	22° 26′	34° 0′	5° 33′	36° 54′
	22° 27′			

After we had observed the Moon, the following again on the Sun, in the same way as before. [*Poſtquam ☾ obſeruaßemus ſequentia rurſus in ⊙ eodem modo vt antea.*]

Hours, minutes, seconds [H. M. S.]	Declination of the Sun [Declin. ⊙]	Azimuth of the Sun, east [Azim. ⊙ or.]	Altitude [Altit.]	Equatorial distance from the meridian [Diſt. æq. a merid.]
$10^h\ 21^m\ 25^s$	22° 28′	23° 0′	8° 48′	
	22° 28½′			
$10^h\ 25^m\ 50^s$	22° 28½′	22° 0′	9° 3′	23° 44′
	22° 28′			
$10^h\ 30^m\ 24^s$	22° 29⅙′	21° 0′	9° 17½′	22° 44½′
	22° 28⅔′			
$10^h\ 34^m\ 47^s$	22° 29′	20° 0′	9° 31′	21° 37½′
	22° 29⅔′			
$10^h\ 41^m\ 24^s$	22° 29′	18½°	9° 47′	19° 53′
	with one [vno]			
$10^h\ 48^m\ 5^s$	22° 29½′	17° 0′	10° 4½′	

On the same day, 27 December [EODEM DIE 27 DECEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	11° 36¼′
by the mural quadrant [per Mural.]	11° 36′
by the revolving quadrant [per Volub.]	11° 36⅔′
Declination [Declin.]	22° 29⅚′
	22° 29½′

[1] Compare below, among the observations of Venus. [Cfr. infra inter obſervationes Veneris.]

The clock was running faster than it should from $9\frac{1}{3}^h$ A.M. The sky was moderately clear. [Mouebatur Horologium celerius iuſto a H. 9⅓ A.M. Fuit mediocriter ſerenum.]

Observations of the Sun in the afternoon of this day. [Obſeruationes ⊙ poſt meridiem huius diej.]

Hours, minutes, seconds [H. M. S.]	Azimuth of the Sun [Azim. ⊙]	Altitude by the revolving quadrant [Altit. per Vol.]	Declination [Declin.]	Sun, west [⊙ occid.]
$1^h\ 18^m\ 5^s$	17° 32′	10° 3′	22° 29½′	18 45½
		by the lesser quadrant [per min. Q.]	22° 30′	
$1^h\ 27^m\ 40^s$		9° 2′	22° 29½′	21 7½
			22° 29′	
$1^h\ 31^m\ 20^s$		9° 25′	22° 28½′	
		revolving quadrant [Volub.]	22° 29′	
$1^h\ 37^m\ 40^s$	22° 0′	9° 10′	22° 28 1/[numeral: ?]′	
			22° 29¼′	
$1^h\ 42^m\ 10^s$	23° 0′	8° 54′	22° 28⅔′	24 33½
		min.	22° 29¼′	
$1^h\ 49^m\ 15^s$		8° 41′	22° 28½′	26 18⅓
			22° 28⅔′	
$1^h\ 55^m\ 55^s$		8° 5′	22° 28⅔′	27 52
			with both [vtroque]	
$2^h\ 4^m\ 20^s$		7° 32′	22° 27¾′	29 48
			22° 27½′	
$2^h\ 15^m\ 55^s$		6° 55′	22° 26⅔′	32 46½
			22° 26½′	
$2^h\ 36^m\ 30^s$		5° 30′	22° 26′	37 46
			22° 25½′	

Here the clock was corrected, its index being set back by 5^m, by which the clock was found to have run faster than it should. [Hic corrigebatur horologium, reducto indice 5 min. quibus celerius iuſto motum fuiße horologium ſit deprehenſum.]

2 49 30	38 30	3 59½	22 23½
			22 24

28 December [DIE 28 DECEMBRIS.]

The Sun was observed before noon in the following manner. [Obſeruabatur ⊙ ante meridiem in hunc ſequentem modum.]

Hours, minutes, seconds [H. M. S.]	Altitude by the lesser quadrant [Alt. per Q. min.]	Declination [Declin.]	Sun, east, on the equator [⊙ orient. in æquat.]
$9^h\ 49^m\ 0^s$	6° 0′, nearly [fere]	22° 19′	37° 0′
		22° 16′	
$9^h\ 51^m\ 5^s$	6½°	22° 18½′	36° 30′
		22° 18⅓′	
$10^h\ 7^m\ 55^s$	7° 8′	22° 20′	32° 30′

Hours, minutes, seconds [H. M. S.]	Altitude by the lesser quadrant [Alt. per Q. min.]	Declination [Declin.]	Sun, east, on the equator [⊙ orient. in æquat.]
		22° 19½′	
10h 13m 50s	7° 16′	22° 19½′	31° 0′
		22° 19′	

Hours, minutes, seconds [H. M. S.]	Altitude by the lesser quadrant [Alt. per Q. min.]	Declination [Declin.]	Sun, east, on the equator [⊙ orient. in æquat.]
10h 21m 50s	7° 53′	22° 19⅓′	29° 0′
		22° 19¾′	
10h 25m 58s	8° 10′	22° 20′	28° 0′
		22° 19⅓′	

From this it is clear that the clock was running more than it should, and so the times are to be corrected. [*Hinc patet quod horologium plus iuſto mouebatur, quare tempora corrigenda.*]

Next the Sun was observed at noon, with altitude [Deinceps obſeruabatur ⊙ in meridie habens Altit.]

by the steel instrument [per Chalyb.]	11° 44½′
by the revolving quadrant [per Volub.]	11° 43¾′
by the mural quadrant [per Mural.]	11° 44⅙′
Declination by the largest armillae [Declin. per Armill. max.]	22° 21½′
	22° 22′

The clock was corrected, because it was running more than it should, by 19m 30s. [Corrigebatur horologium, quod plus iuſto mouebatur 19′ 30″.]

The sky was quite clear. [Fuit ſatis bene ſerenum.]

Afterwards the Sun was observed in the afternoon. [Poſtea obſeruabatur ⊙ poſt meridiem.]

Hours, minutes, seconds [H. M. S.]	Altitude [Altit.]	Azimuth [Azim.]	Declination [Decl.]	Sun on the equator, west [⊙ in æquat. occ.]
1h 41m 40s	9° 1⅙′	23° 0′	22° 22′	24° 40½′
	by the lesser quadrant [per min. Q.]		22° 21½′	
1h 51m 20s	8° 40′		22° 21′	27° 0′
			22° 20½′	
1h 59m 25s	8° 8′		22° 20⅔′	29° 0′
			22° 20½′	
2h 3m 30s	7° 50′		22° 20′	30° 0′
			22° 19¾′	

Hours, minutes, seconds [H. M. S.]	Altitude [Altit.]	Azimuth [Azim.]	Declination [Decl.]	Sun on the equator, west [⊙ in æquat. occ.]
2^h 13^m 30^s	7° 10′		with one [vno] 22° 19¾′	32° 30′
2^h 32^m 0^s	6° 40′		with one [vno] 22° 18¾′	37° 0′
2^h 40^m 15^s	5° 10′			39° 0′

The clock was corrected, because it was running 4^m more than it should. [Corrigebatur Horologium, quod 4 ſcrupulis plus iuſto mouebatur.]

31 December [DIE 31 DECEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	12° 8′
by the revolving quadrant [per Volub.]	12° 8⅙′
Declination [Declinatio]	21° 59′
	21° 59½′

It was very clear. [Fuit bene ſerenum.]

Observations of the Moon [OBSERUATIONES LUNÆ.]

19 February, evening [DIE 19 FEBRUARIJ, VESPERI.]

When the Moon had been carried past the meridian by 3½° in azimuth, its altitude on the revolving quadrant was 59° 53′ at the lower limb. [Cum ☾ eßet tranſuecta meridianum 3½° in Azim., erat eius altitudo in Volubili 59 53 in limbo infer.]

	Distance of the western limb [Diſt. occid. limbi]		Declination [Declin.]
7 44 20	the Moon from the bright foot of Erichthonius [☾ a luc. pede / Erichtonij]	15° 18′	of the lower limb [inf. limbi]
7 49 10			25° 52′
7 56		15° 16′	the left shoulder of Orion, west [Sin. humer. / Orion. occ.]
8 1½			
8 10⅓ corrected [corr.]		15° 19′	28° 51′
8 8 20		15° 17′	

Vice versa [Viceverſa]

8 12 20		
8 31⅔ corrected [corr.]	distance of the same limb from cor ♌ [Diſt. eius-/dem limbi / a corde ♌]	52° 3′ 34 11
8 15 30		52° 2½′ the Greater Dog, west [Can. mai. oc.]
8 22½		52° 2′ 6 10
	Declination[1] [Declin.[1]]	26° 25′
		25° 54′

Computation of the place of the Moon from the observations of 19 February.[2] [Supputatio loci ☾ ex obſeruationibus diei 19 Feb.[2].]

At 8⅙^{h}, distance of the centre [H. 8⅙ Diſtantia centri]	
from the bright foot of Erichthonius [a luc. ped. Ericht.]	15° 35′
Declination of the Moon [Declinatio ☾]	26° 6′
Declination of the foot of Erichthonius [Declin. ped. Ericht.]	28° 11′
Its right ascension [Aſcenſio R. eius]	75° 9¼′
Angular difference of ascension [Ang. diff. aſcenſ.]	17° 21′
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	92° 30¼′
At 8^{h} 27^{m}, distance of the centre of the Moon [H. 8 M. 27 Diſtantia centri ☾]	
from Regulus [a Regulo]	51° 47′
Declination of the Moon [Declinatio ☾]	26° 7′
Declination of Regulus [Declinatio Reguli]	13° 56′
Right ascension of Regulus [Aſc. R. Reguli]	146° 40′
Angular difference of ascension [Ang. diff. aſcenſ.]	53° 58′
Therefore the right ascension of the Moon [Idcirco Aſc. R. ☾]	92° 42′
Take, at 8⅙^{h}, the right ascension of the Moon [Pone H. 8⅙ Aſc. R. ☾]	92° 31′
Declination [Declin.]	26° 6′
Resp. longitude [Reſp. Longitudo]	2° 15¾′ ♋
For the latitude, add [Pro latitudine adde]	6¾
For the parallax [Pro parallaxi]	8
because the Moon was 5′ beyond. [quod ☾ eßet 5′ vltra.]	
Therefore the true Moon, about 90° [Ergo verus ☾ quaſi 90 gr.]	
carried across [tranſuectæ]	2° 30′ ♋

18 October [DIE 18 OCTOBRIS.]

In the evening the Moon was observed near 90° from the Ascendant, before the eclipse occurring the following morning. [Veſperi obſeruabatur ☾ iuxta 90° ab Aſcendente ante Eclipſationem ſequenti mane contingentem.]

It should have been in the 90th degree at 9^{h} 50^{m}. [*Debuit eße in 90 gradu H. 9 M. 50.*]

The first of the wing of Pegasus, transit at 8^{h} 33^{m} 36^{s}. [Prima alæ Peg. tranſ. H. 8 M. 33 S. 36.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb from the first of the wing of Pegasus [Diſt. occ. limb. a 1 alæ Peg.]	Declination of the Moon [Decl. ☾]	Altitude of the Moon [Alt. ☾]	The first of the wing of Pegasus, west [Prima alæ Peg. occ.]
$9^h\ 38^m$	46° 29½′	9° 48′ lower [inf.]	37° 43′ lower [inf.]	
		10° 21′ upper [ſup.]	38° 12½′	
$9^h\ 48^m$	46° 38′	The star in Pegasus was seen with difficulty, both because of the brightness of the Moon and because of rather scattered clouds [Difficulter ſtella / in Pegaſo vide-/batur, tum ob / ſplendorem ☾ tum / rariuſc. nubes]		18 42
$9^h\ 48^m\ 24^s$ corrected [corr.]				
$9^h\ 52^m\ 59^s$	46° 41½′			20 5
$9^h\ 53^m\ 56^s$ corrected [corr.]				

Vice versa, distance of the western limb. [Viceverſa, Diſt. occ. limb.]

	The Moon from Aldebaran [☾ ab Aldeb.]		
9 59 55	33° 52½′		21 32
9 59 45 corrected [corr.]			
10 3 20	33° 51′	Declination of the Moon [Decl. ☾]	22 31
10 6 45	33° 50′	9° 56′ lower limb [inf. limb.]	
		10° 28′ upper [ſuper.]	
10 13 30	33° 48′ nearly [fere]		24 50

For the place of the Moon near the nonagesimal degree. [Pro loco ☾ iuxta nonag. gradum.]

At $9^h\ 54^m$, distance of the centre of the Moon [H. 9 54 Diſt. centri ☾] from the wing of Pegasus [ab alæ Peg.]	46° 58′
Declination of the centre of the Moon [Declin. centri ☾]	10° 5′ north [B.]
Right ascension of the first of the wing of Pegasus [Aſc. R. I alæ Peg.]	341° 10′
Angular difference of ascension, computed [Ang. diff. $aſc^{a\,l_i^s}$ ſupp.]	47° 54′ 30″
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾ æ]	29° 4′ 30″
9 59¾, distance of the centre of the Moon from Aldebaran [9 59¾ Diſt. centri ☾ ab Aldeb.]	33° 36′

Declination of the centre of the Moon [Declin. centri ☾]	10° 6′
Declination of Aldebaran [Decl. Aldeb.]	15° 37′
Arc of inclination [Arcus incli-]	
2⅔′ subtracted [nat. 2⅔ᴹ ſubt.]	
Right ascension of Aldebaran [Aſc. R. Aldeb.]	63° 11′
Angular difference of ascension, computed [Ang. diff. Aſc. ſupp.]	34° 2′
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	29° 9′ 0″
At 9^h 57^m, the limited right ascension of the Moon [H. 9 M. 57 Aſc. R. ☾ limitata]	29° 6′ 45″
Apparent declination [Declinatio viſa]	10° 5′ 30″
Resp. longitude [Reſp. Longitudo]	0° 36½′ ♉
latitude [Latitudo]	1° 45′ south [M.]

[1] Written beside it is "at the last time", but struck through with lines. [Adſcriptum eſt »ad poſtremum tempus«, ſed lineis inductum.] [2] From codex V. [E codice V.]

19 October, morning [DIE 19 OCTOBRIS, MANE.]

For the clock, before the eclipse. [*Pro horologio ante Eclipſin.*]

5^h 23^m 50^s	the Lesser Dog, west [Canis minor occident.]	4 42
5 25 30		5 7
5 27 0		5 29
5 30 0		6 15

The observation of the eclipse of the Moon follows. [*Sequitur obſeruatio Eclipſis* ☾.]

Corrected time [Tempus corr.]	Hours, minutes [H. M.]			
	5^h 50^m	*Nothing at all was yet missing from the Moon.*[1] [*Plane nihil adhuc de* ☾ *abſuit*[1].]	*the Lesser Dog, west* [*Canis minor occid.*]	11 21
5^h $56\frac{1}{6}^m$	5^h $54\frac{1}{2}^m$	*The Moon began to be eclipsed at the upper limb.* [*Incepit* ☾ *in ſuperiori limbo deficere.*]		
			Then the Lesser Dog, west, was [*Fuit tunc canis minor occ.*]	12 35

Corrected time [Tempus corr.]	Hours, minutes [H. M.]	
$6^h\ 4^2/_3{}^m$	$6^h\ 3^m$	*The apparent diameter of the Moon with the Radius was 27′. About 5′ of the Moon were missing.* [*Fuit diameter ☾ apparens / per radium 27′. / Quaſi 5 minuta de ☾ defuere.*]

Diagram. A drawing of the Moon set to the right of the $6^h\ 3^m$ remark: a circle with a narrow dark band along the top of its rim; inside the circle, two small dots on the vertical line through the centre. No letters or labels.

Corrected time [Tempus corr.]	Hours, minutes [H. M.]			
$6^h\ 8^m$	$6^h\ 7^m$	*About a quarter part, nearly, of the diameter of the Moon was missing. The altitude of the lower limb of the Moon was 8° 5′.* [*Quaſi quarta fere pars dia-/metri ☾ abſuit. Altit. ☾ infer. / limbi fuit 8ᴾ 5′.*]	*Then cor ♌, east, was* [*Fuit tunc / cor ♌ or.*]	21 33

Diagram. A drawing of the Moon set to the right of the $6^h\ 7^m$ remark, between the remark and the star line: a circle whose top is cut off by a hatched segment, deeper than in the previous drawing; inside the circle, two small dots below the segment, one near the centre and one lower. No letters or labels.

Corrected time [Tempus corr.]	Hours, minutes [H. M.]			
$6^h\ 13^m\ 54^s$	$6^h\ 12^m\ 45^s$	*Then about the mean between a third and a fourth part was missing from the Moon. The altitude of the lower limb of the Moon was then 7° 18′.* [*Tunc abſuit de ☾ quaſi medi-/um inter tertiam & quartam / partem. / Fuit tunc altit. inf. limbi ☾ 7 18*]	*cor ♌, east* [*Cor ♌ orient.*]	20 4

Diagram. A drawing of the Moon set to the right of the $6^h\ 12^m\ 45^s$ remark: a circle whose upper part is covered by a dark, densely scribbled segment; inside the circle, four small marks below the segment. No letters or labels.

Corrected time [Tempus corr.]	Hours, minutes [H. M.]			
6^h 20⅓^m	6^h 19^m	*About a third part of the Moon laboured in darkness, as you see. The altitude of the lower limb of the Moon was 6° 25′.* [*Quaſi tertia pars de ☾ labora-/vit in tenebris vt vides. / Altit. inf. limbi ☾ 6 25*]	*cor ♌, east* [*Cor ♌ orient.*]	18 28½

Diagram. A drawing of the Moon set to the right of the 6^h 19^m remark: a circle whose upper part is covered by a heavy black segment, its left end projecting a little beyond the rim; one small dot inside the circle below the segment. No letters or labels.

[1] These words having been deleted, codex V adds the following: "Concerning this eclipse there is doubt whether it began much earlier than was recorded." [His verbis deletis hæc addit codex V: »De hac Eclipſi dubitatur an multo antea inceperit quam annotatum ſit«.]

Corrected time [Tempus corr.]	Hours, minutes [H. M.]			
6^h 33^m	6^h 31^m	*The Moon was about half in the shadow. Take this half at 6^h 32^m, or at most 6^h 33½^m, when the same star* [*☾ quaſi dimidia fuit in vmbra. / Pone medietatem hanc H. 6 / M. 32, vel ad ſummum H. 6 / M. 33½, cum eadem ſtella*]	*the Lesser Dog, west* [*Canis minor / occid.*]	21 50
6^h 35 1/[numeral: ?]^m		*was west.* [*eßet occid.*]		22 25

Diagram. A drawing of the Moon set to the right of the 6^h 31^m remark, between the remark and the star line: a circle with a hatched lune over its upper right part, bounded by a curve running from the top of the rim down to the lower right; two small marks in the clear part, below the centre. No letters or labels.

Corrected time [Tempus corr.]	Hours, minutes [H. M.]			
$6^h\ 39¼^m$	$6^h\ 37½^m$	*The diameter of the bright body of the Moon with the Radius was 14′. The altitude of the lower limb with the Radius was then 4½.* [*Fuit diameter corporis lucidi / ☾ per radium 14 M. / Fuit tunc altit. inf. limbi / per radium 4½.*]	*the Dog, west* [*Canis occid.*]	23 23½

Diagram. A drawing of the Moon set to the right of the $6^h\ 37½^m$ remark: a circle whose upper part is covered by diagonal hatching, bounded below by a heavy curved line running from the left of the rim down to the right; the lower part is clear. No letters or labels.

Corrected time [Tempus corr.]	Hours, minutes [H. M.]			
$6^h\ 46¼^m$	$6^h\ 44^m$	*The altitude of the lower limb was then 2¾, uncertain.* [*Fuit tunc altit. inf. limbi 2¾ / incertum*]	*the Lesser Dog, west* [*Canis / minor / occid.*]	25 7
	$6^h\ 50^m\ 0^s$	*For the clock, again* [*Pro horologio iterum*]	*the Lesser Dog, west* [*Canis minor occid.*]	26 35
	$6^h\ 51^m\ 31^s$		*the same star, west* [*eadem ſtella occ.*]	26 48

Diagram. A drawing of the Moon set to the right of the $6^h\ 44^m$ remark: a circle almost wholly covered by dense cross-hatching, with a clear band along its lower part bounded by a doubled curved line. No letters or labels.

But then the Moon did not appear, because of the denser vapours and small clouds around the horizon. [*Sed tunc ☾ non apparuit propter vapores denſiores & nubeculas circa horizontem.*]

Observation of the same eclipse of the Moon by D. D. Gellius in the southern observatory. [Obſeruatio eiuſdem Eclipſis ☾ a D. D. Gellio / in obſeruatorio auſtrali.]

Diagram. The first of four drawings of the Moon set side by side under the line on Gellius's observation (left): a circle with a thin dark mark along the top of its rim. No letters or labels.

Diagram. The second drawing (left of centre): a circle with a small hatched sliver at the upper right of its rim. No letters or labels.

Diagram. The third drawing (right of centre): a circle with a hatched sliver along the top of its rim, a little right of the top, its right end drawn out in a line beyond the rim. No letters or labels.

Diagram. The fourth drawing (right): a circle with a larger cross-hatched segment at its upper right, a stroke rising above the rim at the left end of the segment, and a small break in the rim at the left. No letters or labels.

When the Lesser Dog was 12° from the meridian, or 48^{m} of time, as much as is marked appeared to have failed from the lunar body. [Cum Canis minor / abeßet a Meridi-/ano 12 Grad. vel / 48′ temporis, tan-/tum quantum ſig-/natum eſt videba-/tur corpori Lu-/nari defeciße.]	When it was 51^{m} of time away. [Cum abeßet 51′ / minut. tempo-ris.]	When it was 55′ away, or 13° 45′. [Cum abeßet 55′ / minutis ſeu / 13 gr. 45′]	When the Lesser Dog was 57½^{m} of time from the meridian, a third part of the lunar semidiameter appeared darkened. [Cum abeßet Ca-/nis minor a meri-/die minutis 57½ / Temporis, 3^{ia} pars / ſemidiametri Lu-/naris obſcurata / videbatur.]
Degrees 12° 0′ [Gradus 12^{G} 0′]	Degrees 12° 45′ [Grad. 12° 45′]	Degrees 13° 45′ [Grad. 13° 45′]	Degrees 14° 22′ [Grad. 14° 22′]
Time 0^{h} 48^{m} [Tempus 0 48]	Hours 0^{h} 51^{m} [Hor. 0 51]	Time 0^{h} 55^{m} [Temp. 0 55]	Time 0^{h} 57½^{m} [Temp. 0 57½]

Diagram. The first of four drawings of the Moon set side by side at the head of the page (left): a circle with a cross-hatched segment over its upper right part, bounded below by a curve running from the upper left of the rim to the right. No letters or labels.

Diagram. The second drawing (left of centre): a circle with a larger cross-hatched segment over its upper part, bounded below by a curve from the left of the rim to the right; a thin second arc runs inside the circle just below the left end of the segment. No letters or labels.

Diagram. The third drawing (right of centre): a circle whose upper part is covered by a cross-hatched segment, bounded below by a heavy curve sloping from the upper left of the rim down to the lower right, its right end drawn out beyond the rim. No letters or labels.

Diagram. The fourth drawing (right): a circle whose upper right part, more than half of it, is covered by a cross-hatched area bounded by a line running from the top left of the rim down to the lower right, its end drawn out beyond the rim. No letters or labels.

When the same Dog was 18° 22′ away, or 1^{h} 13½^{m} of time. [Cum abeßet idem / Canis 18 gr. 22′ vel / H. 1 13½ min. tem-/poris.]	When it was 1^{h} 21^{m} away, the Moon appeared darkened in half of itself, if not a little more. [Cum abeßet hora / 1 M. 21 media ſui / parte obſcurata ☾ / apparebat, ſi non / paulo amplius.]	When the Lesser Dog was 22¾° away, or 1^{h} 31^{m}, at least ¾ of the lunar semidiameter appeared to remain. [Cum abeßet canis / minor 22¾ gr. ſeu / H. 1. 31, ſaltem ¾ / ſemidiametri Lu-/naris ſupereße vi-/debatur.]	The Lesser Dog 1^{h} 40 P. M.: at least half of the semidiameter of the Moon appeared to us to remain. Nor could it be observed afterwards. [Canis minor H. 1° / 40 P. M. ☾ ſaltem / medietas ſemidi-/ametri nobis ſu-/pereße videbatur. / Nec poſtea obſer-/uari potuit.]
Degrees 18° 22′ [Grad. 18° 22′]	Degrees 20° 15′ [Grad. 20° 15′]	Degrees 22° 45′ [Grad. 22.45′]	Degrees 25° 0′^{1} [Grad. 25. 0^{1}]

Time 1^{h} 13½^{m} [Tem-pus 1.13½]	Time 1^{h} 21^{m} [Tempus 1.21]	Time 1^{h} 31^{m} [Temp. 1.31]	Time 1^{h} 40^{m} [Temp. 1.40]

7^{h} 12^{m}	The upper limb of the Sun began to rise. [incepit limbus ⊙ ſuperior oriri.]
7^{h} 14⅔^{m}	The middle of the body of the Sun was seen to rise. [Medium corporis ⊙ viſum oriri.]
7^{h} 17^{m}	The whole Sun had risen. [Totus ⊙ ortus eſt.]

When a mechanical trial[2] had been made for the middle of this eclipse, it was found that there had elapsed from the beginning to the obscuration of the Moon [Facta[2] experientia mechanica pro medio huius Eclipſeos / inuentum eſt effluxiße ab initio ad obſcurationem ☾]

		Time [Tempus]
¼	0^{h} 23^{m} [0^{H} 23^{M}]	6^{h} 8^{m} [6^{H} 8^{M}]
½	0 45	6^{h} 31^{m} limited [6 31 limit.]

Therefore the middle 19^{h} 20^{m}. [Ergo medium H. 19 M. 20.]

27 October [DIE 27 OCTOBRIS.]

For the examination of the position of the southern armillae, we observed at the meridian, at about 1½^{h}, in the azimuth of the revolving quadrant [Pro examinatione ſitus armillarum / auſtralium ad Meridiem obſeruaui-/mus hora 1½ circiter in Azimuto Volu-/bilis Quadrantis]

Azimuth of the Sun on the revolving quadrant, from the meridian toward the setting [Azim. ⊙ in Volub. / a merid. ad occaſ.]	When the Sun was on the equator of the armillae [cum ⊙ eßet in æquatore / Armillarum]
22° 0′	21° 47′
23° 0′	22° 49′
24° 0′	23° 53′ here it was not very clear. Take 23 52. [hic non / fuit bene ſerenum. Pone 23 52.]

From this you can correct the armillae, the place of the Sun being given for the assumed time. [Hinc potes corrigere armillas, dato / loco ⊙ ad ſuppoſitum tempus.]

28 October [*DIE 28 OCTOBRIS.*]

For the examination of both armillae. [*Pro examinatione Armillarum am-/barum.*]

the Lesser Dog, west [*Canis minor occident.*]

H. M. S.	*By the largest armillae* [*Per Armillas / maximas*]	*By the armillae merid.* [*Per Armillas / merid.*]
$5^h\ 29^m\ 10^s$	*22 0*	*21 50*
$5^h\ 31^m\ 5^s$	*22 30*	*22 18*
$5^h\ 33^m\ 0^s$	*23 0*	*22 40*
$5^h\ 34^m\ 55^s$	*23 30*	*23 20*
$5^h\ 36^m\ 50^s$	*24 0*	
…	*27 0*	*26 50*

From these it is clear that about 10′ must be subtracted from the observation of the southern armillae. [*Ex his patet quod 10 circiter mi-/nuta ſubtrahenda veniant ab obſer-/uatione Armill. auſtr.*]

Repeated [*Repetita*]		*the Lesser Dog, west* [*Canis minor occid.*]
$5^h\ 50^m\ 20^s$	*by the largest* [*per maximas*]	*27 30*
$5^h\ 52^m\ 20^s$		*28 0*
$5^h\ 54^m\ 15^s$		*28 30*
$5^h\ 58^m\ 5^s$		*29 30*
$6^h\ 0^m\ 0^s$		*30 0*
$6^h\ 2^m\ 0^s$		*30 30*
$6^h\ 3^m\ 55^s$		*31 0*

In the last two the southern armilla had less by 10′, or by 40^s of time. The observation of the Sun by the shadow at noon on the following day confirmed this very point. [*Armilla auſtralis in duabus vlti-/mis minus habuit 10′ vel 40″ tempo-/ris.* Hoc ipſum obſeruatio Solis per / vmbram in meridie ſequentis diej / confirmauit.]

28 October [*DIE 28 OCTOBRIS.*]

The Moon was observed near the 90th degree, horned, midway between □ and ♂. [*Obſeruabatur ☾ iuxta 90 gradum / corniculata, media inter □ & ♂.*]

12 14 30	*the Sun, west* [*⊙ occid.*]	*3 38½*	
	the Moon, west [*☾ occid.*]	*62 45½*	*eastern limb* [*Or. limb.*]
	distance on the equator [*Diſt. æquat.*]	*59° 7′*	
	declination of the upper horn of the Moon [*Declin. ſuper. cornu ☾*]	*11° 27′*	*north* [*borea*]
	lower horn [*infer. cornu*]	*11° 0′*	

[1] These hour angles were written in by another hand. [Hi anguli horales alia manu adſcripti ſunt.] [2] From codex V. [E codice V.]

12 19 30	*the Sun, west* [⊙ *occid.*]	*4 58*	
	the Moon, west [☾ *occid.*]	*64 2*	
	distance on the equator [*Diſt. æquat.*]	*59° 4′*	*take 59 5* [*pone 59 5*]
12 23 40	*the Sun, west* [⊙ *occid.*]	*6 4½*	
	the Moon, west [☾ *occid.*]	*65 8*	
	distance on the equator [*Diſt. æquat.*]	*59°3½′*	*take 59 4* [*pone 59 4*]
			good [*bona*]
12 26 30	*the Sun, west* [⊙ *occid.*]	*6*	
		47½	
	the Moon, west [☾ *occid.*]	*65*	
		50½	
	distance on the equator [*Diſt. æquat.*]	*59° 3′*	*good* [*bona*]
12 29 50	*the Sun, west* [⊙ *occid.*]	*7 39*	
	the Moon, west [☾ *occid.*]	*66*	
		39½	
	distance on the equator [*Diſt. æquat.*]	*59°0½′*	*good* [*bona*]
12 31½	*The declination of the lower limb was again* [*Fuit rurſus declin. infer. limbi*]		
		10°58¼′	
12 35	*Repeated declination* [*Repetita decl.*]		
	of the lower limb [*inf. limb.*]	*10°56½′*	
12 39½	*Declination of the upper limb* [*Declin. ſuper. limbi*]	*11° 25′*	
12 40	*Declination of the lower* [*Declin. inferioris*]	*10° 55′*	
5/[numeral: ?]			

Computation of the lunar place from the preceding observations, for nearly merid. on 28 October. [Supputatio loci lunaris ex præceden-/tibus obſeruationibus ad merid. / fere die 28 Octobris.]

The Moon by computation at 90 at 23^{h} 10^{m} of the day 27 October. [☾ iuxta ſupput. in 90 H. 23 M. 10, / diei 27 Octobris.]

12^{h} $14½^{m}$, or after M. 0^{h} $14½^{m}$. [H. 12 M. 14½ vel poſt M. H. 0 M. 14½]

Distance of the centre of the Moon from the Sun, [Diſt. centri ☾ a ⊙,] taking the semidiameter [accipiendo ſemidia-] of the Moon as 14′, on the equator [metrum ☾ 14′ æquat.]	59° 21′
Declination of the Moon, north [Declin. ☾ borea]	11° 13½′
Apparent right ascension of the Sun [Aſc. recta ⊙ viſa]	222° 14′ 50″
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	162° 53′ 50″
Resp. longitude of the Moon [Reſp. Longitudo ☾]	9° 57⅙′ ♍
Latitude [Latitudo]	3° 38′ 0″ north [B.]
Arc of inclination [Arcus inclinationis]	6′ 0″ subtracted [ſubt.]
True longitude of the Moon with respect to its own [Vera Lunæ reſpectu proprij] circle [circuli longit.]	9° 51⅙′ ♍

13 November [DIE 13 NOUEMBRIS.]

In the evening the Moon was observed descending from the apogee, and in the middle place between the first □ and the ☍ with the Sun. [Veſperi obſeruabatur ☾ ab Apogæo / deſcendens, & in medio loco inter pri-/mam □ & ☍ cum ☉.]

It was, moreover, near 90° at $6\frac{1}{3}^{h}$, by computation. [Erat autem iuxta 90 gr. H. 6⅓ iuxta / ſupput.]

Hours, minutes [H. M.]	Distance of the western limb from the mouth of Pegasus [Diſt. occ. limb. / ab ore Peg.]	Declination of the Moon [Declin. / ☾]		the Vulture, west [Vultur. / occ.]
$6^{h}\ 14\frac{2}{3}^{m}$	51° 20′			
$6^{h}\ 18\frac{1}{2}^{m}$	51° 22′	2° 4½′	upper limb [ſup. limb.]	41 23
		1° 32′	lower [infer.]	
$6^{h}\ 24^{m}$	51° 22′			42 53
$6^{h}\ 26\frac{1}{4}^{m}$ corrected [6 26¼ corr.]				
$6^{h}\ 26\frac{1}{6}^{m}$	51° 25′			
$6^{h}\ 28\frac{1}{2}^{m}$ corrected [6 28½ corr.]				

Hours, minutes [H. M.]	Western limb from the bright star of ♈ [Occ. limb. / a lucida ♈]	Vice versa [Vice Verſa]		the Vulture, west [Vultur. / occ.]
$6^{h}\ 34^{m}$	23° 52¾′			45 30
$6^{h}\ 36\frac{3}{4}^{m}$ corrected [6 36¾ corr.]				
$6^{h}\ 37^{m}$	23° 56′			46 18
$6^{h}\ 39^{m}\ 55^{s}$ corrected [6 39 55″ corr.]				
$6^{h}\ 39\frac{1}{2}^{m}$	23° 54′			46 55
$6^{h}\ 42\frac{1}{6}^{m}$	23° 53′	2 9	upper limb [ſup. limb.]	47 37
		1 35	lower [infer.]	

Transit of the Vulture through the meridian, by computation, $3^{h}\ 34^{m}\ 45^{s}.1$ [Tranſitus Vulturis per meridianum / ex ſupput. H. 3 34′ 45″1.]

From these preceding observations the place of the Moon was found, as follows. [Ex his præced. obſeruationibus in-/uentus eſt Locus ☾ vt ſequitur.]

6^h 28½^m [H. 6 M. 28½]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the mouth of Pegasus [ab ore Pegaſi]	51° 40′
	Declination of the centre of the Moon [Decl. centri ☾]	north [B.] 1° 49½′
	Declination of the mouth of Pegasus [Decl. oris Peg.]	8° 3½′
	Angular ascensional difference [Ang. diff. aſcenſ.$^{a|is}$]	51° 31¼′
	Right ascension of the mouth of Pegasus [Aſc. R. oris Peg.]	321° 5⅓′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	12° 36½′
6^h 40^m [H. 6 M. 40]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the bright star of ♈ [a luc. ♈]	23° 40′
	Declination of the centre of the Moon [Declin. centri ☾]	1° 50′
	Declination of the bright star of ♈ [Declin. luc. ♈]	21° 31′
	Ascensional difference [Aſcenſionalis diff.]	13° 29⅔′
	Right ascension of the bright star of ♈ [Aſc. R. luc. ♈]	26° 8′
	Therefore the right ascension of the Moon [Ergo aſc. R. ☾]	12° 38⅓′
6^h 33^m [H. 6 M. 33]	Limited [Limitata]	
	Right ascension of the Moon [Aſc. R. ☾]	12° 37½′
	Resp. longitude [Reſp. Longitudo]	12° 19⅓′ ♈

[1] Written in the margin. [In margine adſcriptum.]

17 November [DIE 17 NOUEMBRIS.]

In the evening the Moon was observed at full moon and at the greatest prosthaphaeresis of the first epicycle. [Veſperi obſeruabatur ☾ in plenilunio & maxima primi / Epicycli Proſtaphæreſi.]

Hours, minutes [H. M.]	Distance of the western limb from the bright star of ♈ [Diſt. occ. limb. / a luc. ♈]	Declination [Decl.]	Azimuth of the eastern limb and altitude [Azim. or. / limb. & Altit.]	the right shoulder of Orion [Dext. hu. / Orion.]
11^h 6⅙^m	34° 7¾′		azimuth [Az.] 22° 10′ upper altitude [Alt. ſup.] 55° 53′	33 1
11^h 12⅙^m	34° 11½′			31 35
11^h 13^m corrected [11 13 corr.]				
11^h 16⅓^m	34° 10½′			the bright foot of Orion [Luc. pes Or.]
11^h 22⅔^m		upper [ſup.] 23° 14½′	azimuth [Az.] 16° 0′	19 31
11^h 18^m 35^s corrected[1] [11 18 35″ corr.[1]]		lower [inf.] 22° 42′	upper altitude [Alt. ſup.] 57° 35′	
			lower [inf.] 56° 2′	
11^h 29⅓^m	34° 18′ good [34 18 bona]			17 45

Hours, minutes [H. M.]	Distance of the western limb from the bright star of ♈ [Dist. occ. limb. / a luc. ♈]	Declination [Decl.]	Azimuth of the eastern limb and altitude [Azim. or. / limb. & Altit.]	the right shoulder of Orion [Dext. hu. / Orion.]
	Eastern limb of the Moon from the upper head of ♊ [Or. limb. ☾ / a sup. cap. ♊]	Vice versa [Viceversa]		
11h 33m	39° 6⅓′	23 15½ upper [sup.]		16 46
11h 34m corrected [11 34 corr.]		22 44 lower [inf.]		
11h 39m	39° 4½′		lower altitude [Alt. inf.] 56° 36′ azimuth, east [Az. or.] 9° 0′	15 17
11h 45½m	39° 0¾′	23 17 upper [sup.]		13 38
		22 46½ lower [inf.]		
11h 59m	The western limb crossed. [Transijt occ. limb.]			10 22
	The Moon at the meridian, in altitude: the upper horn [☾ merid. in alt. superius cornu]	by the steel instrument [per Chal.]	57° 24′	
		by the revolving quadrant [per Volub.]	57° 23⅚′	
12h 1⅔m	The eastern limb crossed. [Transijt orient. limb.]			9 31
	The Moon in altitude: the lower horn [☾ in alt. inferioris cornu]	by the steel instrument [per Chal.]	56° 53′	
		by the revolving quadrant [per Volub.]	53° 52½′	
	Further, for the clock [Vlterius pro horologio]			
12h 9½m	the left shoulder of Orion [Sinister hum. Orionis]			9 43
12h 12⅔m	the bright foot of Orion, east [Lucidus pes Orion. or.]			6 55

For the longitude of the Moon from the preceding observations at full moon. [Pro longitudine ☾ ex præcedentibus / obseruationibus in plenilunio.]

The Moon near the nonagesimal degree at 11h 18m. [☾ *iuxta nonag. gr. H. 11 M. 18*]

11h 13m [H. 11 M. 13]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the bright star of ♈ [a luc. ♈]	34° 27′
	Declination of the centre of the Moon [Declin. centri ☾]	north [B.] 22° 58′
	Declination of the bright star of ♈ [Declin. luc. ♈]	north [B.] 21° 31′
	Angular difference of ascension [Ang. dr æ aſcis]	37° 10½′
	Right ascension of the bright star of ♈ [Aſc. R. luc. ♈]	26° 8′ 0″
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	63° 18′ 30″
11h 34m [H. 11 34]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the upper head of ♊ [a ſup. cap. ♊]	39° 23′
	Declination of the centre of the Moon [Declin. centri ☾]	23° 0′
	Declination of the upper head of ♊ [Declin. ſup. cap. ♊]	32° 42′
	Angular ascensional difference [Ang. dr æ aſcalis]	43° 30′ 20″
	Right ascension of the upper head of ♊ [Aſc. R. ſup. cap. ♊]	107° 5′ 0″
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	63° 34′ 40″

11h 23½m [H. 11 M. 23½]	Right ascension of the Moon, limited [Aſc. R. ☾ limit.]	63° 26′ 35″
	Declination of the Moon, north [Declin. ☾ B.]	22° 59′ 0″
	R. longitude [R. Longitudo]	5° 41′ 13″ ♊
	Latitude [Latitudo]	1° 41′ 0″ north [B.]
	Arc of inclination because of the latitude [Arcus inclinationis ob latit.]	5′ 40″
		added [add.]
	Therefore the true longitude of the Moon [Ergo vera longitudo ☾]	
	in its own orbit [in propria orbita]	5° 46′ 53″
	Magini's Ephemerides [Ephemerides Magini]	5° 42′
	of the Alphonsines [Alphonſinorum]	
	of Cyprian [Cypriani]	5° 51′

18 November [DIE 18 NOUEMBRIS.]

We corrected the clock by the Vulture for the future observations of the Moon, advancing it 18m. [Correximus Horologium ad Vultu-/rem pro futuris ☾ obſeru-/ationibus, / promouendo illud 18 M.]

The Moon near 90° at 12h 38m. [☾ iuxta 90 gr. H. 12 38′.]

[1] The minutes should be 23. [Minuta debent eße 23.]

Hours, minutes [H. M.]			the bright foot of Orion, east [Luc. pes / Orion. or.]
12h 8m	Distance of the eastern [Diſt. orient.]	48° 17½′	3 55
12h 11m	limb from the bright star of ♈ [limbi a luc. ♈]	48° 22′	3 10

Hours, minutes [H. M.]			
			the bright foot of Orion, east [Luc. pes / Orion. or.]
$12^h\ 15^m\ 0^s$	the right shoulder of Orion, east [Dext. hum. Orion. or.]		11 38
$12^h\ 18^m$	Declination of the upper horn [Decl. ſup. cornu]	26° 10½′	
	lower [infer.]	25° 38′	
$12^h\ 22^m\ 50^s$	The same distance [Eadem diſt.]	48° 24′	9 38
$12^h\ 36^m\ 24^s$ corrected [12 36 24 corr.]			
$12^h\ 25^m\ 5^s$		48° 24½′	
$12^h\ 38^m\ 45^s$ corrected [12 38 45 corr.]			
$12^h\ 28^m\ 40^s$	The northern [Tranſiuit boreale]		8 11
	horn of ♉ crossed the meridian, in altitude [cornu ♉ merid. in altit.]		
	by the steel instrument [per Chal.]	62° 15′	
	by the revolving quadrant [per Volub.]	62° 16′	
	Approximately [ἐν πλάτει], because of the Moon. [ἐν πλάτει propter ☾.]		
	Vice verſa, from the lower head of ♊ [Viceverſa ab infer. cap. ♊]		
$12^h\ 34^m\ 30^s$	Distance [Diſt.]	27° 27½′	6 42
$12^h\ 48^m\ 10^s$ corrected [12 48 10 corr.]			
$12^h\ 44^m\ 55^s$	The eastern [Tranſijt orient.]		3 58
	limb of the Moon crossed the meridian [limb. ☾ per merid.]		
	and had altitude [habuitque altit.]		
	upper horn [ſup. cornu]		
	by the steel instrument [per Chalyb.]	60° 16 1/[numeral: ?]′	
	by the revolving quadrant [per Volub.]	60° 16⅔′	
	lower horn, by the steel instrument [infer. cornu per Chal.]	59° 44′	
	by the revolving quadrant [per Volub.]	59° 44⅓′	
$12^h\ 50^m\ 55^s$	The same distance [Eadem diſt.]	27° 22½′	2 29
$12^h\ 53^m\ 50^s$	from the lower [ab infer.]	27° 20½′	1 44
$12^h\ 59^m\ 15^s$	head of ♊ [cap. ♊]	27° 19¼′	0 25
	Declination of the upper horn [Decl. ſup. cornu]	26° 13½′	
	of the lower [inferioris]	25° 45′	

All these observations, limited against one another, can safely be trusted, for it was exceptionally clear and the air was calm. [Obſeruationibus hiſce

omnibus in-/uicem limitatis tuto fidendum eſt. Fuit / enim apprime ſerenum & aër tran-/quillus.]

For the place in longitude and latitude of the Moon, for 18 November. [Pro loco longitudinis & latitudinis ☾ / ad diem 18 Nouembris.]

12^h $38¾^m$ [H. 12 M. 38¾]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the bright star of ♈ [a luc. ♈]	48° 9′
	Declination of the centre of the Moon [Decl. centri ☾]	25° 54′
	Declination of the bright star of ♈ [Decl. lucidæ ♈]	21° 31′
	Right ascension of the bright star of ♈ [Aſc. R. lucidæ ♈]	26° 8′
	Angular difference of ascension [Ang. d^{r}æ aſc.]	52° 43′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	78° 51′
12^h $48⅙^m$ [H. 12 M. 48⅙]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the lower head of ♊ [ab inf. cap. ♊]	27° 43′
	Declination of the centre of the Moon [Decl. centri ☾]	25° 55′
	Declination of the lower head of ♊ [Decl. inf. cap. ♊]	28° 57′
	Right ascension of the lower head of ♊ [Aſc. R. inf. cap. ♊]	110° 4′ 20″
	Angular difference of ascension [Ang. d^{r}æ aſc.]	31° 8′ 0″
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	78° 56′ 20″

12^h $42½^m$ [H. 12 M. 42½]		
	Limited right ascension of the Moon [Limitata Aſc. R. ☾]	78° 53′ 40″
	Declination of the Moon, north [Declin. ☾ B.]	25° 54′ 30″
	When the Moon was at 90° from the Ascendant of the ecliptic [Quando ☾ fuit in 90 gr. ab Aſcend. Eclipt.]	
	Resp. longitude [Reſp. Longitudo]	20° 1′ 0″ ♊
	Latitude [Latitudo]	2° 46′ 20″ north [B.]
	Arc of inclination because of the latitude [Arcus inclinationis ob latit.]	0° 7′ 0″ added [add.]
	Therefore the longitude of the Moon [Ergo long. ☾] in its own circle [in proprio circulo]	20° 8′ 0″ ♊
	From Magini's ephemeris [Ex ephemeride Magini]	19 33 0
	of Cyprian [Cypriani]	19 46 0

Interval of time since yesterday's observation [Interuallo tem-/poris ab heſterna / obſeruatione]	From the observation [Ex / Obſeruat.]	From Magini [Ex / Magino]	From Cyprian [Ex / Cypriano]
25^h 21^m [H. 25 M. 21]	14° 21′	13 51	13 55

27 November, morning [DIE 27 NOUEMBRIS, MANE.]

		Spica of ♍, east [Spica ♍ or.]
6 53	Distance of the eastern limb of the Moon [Diſt. or. limbi ☾]	52° 39½′20 35
6 55	and cor ♌ [& cor ♌]	52° 37′ 19 45
55		
	Declination of the upper [Declin. ſuper.] 4° 56′	
	lower [infer.] 5° 25′	
7 1 45	Distance from cor ♌ [Diſt. a corde ♌]	52° 41½′18 5
8 14	The eastern limb of the Moon crossed [Orientalis limbus ☾ tranſijt]	
20	the meridian, having the altitude of the upper horn [merid. habens alt. ſup. cornu]	
	by the steel instrument [per Chalyb.]	28° 50′
	by the revolving quadrant [per Volub.]	28° 50′
	the lower, however, by the steel instrument [infer. vero per Chalyb.]	28° 20½′
	by the revolving quadrant [per Volub.]	28° 22′

9 December [DIE 9 DECEMBRIS.]

Observation of the Moon near 90°, and near the apogee and □. [Obſeruatio ☾ iuxta 90 gr. & prope / Apogæum & □.]

The clock was corrected by the Sun, $2^h\ 5^m$. [Horologium corrigebatur ad ☉ / H. 2 M. 5.]

Hours, minutes, seconds [H. M. S.]	Declination of the Moon [Decl. ☾]	Altitude of the Moon [Altit. ☾]	Azimuth of the Moon from the meridian toward the west [Azim. ☾ a / mer. ver-/ſus occid.]
$3^h\ 0^m\ 25^s$	upper [ſup.] 6° 6′	upper horn [ſup. corn.] 19° 12½′	44° 0′
	lower [inf.] 6° 29½′	lower [inf.] 18° 48′	by the steel instrument [per Chal.]
$3^h\ 9^m\ 15^s$	upper [ſup.] 6° 4′	20° 15′	42½°
	lower [inf.] 6° 30½′	19° 51′	revolving quadrant [Volub.]
The Moon should have been at the 90th degree at $3^h\ 8^m$. [☾ *debuit eſſe in 90 gradu H. 3 M. 8.*]			
$3^h\ 19^m\ 25^s$	Distance of the western [Diſt. occ.]	39° 37⅓′	
$3^h\ 33^m\ 40^s$ corrected [3 33 40 corr.]	limb of the Moon [limbi ☾]		Declination of Venus [Decl. ♀]
$3^h\ 21^m\ 30^s$	from Venus [a ♀]	39° 39′	18° 5 2/[numeral: ?]′ 18° 5½′
$3^h\ 23^m\ 45^s$		39° 40⅔′	
$3^h\ 28^m\ 45^s$	Declination of the upper limb [Decl. ſup. limbi]	5° 55′	among [inter]

Hours, minutes, seconds [H. M. S.]	Declination of the Moon [Decl. ☾]	Altitude of the Moon [Altit. ☾]	Azimuth of the Moon from the meridian toward the west [Azim. ☾ a / mer. ver-/ſus occid.]
	of the lower [inferioris]	6° 25½′	clouds [nubes]

Hours, minutes, seconds [H. M. S.]	Declination of the Moon [Decl. ☾]	Altitude of the Moon [Altit. ☾]	Azimuth of the Moon from the meridian toward the west [Azim. ☾ a / mer. ver-/ſus occid.]
$6^h\ 30^m\ 30^s$	Distance of the western limb of the Moon from Jupiter [Diſt. occ. limbi ☾ a ♃]	31° 35′	
	the bright star of the jaw of the Whale, east [Luc. mandib. Ceti or.]	27 10	
	Declination of the lower horn [Declin. inf. cornu]	5° 42⅔′	
	of the upper [ſuperioris]	5° 14′	
$6^h\ 34^m\ 15^s$	Distance of the western limb from Jupiter [Diſt. occ. limbi a ♃]	31° 36′	
	Altitude of the upper horn of the Moon [Altit. ſuper. cornu ☾]	27½°	
	Altitude of Jupiter [Altit. ♃]	9¼°	

10 December, evening [DIE 10 DECEMBRIS, VESPERI.]

Hours, minutes [H. M.]	Declination of the Moon, upper/lower [Decl. ☾ / ſup./inf.]	Distance of the western limb from Venus [Diſt. occ. / limb. a ♀]	Altitude, upper/lower [Altit. / ſup./inf.]	Venus, west [♀ occid.]
$3^h\ 32^m$	0° 26½′		23° 36′	4 46
	0° 58′		…	
$3^h\ 37⅓^m$	0° 25½′			6 2
	0° 56½′			
Afterwards, with the Moon tending closer to 90°. [*Poſtea ☾ ad 90 gr. propius tendente.*]				
$3^h\ 51½^m$		50° 39½′	25° 27′	9 37
$4^h\ 0⅓^m$ corrected [4 0⅓ corr.]			24° 56′	
$3^h\ 55^m$		50° 40½′		
$3^h\ 59^m$		50° 42′	26° 12½′	11 28
			25° 43′	
$4^h\ 4⅓^m$		50° 43½′	26° 15′	12 38
$4^h\ 7^m$		50° 45′		13 32
$4^h\ 9½^m$	0° 18½′	50° 45½′		14 10
	0° 48⅔′			

Hours, minutes [H. M.]	Declination of the Moon, upper/lower [Decl. ☾ / ſup./inf.]	Distance of the western limb from Venus [Diſt. occ. / limb. a ♀]	Altitude, upper/lower [Altit. / ſup./inf.]	Venus, west [♀ occid.]
4^h $12¾^m$		50° 47⅓′		15 0
4^h 15^m		50° 48′	...	15 35
			27° 11′	

At 6^h 28^m 15^s the western limb of the Moon crossed the meridian, when the ſirſt of the wing was west. 27 12 [6 28′ 15″ ☾ occ. limbus tranſiuit me-/ridianum quando prima alæ erat / occid. 27 12]

Altitude of the upper horn [Altitudo ſup. cornu]	steel instrument [Chalyb.]	34° 19′
lower horn [inf. cornu]		33° 40½′[1]
upper [ſup.]	revolving quadrant [Volub.]	34° 17½′
lower [inf.]		33° 50′

11 December [DIE 11 DECEMBRIS.]

In the evening the Moon was observed approaching 90°, in the following way. [Veſperi obſeruabatur ☾ appropin-/quans 90 gr. in hunc qui ſequitur mo-/dum.]

Hours, minutes [H. M.]	Distance of the western limb from the mouth of Pegasus [Diſt. occ. / limb. ab / ore Peg.]	Declination of each limb [Declin. / vtriusq. / limbi]	Altitude, upper/lower [Alt. / ſup./inf.]	the Vulture, west [Vultur / occid.]
4^h 32^m	56° 56′	5° 23¼′	31° 0′	47 0
		4° 52′	30° 30′	
4^h $37½^m$			31° 30′	48 38
			30° 59½′	
4^h $40⅔^m$	57° 0½′	5° 23½′		49 26
		4° 53′		
4^h $44½^m$	57° 2′	5° 25′	32° 15′	50 31
		4° 53′	31° 46′	
4^h $52⅔^m$	57° 5′			52 42
5^h $3¾^m$ corrected [5 3¾ corr.]				
Afterwards the Moon was observed vice versa, from Aldebaran. [Poſtea obſeruabatur ☾ viceverſa / ab Aldebora.]				
4^h $56¾^m$	44° 57⅓′		33° 22½′	53 42
5^h $7¾^m$ corrected [5 7¾ corr.]			32° 53′	
5^h 0^m	44° 55′	5° 29′		54 43

Hours, minutes [H. M.]	Distance of the western limb from the mouth of Pegasus [Diſt. occ. / limb. ab / ore Peg.]	Declination of each limb [Declin. / vtriusq. / limbi]	Altitude, upper/lower [Alt. / ſup./inf.]	the Vulture, west [Vultur / occid.]
		5° 0′		
5^h 3^m	44° 53⅓′		34° 2′	55 23
			33° 31′	
5^h 6^m	44° 52¾′			the mouth of Pegasus, west [Os Peg. occ.]
5^h 8^m 50^s	44° 52′	5° 28½′	...	28 41
		5° 1′	34° 2′	
7^h 3^m 10^s	The western limb of the Moon crossed the meridian, and had an altitude at the upper horn [Tranſiuit occid. limb. ☾ per / meridianum, habuitque altitudi-/nem in cornu ſuperiori]			
	by the steel instrument [per Chalyb.] 40° 4′			
	by the revolving quadrant [per Volub.] 40° 2½′			
	at the lower horn [in cornu infer.]			
	by the steel instrument [per Chalyb.] 39° 34½′			
	by the revolving quadrant [per Volub.] 39° 33⅔′			

For the place of the Moon for 9 December, in ☐ and at apogee. [Pro loco ☾ ad diem 9 Decembris / in ☐ & Apogæo.]

3^h 34^m [H. 3 34′]	Distance of the centre of the Moon from Venus [Diſt. centri ☾ a ♀]	39° 52′
	Declination of the centre of the Moon [Declin. centri ☾]	6° 14′ south [M.]
	Declination of Venus, both as observed [Declin. ♀ tam obſeruata] and as reduced [quam reducta]	18° 5′ south [M.]
	Computed angular ascensional difference [Ang. differ. aſcenſio-/nalis ſupput.]	39° 3′ 10″
	Right ascension of Venus [Aſcenſ. R. ♀]	317° 49′ 10″
	Right ascension of the Moon [Aſcenſ. R. ☾]	356° 52′ 20″
	Resp. longitude [Reſp. Longitudo]	24° 38¾′ ♓
	Latitude [Latitudo]	4° 28′ 6″ south [M.]
	Reduction [Reductio]	7 30

For the place of the Moon on 10 December. [Pro loco ☾ die 10 Decembris.]

4^h 0^m [H. 4 0′]	Distance of the centre of the Moon from Venus [Diſt. centri ☾ a ♀]	50° 54′
	Declination of the centre of the Moon [Declin. centri ☾]	0° 38′ south [M.]
	Declination of Venus [Declin. ♀]	17° 42′
	Right ascension of Venus [Aſc. R. ♀]	318° 52′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	7° 40′ 45″
	Resp. longitude [Reſp. Longitudo]	6° 47¾′ ♈
	Latitude [Latitudo]	3° 38⅓′ south [M.]

For the place of the Moon on 11 December. [Pro loco ☾ die 11 Decembris.]

5^h $3¾^m$ [H. 5 M. 3¾]	Distance of the Moon [Diſt. ☾]	
	from the mouth of Pegasus [ab ore Pegaſi]	57° 20½′
	Declination of the centre of the Moon [Declin. centri ☾]	5° 10½′ north [B.]
	Declination of the mouth of Pegasus [Declin. oris Pegaſi]	8° 3½′ north [B.]
	Right ascension of the same [Aſc. recta eiuſdem]	321° 5′ 20″
	Angular difference of ascension [Angulus differ. aſc.]	57° 41′ 42″
	Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	18° 47′ 2″

[1] It should be 50½. [Debet eße 50½.]

5 7¾	Distance of the centre of the Moon from Aldebaran [Diſt. centri ☾ ab Aldeb.]	44° 42′
	Declination of the centre of the Moon [Declin. centri ☾]	5° 12′ north [B.]
	Declination of Aldebaran [Declin. Aldeboræ]	15° 37′ north [B.]
	Right ascension of Aldebaran [Aſc. recta Aldeb.]	63° 11′ 30″
	Angle of the difference of ascension [Ang. differentiæ aſc.]	44° 18′ 10″
	Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	18° 53′ 20″
5^h $5¾^m$ [H. 5 M. 5¾]	Limited right ascension of the Moon [Aſc. R. ☾ limitata]	18° 50¼′
	Declination [Declinatio]	5° 11′ north [B.]
	Resp. longitude [Reſp. Longitudo]	19° 20⅔′ ♈
	Latitude [Latitudo]	2° 18⅙′ south [M.]

14 December [DIE 14 DECEMBRIS.]

In the evening the Moon was observed between □ and opposition, about midway between apogee and perigee: that is, at the place where both the Prutenic and the Alphonsine tables depart most from the appearances. [Veſperi obſeruabatur ☾ inter □ & ☍ / circa mediam diſtantiam inter Apo-/gæum & Perigæum, in eo videlicet / loco, vbi maxime ab apparentijs ta-/bulæ tum Prutenicæ tum Alphonſinæ / diſcrepant.]

On this day the Moon was near 90° at 8^h 35^m. [Hoc die fuit ☾ iuxta 90 gr. H. 8 M. 35.]

By computation Aldebaran crossed the meridian at exactly 10^h. [Aldebora iuxta ſupput. tranſiuit me-/rid. H. 10 exacte.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon from the bright star of ♈ [Diſt. occid. / limb. ☾ / a luc. ♈]	Declination of each limb of the Moon [Declin. ☾ / vtriusque / limbi]	the eye of ♉, east [Oculus ♉ / orient.]
8^h 8^m 50^s	27° 49½′	ſub. 21° 14′ lower [inf.] 20° 43′	28 7½
8^h 14^m 55^s	27° 53½′		26 26
8^h 18^m 35^s	27° 54′		25 35
8^h 22^m 55^s			24 28
8^h 22^m corrected [8 22 corr.]			
8^h 26^m 25^s	28° 0′		
8^h 28^m 10^s	28° 2′	upper [ſup.] 21° 21′ lower [inf.] 20° 48½′	
8^h 32^m 0^s	28° 4¾′		22 11
8^h 31^m 15^s corrected [8 31 15 corr.]			
Vice versa, from the lower head of ♊ [Viceverſa ab infer. cap. ♊]			
8^h 34^m 55^s	49° 0⅓′		21 28
8^h 34^m corrected [8 34 corr.]			
8^h 37^m 0^s	48° 59½′	upper [ſup.] 21° 23′ lower [inf.] 20° 48½′	20 55
8^h 41^m 35^s	48° 57⅔′		19 42
8^h 45^m 5^s	48° 55′		18 55

To test the larger armillae we observed Aldebaran, and its declination was found to be north, 15° 39½′ with one pinnule, 15° 39⅔′ with the other. [Pro examinandis Armillis maiori-/bus obſeruabamus Aldeboram & in-/uenta eſt eius declinatio Borea / 15 39½ vno / 15 39⅔ altero pinnac.] (The declination should be 15° 37½′; the armillae therefore exceed by 2′.)[1] [(Deberet eße declinatio 15 37½. abun / dant igitur Armillæ in 2 minutis)[1].]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb from the bright star of ♈ [Diſt. occ. / limbi a / lucida ♈]	Declination [Declinatio]	the bright shoulder of Orion, east [Luc. hum. / Orion. or.]
8^h 59^m 40^s	28° 14′	upper [ſup.] 21° 25⅓′	35 22

Hours, minutes, seconds [H. M. S.]	Distance of the western limb from the bright star of ♈ [Diſt. occ. / limbi a / lucida ♈]	Declination [Declinatio]	the bright shoulder of Orion, east [Luc. hum. / Orion. or.]
		lower [inf.] 20° 55⅙′	
$9^h\ 4^m\ 30^s$	28° 17⅔′		34 14
$9^h\ 6^m\ 30^s$	28° 18¼′	21° 26½′	33 47
		20° 56⅓′	
Vice versa, from the lower head of ♊ [Viceverſa ab inferiori capite ♊]			
$9^h\ 11^m\ 0^s$	48° 45′ 0″		
$9^h\ 14^m\ 10^s$	49° 43⅓′	21° 28′	31 47
		20° 54′	
$9^h\ 22^m\ 15^s$	48° 40′ 0″		29 47
$9^h\ 35^m\ 15^s$	The western limb of the Moon crossed [Tranſiuit occid. limbus ☾]		
	the meridian, having the altitude [per meridianum habens altitud.]		
	of the upper limb, by the steel instrument [ſuper. limbi per Chalyb.] 55° 35⅔′		
	by the revolving quadrant [per Volub.] 55° 34½′		
	lower, by the steel instrument [infer. per Chalyb.] 55° 4′		
	by the revolving quadrant [per Volub.] 55° 3½′		
	the right shoulder of Orion, east [Dexter hum. Orionis or.] 26 37		
	Declination of the upper [Declin. ſuper.]	21° 33′	
	of the lower [inferioris]	20° 58½′	

Again, to test the armillae, the bright star of ♈ was observed in declination 21° 31′, 21° 30⅔′. [Obſeruabatur rurſus pro Armillis / examinandis lucida ♈ in declinatione / 21 31 / 21 30⅔]

(It would have been 21° 30⅚′ north. Here, therefore, the armillae nearly agree.)[1] [(Fuißet illa 21 30⅚ B. Conueniunt igi-/tur fere hic Armillæ)[1].]

Let it be set for $8^h\ 35^m$, when the Moon should have been at 90°: its distance from the bright star of ♈, as to the western limb, 28° 5½′, and at the same instant set the distance from the lower of ♊ at 49° 0½′; but look up the declination and correct it from Aldebaran. From this let the place of the Moon be found exactly. [*Ponatur ad horam 8 M. 35, quando / ☾ debuit eßе in 90 grad. ipſius diſtan-/tia a lucida ♈ quoad limbum occid. / 28 5½ & eodem inſtanti pone diſtanti-/am ab infer. ♊ 49 0½, Declinationem / vero inquire & emenda ex Aldebora. / Hinc inquiratur locus ☾ exacte.*]

15 December, evening [DIE 15 DECEMBRIS, VESPERI.]

Observation of the Moon near 90°, tending towards opposition to the Sun. [Obſeruatio ☾ iuxta 90 grad. tenden-/tis ad ☍ ☉.]

It was at 90°, moreover, at 9^h 55^m. [Erat autem in 90 grad. H. 9 M. 55.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon from the bright star of ♈ [Diſt. occ. / limbi ☾ a / luc. ♈]	Declination of each limb of the Moon [Declin. ☾ / vtriusque / limbi]	the right shoulder of Orion, east [Dext. / hum. / Orion or.]
9^h 28^m 0^s	41° 12¼′	upper [ſup.] 24° 56′	27 9
		24° 23½′	
9^h 32^m 40^s	41° 13′	24° 57½′	25 58
		24° 25′	

[1] Added afterwards. [Poſtea adſcripta.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon from the bright star of ♈ [Diſt. occ. / limbi ☾ a / luc. ♈]	Declination of each limb of the Moon [Declin. ☾ / vtriusque / limbi]	the right shoulder of Orion, east [Dext. / hum. / Orion or.]
9^h 35^m 40^s	41° 14½′		25 11
9^h 38^m 25^s	41° 16′	24° 59⅔′	24 30
		24° 25½′	
9^h 45^m 10^s	41° 20′		22 47
9^h 45^m 20^s corrected [9 45 20 corr.]			
9^h 48^m 30^s	41° 20½′	25° 0⅔′	
		24° 28⅓′	
9^h 52^m 40^s	41° 21½′		
Vice versa, from the lower head of ♊ [Viceverſa ab inferiori capite ♊]			
9^h 55^m 45^s	34° 49⅔′		20 10
9^h 57^m 5^s	34° 49½′		19 50
9^h 59^m 10^s	34° 48½′	25° 0′	
		24° 29′	the bright foot [Lucid. pes]
10^h 2^m 45^s	34° 47′		of Orion, east [Orion. or.]
10^h 4^m 50^s	34° 46⅚′	25° 0′	8 29
		24° 29′	
10^h 9^m 0^s	34° 45½′		7 20
10^h 11^m 5^s	34° 44½′	25° 1′	6 50
		24° 30½′	

To test the armillae, the declination of the northern horn of ♉ was observed here: 28° 11¼′, 28° 11½′. [Pro examinandis Armillis obſeruaba-/tur hic Declin. Borealis 28 11¼ / cornu ♉ 28 11½]

At 10^h 29^m 20^s the western limb of the Moon crossed the meridian, and had the altitude [H.10 M.29 20″Tranſijt occid. limbus ☾ / per merid., habuitque alt.]

at the upper limb, by the steel instrument [in ſup. limbo per Chalyb.]	59° 10′
by the revolving quadrant [per Volub.]	59° 9½′
at the lower limb, by the steel instrument [in inf. limbo per Chalyb.]	58° 34½′
by the revolving quadrant [per Volub.]	58° 35′
Declination of the upper [Declin. ſuper.]	25° 3′
of the lower [inferioris]	24° 30½′
the bright foot of Orion, east [Lucidus pes Orionis or.]	2 16

For the place of the Moon for 14 December, from the observations assigned above to that same day. [Pro loco ☾ ad diem 14 Decembris / ex obſeruationibus ſuperius / eidem diej aßignatis.]

8^h 34^m [H. 8 34′]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the bright star of ♈ [a lucida ♈]	28° 22′
	The same from the lower head of ♊ [Eadem ab inf. cap. ♊]	48° 45′
	Assumed semidiameter [Aßumpta ſemidiam.]	16′
	Declination of the centre of the Moon [Declin. centri ☾]	21° 5′ north [B.]
	Declination of the bright star of ♈ [Declin. luc. ♈]	21° 31′ north [B.]
	Declination of the lower head of ♊ [Declin. infer. cap. ♊]	28° 56′ north [B.]
	Right ascension of the bright star of ♈ [Aſc. recta luc. ♈]	26° 8′ 10″
	of the lower head of ♊ [inf. cap. ♊]	110° 6′ 30″
	Angular difference of ascension from the bright star of ♈ [Ang. differ. aſc. a luc. ♈]	30° 29′ 30″
	from the lower head of ♊ [ab inf. cap. ♊]	53° 32′ 15″
	Therefore the right ascension of the Moon from the bright star of ♈ [Ergo Aſc. recta ☾ a luc. ♈]	56° 37′ 40″
	from the lower head of ♊ [ab inf. cap. ♊]	56° 34′ 20″
	Limited right ascension of the Moon [Aſc. R. ☾ limitata]	56° 36′ 0″
	Resp. longitude [Reſp. Longitudo]	29° 5⅓′ ♉
	Latitude [Latitudo]	1° 5⅔′ north [B.]

Computation of the place of the Moon for 15 December. [Supputatio loci ☾ ad diem / 15 Decembris.]

9^h $52\frac{5}{6}^m$ [H. 9 52⅚′]	Distance of the Moon from the bright star of ♈ [Diſt. ☾ a lucida ♈]	41° 38′
	Northern declination of the Moon [Declin. ☾ borea]	24° 45′
	Angular difference of ascension [Ang. diff. aſcenſ.]	45° 20′ 30″
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	71° 28′ 30″
9^h $57\frac{1}{4}^m$ [H. 9 57¼′]	Distance of the Moon [Diſt. ☾]	
	from the lower head of ♊ [ab inf. cap. ♊]	34° 33′
	Declination of the centre of the Moon, north [Declin. centri ☾ B.]	24° 46′
	Angular difference of ascension [Ang. diff. aſcenſionalis]	38° 36′ 40″
	Hence, therefore, the right ascension of the Moon [Hinc igitur Aſc. R. ☾]	71° 29′ 50″
9^h $55\frac{1}{2}^m$ [H. 9 55½′]	Limited right ascension of the Moon [Aſc. R. ☾ limitata]	71° 29⅙′
	Declination, north [Declinatio B.]	24° 45½′
	Resp. longitude [Reſp. Longitudo]	13° 13′ 50″ ♊
	Latitude [Latitudo]	2° 18′ 34″ north [B.]

20 December [DIE 20 DECEMBRIS.]

In the morning the Moon was observed near the meridian and 90°. [Mane obſeruabatur ☾ circa meridi-/anum & 90 grad.]

At 2^h 33^m 40^s the eastern limb of the Moon crossed the meridian, having the altitude [H. 2 33′ 40″ Tranſiuit orient. limbus ☾ / per merid. habens altit.]

upper horn, by the steel instrument [ſuper. cornu per Chalyb.]	55° 37½′	
by the revolving quadrant [per Volub.]	55° 34⅔′	
lower, by the steel instrument [infer. per Chalyb.]	55° 3′	
by the revolving quadrant [per Volub.]	55° 2′	
Declination of the upper [Declin. ſuper.]	21° 29¾′	Cor ♌, east [Cor ♌ or.]
lower [infer.]	20° 57′	9 18

Declination of the centre of the Moon from these altitudes: 21° 13¾′. [Decl. centri ☾ ex his alt. 21 13¾]

The Moon at 90° of the ecliptic at 3^h 42^m. By computation, cor ♌ crossed the meridian at 3^h $10\frac{1}{2}^m$. [☾ in 90 gr. Eclipticæ H. 3 M. 42. Cor ♌ / tranſijt meridianum iuxta ſupput. / H. 3 M. 10½.]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from the lower head of ♊ [Diſt. or. / limbi ☾ ab / inf. cap. ♊]	Declination [Declin.]	Cor ♌, west [Cor ♌ occ]
3^h 30^m 30^s	26° 17¼′		5 7

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from the lower head of ♊ [Diſt. or. / limbi ☾ ab / inf. cap. ♊]	Declination [Declin.]	Cor ♌, west [Cor ♌ occ]
$3^h\ 30^m\ 55^s$ corrected [3 30 55 corr.]			
$3^h\ 31^m\ 45^s$	26° 18′	lower [inf.] 20° 47′	5 26
$3^h\ 33^m\ 35^s$	26° 19⅔′		
$3^h\ 35^m\ 10^s$	26° 20⅚′	upper [ſup.] 21° 18′	5 55
		lower [inf.] 20° 45½′	both with one pinnule [ambo vno / pinn.]
$3^h\ 38^m\ 25^s$	26° 22½′		the Lesser Dog, west [Can. min. occ.]
$3^h\ 40^m\ 30^s$	26° 24′	21° 17′	44 48
$3^h\ 41^m\ 10^s$ corrected [3 41 10 corr.]		20° 46½′	
$3^h\ 44^m\ 35^s$	26° 26′		45 48
$3^h\ 45^m\ 10^s$ corrected [3 45 10 corr.]	These last distances [Hæ vltimæ diſtantiæ]		
$3^h\ 45^m\ 50^s$	are good. [ſunt bonæ.]		46 7
$3^h\ 47^m\ 20^s$	26° 27¼′		46 32
$3^h\ 48^m\ 4^s$ corrected [3 48 4 corr.]			
$3^h\ 48^m\ 30^s$	26° 27⅔′	21° 14½′ 20° 42½′	46 50

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from the lower head of ♊ [Diſt. or. / limbi ☾ ab / inf. cap. ♊]	Declination [Declin.]	Cor ♌, west [Cor ♌ occ]
Vice versa, from cor ♌ [Viceverſa a corde ♌]			
$3^h\ 52^m\ 0^s$	10° 49′1		47 42
$3^h\ 52¾^m$ [3 52¾]			
$3^h\ 53^m\ 0^s$	10° 48½′	21° 13½′ 20° 42′	48 0
$3^h\ 55^m\ 55^s$	10° 47′		48 41
$3^h\ 57^m\ 10^s$	10° 46⅔′	21° 12½′ 20° 41½′	49 1½
$3^h\ 59^m\ 20^s$	10° 45⅔′		49 35
$4^h\ 0^m\ 55^s$	10° 44⅔′		50 0
$4^h\ 2^m\ 45^s$	10° 44¼′		50 28
$4^h\ 4^m\ 10^s$	10° 43⅓′	21° 11½′	50 49

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from the lower head of ♊ [Diſt. or. / limbi ☾ ab / inf. cap. ♊]	Declination [Declin.]	Cor ♌, west [Cor ♌ occ]
		20° 29⅚′	

It was fairly clear, but not without a rather strong wind. [Fuit ſatis bene ſerenum, ſed non / absque flatu vehementiori.]

These observations of the Moon are very good for restoring its motion around perigee. For the Moon was near perigee, midway between opposition and quadrature, a place where reliable observations had so far been nearly lacking. [Hæ obſeruationes ☾ ſunt admo-/dum bonæ pro eius motu reſtitu-/endo circa perigæum. Verſabatur / enim ☾ prope perigæum medio loco / inter ☍ & quadraturam, quo in loco / obſeruationes ratæ hactenus fere de-/ſiderabantur.]

N.B. For the transit of the Moon through the meridian see above, so that from it you may test the declination, and the parallaxes too may be derived, if you should care to. [N. B. Tranſitum ☾ per meridianum / vide ſuperius, vt inde tam declinatio-/nem examines quam parallaxes, ſi / forte lubeat, erui poßint.]

For the place of the Moon from the preceding observations (the semidiameter of the Moon in the distance is taken as 16½′). [Pro loco ☾ ex præcedentibus obſer-/uationibus (aßumitur ſemid. / ☾ in diſt. 16½′).]

$3^h\ 48^m$ [H. 3 48′]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the lower head of ♊ [ab inf. cap. ♊]	26° 10¾′
	Declination of the centre of the Moon [Declin. centri ☾]	20° 59′
	Declination of the lower head of ♊ [Declin. infer. cap. ♊]	28° 56⅔′
	Right ascension of the same [Aſc. R. eiuſdem]	110° 6′
	Angular difference of ascension [Angulus differ. aſc.]	27° 35¼′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	137° 41¼′
$3^h\ 52¾^m$ [H. 3 52¾′]	Distance of the centre from Regulus [Diſt. centri a Regulo]	11° 5½′
	Declination of the Moon [Declin. ☾]	20° 58′ north [B.]
	Declination of Regulus [Declin. Reguli]	13° 55′
	Right ascension of Regulus [Aſc. R. Reguli]	146° 40′ 10″
	Angular difference of ascension [Angulus diff. aſc.]	8° 59′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	137° 41′ 10″
$3^h\ 50^m$ [H. 3 M. 50]	Take the right ascension of the Moon [Pone Aſc. R. ☾]	137° 41⅕′
	the declination [Declinationem]	20° 58½′
	Resp. longitude [Reſp. Longitudo]	13° 49½′ ♌
	Latitude [Latitudo]	4° 27⅙′

21 December [DIE 21 DECEMBRIS.]

The Moon was observed past 90°, where it was at $5^h\ 0^m$. [Obſeruabatur ☾ poſt 90 gr., vbi eßet / H. 5 0′.]

Hours, minutes [H M.]	Distance of the eastern limb of the Moon from the lower head of ♊ [Diſt. or. limb. / ☾ ab inf. / cap. ♊]	Declination, upper [Declinatio / ſup.]	lower limb [inf. limbi]	Spica ♍, east [Spica ♍ / orient.]
6^h $1\frac{2}{3}^m$	42° 8½′	15° 40½′	15° 8′	6 55
6^h $4\frac{2}{3}^m$	42° 10½′			6 12
6^h 7^m 35^s	42° 12′	15° 39′	15° 7′	5 32
6^h $0\frac{1}{4}^m$ corrected [6 0¼ corr.]				
Vice versa, from Spica ♍ [Viceverſa a Spica ♍]				
6^h $10\frac{1}{4}^m$	48° 35′			4 50
6^h 3^m 0^s corrected [6 3 0 corr.]				
6^h 12^m 40^s	48° 33′	15° 35½′	15° 4¼′	4 12
6^h 15^m 50^s	48° 32½′			3 23

N.B. It had passed 90° by about one hour, but in that position the parallax in latitude varies by scarcely a single minute, and in longitude by scarcely more than 6′. This observation, moreover, is to be carefully kept, both because of its distance from the earth, since it was at the perigee of the first epicycle and about midway between opposition and □, though nearer to quadrature, and having a large latitude. The diameter of the Moon appeared scarcely larger than 33′, or at most 34′, if you take account of that small part of the horns of the Moon that was seen while observing. But if we consider the Ptolemaic hypotheses, it would have had to be far larger, since the Copernicans too make it a little larger. [N. B. Erat quaſi vna hora præter-/greßa 90 gradum, ſed Parallaxis quoad / latitudinem vix vnicum minutum in / eo ſitu variat: in longitudine vix vltra / 6′. Eſt autem hæc obſeruatio diligen-/ter ſeruanda, tum propter diſtantiam / a terra, cum fuerit in Perigæo primi / Epicycli & quaſi in medio loco inter / ☍ & □, propior tamen quadraturæ, & / habens magnam latitudinem. Diame-/ter ☾ vix apparebat maior 33′ vel ad / ſummum 34′, ſi habeas rationem eius / particulæ quæ de ☾ cornubus inter ob-/ſeruandum videbatur. At ſi Ptolomai-/cas ſpectemus Hypotheſes, opportu-/ißet longe fuiße maiorem, cum & Co-/pernicæi paulo maiorem faciant.]

22 December [DIE 22 DECEMBRIS.]

In the morning the Moon was observed near its perigee, and shortly approaching the last □. [Mane obſeruabatur ☾ iuxta Peri-/gæum ſuum & □ vltimæ pro-/pediem appropinquans.]

The Moon through 90° at 6^h 30^m. [☾ per 90 grad. H. 6 M. 30.]

At 4^h $22\frac{1}{3}^m$ the eastern limb of the Moon crossed the meridian, having the altitude [H. 4 22⅓′ Tranſiuit orient. limbus ☾ / per merid. habens altit.]

by the steel instrument, upper [per Chalyb., ſup.]	44° 9′
lower [inf.]	43° 35′
by the revolving quadrant, upper [per Volub., ſup.]	44° 8½′
lower [inf.]	43° 37½′
Then cor ♌ was west [Tunc fuit cor ♌ occid.]	19 51
Declination of the Moon, lower [Declin. ☾ inf.]	9° 27′
upper [ſup.]	10° 2′
At 4^h 42^m there was observed [H. 4 M. 42 obſeruabatur]	13° 54½′
cor ♌ in declination [cor ♌ in declin.]	13° 54⅔′

[1] Originally 49¾ was written, but the ¾ struck through with lines. [Primitus ſcriptum erat 49¾, ſed ¾ lineis inductæ.]

For correcting the armillae in yesterday's and today's observations of the Moon. For Regulus was removed from the meridian by as much, and was in nearly the same position, as when the said observations of the Moon were made. [Pro Armillis corrigendis in obſerua-/tionibus heſternis & hodiernis ☾. Fuit / enim Regulus in tantum a meridiano / remotus & ferme in eodem ſitu, quo / dictæ ☾ obſeruationes fiebant.]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from cor ♌ [Diſt. or. / limb. ☾ a / corde ♌]	Northern declination [Declin. / Bor.]	On the equator, Spica east [In / æquat. / Spica or.]
6^h 13^m 20^s	20° 37′		
6^h 15^m 20^s	20° 39′	9° 33′ upper [ſup.]	1° 6′
		9° 0′ lower [inf.]	west [occid.]
6^h 20^m 15^s	20° 40¼′		0° 2′
6^h 21^m 35^s	20° 41′	9° 30½′	0° 25′
		8° 58⅓′	
6^h 27^m 10^s	20° 41½′		1° 48′
6^h 28^m 50^s	20° 42′*	9° 29′	2° 14′
		8° 55′	
6^h 31^m 35^s	20° 43′*		2° 51′
6^h 29^m 20^s corrected [6 29 20 corr.]		*good [*bonæ]	

Vice versa, from Spica ♍ [Viceverſa a Spica ♍]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination, north [Decl. B.]	Altitude of the upper horn [Altit. / ſup. cornu]	Spica, west [Spica / occ.]
6^h 33^m 40^s	33° 48′	9° 31′		3 23
6^h 32^m corrected [6 32 corr.]		8° 55′		
6^h 36^m 50^s	33° 46′			4 11
6^h 38^m 5^s	33° 43½′	9° 30′		4 28

Hours, minutes, seconds [H. M. S.]	Distance [Dist.]	Declination, north [Decl. B.]	Altitude of the upper horn [Altit. / sup. cornu]	Spica, west [Spica / occ.]
		8° 53½′	36° 40′	
$6^h\ 43^m\ 5^s$	33° 42½′			5 39
$6^h\ 45^m\ 25^s$	33° 41½′	9° 27′		6 16
		8° 52′		

Afterwards, in the evening, we observed the declination of the bright star of ♈ *in the same position, and with both pinnules it was found to be 21° 30¾′. It should be 21° 31⅙′.* [Poſtea obſeruauimus veſperi de-/clinationem lucidæ ♈ in eodem ſitu / & eſt inuenta vtroque pinnacidio / 21 30¾. Debet eße 21 31⅙.]

And that of the lower head of ♊ *towards the rising, 28° 57¾′; it should be 28° 57′.* [Et inferioris capitis ♊ verſus or-/tum 28 57¾, debet eße 28 57.]

The armillae therefore increase by ½ minute towards the rising; towards the west they decrease. [Armillæ itaque in ½ minuto verſus / ortum augent: occid. minuunt.]

23 December [DIE 23 DECEMBRIS.]

In the morning the Moon was observed near 90°, not far from □. The Moon was near 90 at $7^h\ 45^m$. [Mane obſeruabatur ☾ circa 90 gr. / non procul a □. Fuit ☾ iuxta 90 H. 7 / M. 45.]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb from cor ♌ [Dist. or. limbi / a corde ♌]	Declination, upper/lower [Declin. / sup./inf.]	Cor ♌, west [Cor ♌ / occid.]
$7^h\ 23^m\ 50^s$	35° 27⅔′	2° 46⅔′	
		2° 13′	
$7^h\ 27^m\ 30^s$	35° 25′		66 54

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb from cor ♌ [Dist. or. limbi / a corde ♌]	Declination, upper/lower [Declin. / sup./inf.]		Cor ♌, west [Cor ♌ / occid.]
$7^h\ 31^m\ 0^s$	35° 32′	2° 44′	altitude [Alt.]	67 50
		2° 10½′		
$7^h\ 34^m\ 0^s$	35° 32⅔′			68 33
$7^h\ 31^m\ 0^s$ corrected [7 31 0 corr.]				
$7^h\ 37^m\ 0^s$	35° 34′	2° 42½′	29 45	
$7^h\ 34^m\ 0^s$ corrected [7 34 0 corr.]		2° 9⅓′		

Hours, minutes, seconds [H. M. S.]	Vice versa, from Spica ♍ [Viceverſa a Spica ♍]	Declination, upper/lower [Declin. / ſup./inf.]	Cor ♌, west [Cor ♌ / occid.]
$7^h\ 41^m\ 30^s$	18° 56′		70 19
$7^h\ 38^m\ 0^s$ corrected [7 38 0 corr.]			
$7^h\ 43^m\ 10^s$	18° 54½′		
$7^h\ 44^m\ 45^s$	18° 54⅓′	2° 40′	
		2° 7′	
$7^h\ 47^m\ 15^s$	18° 53½′		71 45

The stars could no longer be seen because of the dawn and the rather scattered clouds. [Stellæ amplius videri nequibant prop-/ter auroram & rariuſculas nubes.]

Calculation of the appearances of the Moon from selected observations of 21, 22 and 23 December near 90°, in the morning. [Calculus apparentiarum ☾ ex ſelectis / obſeruationibus dierum 21, 22 & 23 / Decembris iuxta 90 grad., Mane.]

On the 21st, $6^h\ 0¼^m$ [Die 21 H. 6 0¼′]	Distance of the centre of the Moon [Diſt. centri ☾]	
	from the lower head of ♊ [ab inf. cap. ♊]	41° 56′
	Declination of the lower head of ♊ [Declin. inf. cap. ♊]	28° 57′
	Declination of the centre of the Moon [Decl. ☾ centri]	15° 22′

N.B. The semidiameter of the Moon is applied as limited from the declinations; in the distances, however, 16 M. throughout, near perigee. [N. B. Semidiameter ☾ ex declinatio-/nibus limitata adhibetur: in diſtantijs / vero vbique 16 M. circa Perigæum.]

	The angular difference of ascension was found [Angulus differentiæ aſcenſ. inuentus]	
	by computation [eſt per ſupput.]	43° 8½′
	Right ascension of the head of ♊ [Aſcenſio R. capitis ♊]	110° 6′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	153° 14½′
$6^h\ 3^m$ [H. 6 3′]	Distance of the centre of the Moon from Spica [Diſt. centri ☾ a Spica]	48° 51′
	Declination of Spica, south [Declin. Spicæ M.]	8° 59′
	Declination of the centre of the Moon [Declin. centri ☾]	15° 21′
	Right ascension of Spica [Aſc. R. Spicæ]	195° 59¼′
	Angular difference of ascension, computed [Ang. differentiæ aſc. ſupput.]	42° 45′ 20″
	Therefore the right ascension of the Moon from Spica, [Ergo Aſc. R. ☾ a Spica,]	
	nearly [fere]	153° 14′ 0″
$6^h\ 0^m$ [H. 6 0]	Limited right ascension of the Moon [Aſc. recta ☾ limitata]	153° 13′ 0″
	Declination of the Moon, north [Declin. ☾ B.]	15° 22′ 0″

Resp. longitude [Reſp. Longitudo]	29° 38½′ ♌
Latitude [Latitudo]	3° 59⅓′ north [B.]
Parallax [Parallaxis]	6 added [add.]
Arc of inclination [Arcus inclinationis]	5 subtracted [ſubt.]
Therefore the true observed longitude of the Moon will be [Erit igitur vera ☾ longit. ob-ſeruata]	29° 39½′ ♌

A more precise computation of the place of the Moon from the observations of 21 December.[1] [Scrupuloſior ſupputatio loci ☾ ex / obſeruationibus 21 Decemb.[1].]

6^h 0^m [H. 6 M. 0]	Distance of the eastern limb from [Diſtant. orient. limbi ab]	
	the lower head of ♊ [inf. cap. ♊]	42° 11′
	Semidiameter of the Moon, subtracted [Semidiam. ☾ ſubt.]	18′
	Therefore the distance of the centre [Ergo diſt. centri]	41° 53′
	Declination of the Moon [Declin. ☾]	15° 22′
	Difference of ascension [Diff. aſcenſ.]	43° 5′
	Right ascension of the star [Aſc. R. ſtellæ]	110° 6′
	Right ascension of the Moon [Aſc. R. ☾]	153° 11′
	Distance from Spica ♍ [A Spica ♍ diſt.]	48° 55′
	Angular difference of ascension [Ang. diff. aſc.]	42° 49⅔′
	Right ascension of Spica [Aſc. R. Spicæ]	195° 59¼′
	Right ascension of the Moon [Aſc. R. ☾]	153° 9½′
	Put the limited right ascension [Pone Aſc. R. limit.]	153° 10′
	Resp. longitude [Reſp. Longitudo]	29° 35′ 50″
For the parallax of the Moon. [Pro parallaxi ☾.]		
	Distance of the Moon from the earth [Diſt. ☾ a terra]	55 semidiameters of the earth [55 ſemid. terræ.]
	Distance of the Moon from the vertex [Diſt. ☾ a vertice]	52° 30′
	Resp. parallax of altitude [Reſp. Parall. alt.]	38′
	Side of longitude [Latus longit.]	6
	Resp. [Reſp.]	4 nearly, added [4 fere add.]
	Arc of latitude, subtracted [Arcus latit. ſubt.]	4 50″

	Difference [Differentia]	50″
	Therefore the true longitude of the Moon [Ergo vera longit. ☾] in its own circle [in proprio circulo]	29° 35′ ♌

22 DECEMBER, MORNING [DIE 22 DECEMBRIS, MANE.]

6^h $29\frac{1}{3}^m$ [H. 6 29⅓′]	Distance of the Moon from cor ♌ [Diſt. ☾ a corde ♌]	20° 27′
	This was close to 90° itself. [Hæc fuit iuxta ipſum 90 gr.]	
	See above. [Vide ſuperius.]	
	Declination of the centre [Declin. centri]	9° 13′
	Angular difference of ascension, [Ang. differentiæ aſc.] computed [ſupput.]	20° 19⅔′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾] from Regulus [a Regulo]	166° 59⅚′
6^h 32^m [H. 6 32′]	Distance of the Moon from Spica [Diſt. ☾ a Spica]	34° 4′
	Declination of the Moon [Declin. ☾]	9° 12′
	Angular difference of ascension [Angulus differ. aſcenſ.]	28° 56′ 0″
	Therefore the right ascension of the Moon from Spica [Ergo Aſc. R. ☾ a Spica]	167° 3′ 15″
6^h 30^m [H. 6 30′]	Limited right ascension [Aſc. recta limitata]	167° 1⅙′
	Declination, north [Declin. B.]	9° 12¼′
	Resp. longitude [Reſp. Longitudo]	14° 28¾′ ♍
	Latitude [Latitudo]	3° 28′ 10″ north [B.]

23 DECEMBER, MORNING [DIE 23 DECEMBRIS, MANE.]

7^h 34^m [H. 7 34′]	Distance of the Moon from cor ♌ [Diſt. ☾ a corde ♌]	35° 18′
	Declination of the centre of the Moon [Declin. centri ☾]	2° 26′ north [B.]

	Angular difference of ascension, computed [Angulus diff. aſc. ſupput.]	33° 47′ 30″
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	180° 27′ 40″
7^h 38^m [H. 7 38′]	Distance of the Moon from Spica [Diſt. ☾ a Spica]	19° 12′ 0″
	Declination of the centre of the Moon, north [Declinatio centri ☾ B.]	2° 24′ 0″
	Angular difference of ascension [Angulus differ. aſc.]	15° 30′ 45″

	Therefore the right ascension of the Moon from Spica [Ergo Aſc. R. ☾ a Spica]	180° 28½′
7^h 36^m [H. 7 M. 36]	Limited right ascension [Aſc. recta limitata]	180° 28′ 0″
	Declination, north [Declin. B.]	2° 25′ 0″
	Resp. longitude [Reſp. Longitudo]	29° 27⅚′ ♍
	Latitude [Latitudo]	2° 24⅙′ north [B.]
	Arc of inclination, subtracted [Arcus inclinationis ſubt.]	7′ 17″
	Therefore the true longitude of the Moon [Ergo vera ☾ longitudo]	29° 20⅗′ ♍

26 December [DIE 26 DECEMBRIS.]

The Moon was observed against the apparent place of the Sun by the equatorial armillae, when it was near 90°, in the following way. The Moon was then in ✶ ☉, as it were midway between □ and ☌; it did not have a great latitude, and was nearly at its greatest in προσθαφαιρεσι [Greek: prosthaphairesi, "prosthaphaeresis"]. [Obſeruabatur ☾ ad Solis locum vi-/ſum per Armillas æquatorias, cum / eßet prope 90 gradum, in hunc qui / ſequitur modum. Erat autem ☾ tunc / in ✶ ☉, quaſi media inter □ & ☌, / nec habuit magnam latitudinem, & / in προσθαφαιρεσι ferme maxima.]

It should have been at 90° today at 9^h 40^m. [Debuit autem eße in 90 gr. hodie / H. 9 M. 40.]

Time [Tempus]	Distance on the equator [Diſtant. æquat.]	Declination of each horn [Declin. / vtriusq. cornu]	Semidiameter [Semid.]
9^h 36^m 50^s	the Sun, east [☉ or.] 35° 49½′	upper [ſup.] 16° 28½′	
	the Moon, west [☾ oc.] 30° 38′	lower [inf.] 16° 56′	0° 37½′
	Difference [Differ.] 66° 27½′		
9^h 39^m 30^s		16° 24½′	
		16° 57′	0° 32½′
9^h 41^m 40^s	the Sun, east [☉ or.] 34° 38¼′		
9^h 41^m 15^s corrected from the true ascension of the Sun [9 41 15 corr. ex vera aſc. ☉]			
	the Moon, west [☾ oc.] 31° 47′		
	66° 25½′		
9^h 44^m 30^s	the Sun, east [☉ or.] 33° 56′	16° 20′	altitude of the Sun [Alt. ☉]
	the Moon, west [☾ oc.] 32° 28′	16° 54′	6⅓
	66° 24′	0° 34′	
9^h 46^m 0^s	the Sun, east [☉ or.] 33° 26½′		altitude of the lower [Alt. inf.]

Time [Tempus]	Distance on the equator [Diſtant. æquat.]	Declination of each horn [Declin. / vtriusq. cornu]	Semidiameter [Semid.]
	the Moon, west [☾ oc.] 32° 57′		limb [limb.]
	66° 23½′		12½
9^h 49^m	the Moon, west [☾ oc.] 33° 36½′	16° 22′	altitude of the Sun [Alt. ☉] 6⅔
		16° 54′	lower limb of the Moon [inf. limb. ☾]
		0° 32′	11⅚
9^h 52^m	the Sun, east [☉ or.] 32° 0½′	lower [inf.] 16° 24′	altitude of the Sun [Alt. ☉] 7° 0′
	the Moon, west [☾ oc.] 34° 21′	upper [ſup.] 16° 56′	lower limb of the Moon [☾ inf. limb.]
	66° 21½′	0° 32′	11° 30′
9^h 54^m	the Sun, east [☉ or.] 31° 33′		
	the Moon, west [☾ oc.] 34° 47′		
	66° 20′		

[1] From codex V. [E codice V.]

Afterwards, so that the apparent declination of the Sun might be had, it was taken in this way. [Poſtea vt Declinatio ☉ viſa habere-/tur, capiebatur ea hoc modo.]

Hours, minutes [H. M.]	Altitude of the Sun [Altitudo ☉]	Declination [Declinatio]
10^h 15^m	*8½*	*22° 35½′ with both* [vtroque]
10^h $20½^m$	*8⅔*	*22° 35⅚′ with both* [vtroque]

Put therefore, at 9^h 40^m, when the Moon should have been at 90°, the equatorial difference of the eastern limb from the Sun, 66° 26′, and add 15 M. for the semidiameter; then take the declination of the centre of the Moon, 16° 38½′ south, and the apparent declination of the Sun, 22° 34′.[1] *And from this, from the apparent place of the Sun as to right ascension and declination, gather the apparent right ascension of the centre of the Moon and the apparent longitude and latitude, which, corrected by a refraction equal to the solar one, gives the true longitude of the Moon and an apparent latitude subject at least to parallax; afterwards with our hypothesis.*[2] [Pone itaque hora9 M.40, quando ☾ / debuit eße in 90 gradu, differentiam / æquatoriam orientalis limbi a ☉ 66 26 / & adde pro ſemidiametro 15 M., ac-/cipe tunc declinationem centri ☾ / 16 38½ auſtrinam & declinationem vi-/ſam ☉ 22 34[1]. Hincque ex loco viſo ☉ / quo ad Aſc. R. & declinationem, col-/lige Aſc. R. centri ☾ viſam & longitu-/dinem ac latitudinem viſam, quæ per / refractionem æqualem ſolari emen-/data, dat longitudinem veram ☾ & la-/titudinem viſam Parallaxi ſaltem ob-/noxiam, poſtea cum noſtra Hypo-/theſi[2].]

For the place of the Moon for 26 December. [Pro loco ☾ ad diem 26 Decembris.]

$9^h\ 40^m$ [H. 9 M. 40]		
	Distance of the centre of the Moon from the Sun [Diſt. centri ☾ a ☉]	66° 41′
	Apparent right ascension of the Sun [Aſc. recta viſa ☉]	285° 54′

(4ᴹ nearly is subtracted for the refraction of the Sun in right ascension.[3]) [(Subtrahitur pro refractione ☉ 4ᴹ fere / in Aſc. R.[3]).]

Therefore the true right ascension of the Moon [Ergo vera Aſc. R. ☾]	219° 13′
Declination of the centre of the Moon, south [Declin. centri ☾ auſt.]	16° 38½′
Resp. longitude [Reſp. Longitudo]	12° 3⅓′ ♏
Latitude [Latitudo]	1° 1⅗′ south [M.]

27 December [DIE 27 DECEMBRIS.]

In the morning the Moon was observed before 90°. [Mane obſeruabatur ☾ ante 90 gradum.]

Hours, minutes, seconds [H. M. S.]	Distance of the Moon from Spica ♍ [Diſt. ☾ a / Spica ♍]	Declination, upper/lower [Declin. / ſup./inf.]	Altitude of the lower limb [Altit. / inf. limb.]	Spica, west [Spica ♍ / occid.]
$7^h\ 14^m\ 40^s$	36° 42⅙′			22 0
$7^h\ 17^m\ 50^s$	36° 44′	20° 50½′ 21° 16⅓′	12° 16′	22 43
$7^h\ 23^m\ 45^s$	36° 47′			24 11
$7^h\ 28^m\ 20^s$	36° 50′	20° 51′	12° 32′	25 17
$7^h\ 35^m$ corrected [7 35 corr.]		21° 19′		

Spica could no longer be seen because of the dawn. [Spica amplius propter auroram non / videbatur.]

At $8^h\ 12^m\ 20^s$ the Moon crossed the meridian, having an altitude of the upper horn [H. 8 12′ 20″ Tranſiuit ☾ / per meridianum habens altit. / ſuperioris cornu]

	by the steel instrument [per Chalyb.]	13° 8½′
	by the revolving quadrant [per Volub.]	13° 5′
but the lower [infer. vero]	by the steel instrument [per Chalyb.]	12° 40⅓′

	by the revolving quadrant [per Volub.]	12° 39′
Declination, upper [Declin. ſuper.]		21° 0′
lower [infer.]		21° 30′
Put the apparent declination [Pone declinationem viſam]		*21° 12′*
true [veram]		*21° 10′*

At 9⅓h [H. 9⅓] the clock was corrected to the Sun; since yesterday's noon it had advanced 7½ more slowly than it should. [H. 9⅓ corrigebatur ad ☉ horologium / ab heſterno meridie 7½ tardius / iuſto promotum.]

On the same day the Moon was observed from the Sun, being near 90°, at which it was observed at 10h 2m. [Eodem die ☾ obſeruabatur a ☉ exi-/ſtens iuxta 90 gradum, in quo / obſeruabatur H. 10 M. 2.]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from the Sun [Diſt. or. / limb. ☾ / a ☉]	Declination of each horn [Declin. / vtriusq. / cornu]	Altitude of the middle of the Moon [Alt. / medie-/tatis ☾]	Limited distance [Limi-/tat. / diſtant.]
9h 41m 20s			*11° 20′*	
9h 47m 55s	*49° 59⅔′*	*21° 33½′* *upper* [ſup.] *21° 6⅔′*	*10° 0′*	*50° 2′*
9h 51m 20s	*50° 2′*			*50° 1′*
9h 53m 25s	*50° 1½′*			*50° 0′*
9h 55m 30s	*49° 59′*	*21° 35′* *21° 1′*	*9¾°*	*49° 59′*
9h 58m 18s	*49° 58½′*	*21° 38′* *21° 14′*	*9½°*	*49° 58′*
10h 0m 38s	*49° 56′*	*21° 45′* *21° 13′*		*49° 56′*
10h 3m 30s	*49° 55′*			*49° 55′*
10h 5m 30s	*49° 53′*			*49° 53′*
10h 7m 20s	*49° 50′*			*49° 51′*
10h 10m 15s		*21° 49′*		*the Sun, east* [☉ orient.]
		21° 11′		*27° 37′*

Put, at 10h 2m, when the Moon was at 90°, its distance by the eastern limb from the Sun 49° 55′, and add 15′ for the semidiameter of the Moon, so that the true distance is 50° 10′. Let the declination of the Moon be taken as 21° 25′, and the altitude of the Moon 9° [9 p.], and the apparent declination of the Sun 22° 27′, altitude 7½. [Pone hora 10 M. 2, cum ☾ eßet in / 90 gradu, eius diſtant. per limb. or. a / ☉ p. 49 M. 55 & adde 15′ pro ſemidia-/metro ☾, vt ſit vera diſtantia 50 10. / Declinatio ☾ aßumatur 21 25 & Al-/tit. ☾ 9 p. & declinatio ☉ viſa 22 27, / altit. 7½.]

[1] Perhaps 33; the number has been corrected. [Forſitan 33, numerus correctus eſt.] [2] Nothing more in the codex. [Nihil amplius in codice.] [3] Written in the margin. [In margine adſcriptum.]

28 December [DIE 28 DECEMBRIS.]

In the morning the Moon was observed 2½^h before 90, as follows. [Mane obſeruabatur ☾ 2½ H. ante / 90 vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb from Spica ♍ [Diſt. or. / limbi a / Spica ♍]	Declination of each horn [Decl. / vtriusq. / cornu]	Altitude of the lower limb [Alt. / infer. / limbi]	Spica, west [Spica / ♍ / occid.]
7^h 36^m 40^s	*49° 50¾′*	*24° 31¼′* *lower* [infer.] *25° 0½′*	*6° 34′*	
7^h 40^m 15^s	*49° 53′*	*24° 31⅚′* *25° 0⅔′*	*6° 52′*	*23 20*
7^h 44^m 0^s	*49° 55′*	*24° 33½′* *25° 1′*	*7° 5′*	*24 15*
7^h 47^m 30^s	*49° 57′*	*24° 34′* *25° 3′*	*7° 20′*	*25 9*
7^h 56^m 35^s	*49° 59′*	*24° 35½′* *25° 5′*	*7° 45′*	*27 20*
8^h 1^m 30^s 7^h 45½^m corrected [7 45½ corr.]	*50° 1′*	*24° 37⅔′* *25° 7′*	*7° 57′*	*28 22*

Computation of the φαινομένων [Greek: phainomenōn, "appearances"] of the Moon in longitude and latitude from the observations made on 27 and 28 December (for the rest, see beside the observations of each day). [Supputatio φαινομένων ☾ in longitu-/dine & latitudine ex obſeruationibus / habitis die 27 & 28 Decembris / (reliqua vide iuxta obſeruati-/ones ſinguli diej).]

On the 27th at 10^h 2^m A.M., the Moon being at 90°. [Die 27 H. 10 M. 2 A. M., ☾ exiſtente in / 90 gradu.]

Distance of the centre of the Moon from the Sun [Diſtantia centri ☾ a ☉]	50° 10′
Declination of the centre of the Moon [Declinatio centri ☾]	21° 25′ south [M.]
Apparent declination of the Sun [Declin. ☉ viſa]	22° 27′
Apparent right ascension of the Sun [Aſc. R. ☉ viſa]	287° 3′
Angular difference of ascension [Angulus differ. aſcenſ.]	54° 22′ 45″
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	232° 40′ 15″
Resp. longitude [Reſp. Longitudo]	25° 36′ ♏
Latitude [Latitudo]	2° 15¼′ south [A.]

On the same day at 7^h 35^m A.M., 2^h 27^m before 90°. [Eodem die H. 7 M. 35 A. M., H. 2 M. 27 / ante 90^{um} g.]

Distance of the Moon from Spica ♍ [Diſt. ☾ a Spica ♍]	36° 34′
Declination of the centre of the Moon [Declin. centri ☾]	21° 5′
Declination of Spica [Declin. Spicæ]	8° 59′
Angular difference of ascension [Angulus differ. aſc.]	35° 51⅙′
Right ascension of Spica [Aſc. R. Spicæ]	195° 59¼′
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	231° 50′ 25″
Resp. apparent longitude [Reſp. viſa Longitudo]	24° 46′ ♏
Latitude [Latitudo]	2° 7⅓′ south [Auſt.]

On the 28th, when the Moon was near 90° at 10^h 40^m. [Die 28, cum ☾ eßet iuxta 90 gradum / H. 10 M. 40.]

7^h 45^m [H. 7 M. 45]	Distance of the centre of the Moon [Diſt. centri ☾] from Spica [a Spica]	49° 45′
	Declination of the centre of the Moon [Declin. centri ☾]	24° 51′
	Angular difference of ascension [Angulus differ. aſc.]	49° 38′
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	245° 37¼′
	Resp. longitude [Reſp. Longitudo]	7° 58⅓′ ♐
	Latitude [Latitudo]	3° 11¼′ south [M.]

The next two appearances of the Moon lead to finding the daily motion of the Moon, with the parallax of longitude, which exceeds the earlier one by M. 3⅓, subtracted at least from the later one, so that the longitude is 7° 55′; and therefore the daily motion is investigated in this way. [Proximæ binæ apparentiæ ☾ con-/ducunt ad motum ☾ diurnum cogno-/ſcendum, ſubducta ſaltem a poſteri-/ori Parallaxi longitudinis M. 3⅓ prio-/rem exſuperante: ita vt ſit Longitudo / 7 55, & propterea motus diurnus hoc / modo inueſtigatus.]

Days, hours, minutes [D. H. M.]	
27^d 7^h 35^m	24° 46′ ♏
28^d 7^h 45^m	7° 55′ ♐
1^d 0^h 10^m	13 9 Difference [Differentia.]

The daily motion will therefore be [Erit itaque motus diurnus]

according to the observation [iuxta obſeruationem]	13 3
according to Copernicus [iuxta Copernicum]	13 12
Alphonsine [Alphonſinum]	13 19

Collection of the observed lunar φαινομένων from 10 December to the 27th.[1] [Collectio φαινομένων lunarium obſeruatorum a 10 die Decembris in 27[1].]

Longitude of the Moon. [Longitudo Lunæ.]

Day [Dies]	Hours, minutes [H. M.]	With respect to the ecliptic [Reſpectu Eclipticæ]	Resp. of its own orbit [Reſp. propriæ orbitæ]	From Magini [Ex Magino]	From Cyprian [Ex Cypriano]
9	$3^h\ 34^m$	24° 38¾′ ♓	24° 31⅗′ ♓		
10	$4^h\ 0^m$	6° 47¾′ ♈	6° 41⅓′ ♈	7° 4′ ♈	7° 30′ ♈
11	$5^h\ 5¾^m$	19° 20⅔′ ♈	19° 16⅙′ ♈	19° 56′ ♈	20° 35′ ♈
14	$8^h\ 34^m$	29° 5⅓′ ♉	29° 10⅙′ ♉	29° 49′ ♉	0° 2′ ♊
15	$9^h\ 55½^m$	13° 13⅚′ ♊	13° 20′ 35″ ♊	13° 42′ ♊	13° 53′ ♊
20	$3^h\ 50^m$ A.M. [A. M.]	13° 49½′ ♌	13° 48′ ♌	12° 49′ ♌	12° 45′ ♌
21	$6^h\ 0^m$ – –	29° 44½′ ♌	29° 39½′ ♌	28° 41′ ♌	29° 0′ ♌
22	$6^h\ 30^m$ – –	14° 28¾′ ♍	14° 22′ ♍	13° 35′ ♍	14° 14′ ♍
23	$7^h\ 36^m$ – –	29° 27⅚′ ♍	29° 20⅗′ ♍	28° 51′ ♍	29° 27′ ♍
26	$9^h\ 40^m$ – –	12° 3⅓′ ♏	12° 4′ 25″ ♏	12° 38′ ♏	12° 14′ ♏
27	$10^h\ 2^m$ – –	25° 26′ ♏	25° 30¼′ ♏	26° 23′ ♏	25° 46′ ♏

[1] Day 9 was added afterwards. [Dies 9 poſtea additus eſt.]

N.B. In this comparison of the Copernican calculation and of the Alphonsines with the observed phenomena of the Moon, no account has been taken either of the equation of time or of the reduction for the dissimilar meridians, because the latter remains always very similar to itself, while the former, in a continuous comparison within so short a time, does not change much perceptibly. It is therefore enough to recognize, both from the daily motion of the Moon and from its constitution in a different situation of the hypothesis, that neither of the artificers' hypotheses can satisfy the celestial appearances or save them. This too has been seen enough and more than enough from all the observations made before. [N. B. In hac Calculi Copernicæi & Alphonſinorum cum Phænomenis ☾ obſer-/uatis collatione, neque temporis æquationis neque reductionis ob diſsimiles / meridianos ratio habita eſt: quod hæc perpetuo perſimilis ſibi maneat, illa vero / in continua collatione intra tam breue tempus non multum ſenſibiliter altere-/tur. Satis itaque eſt cognoſcere: tum ex motu diurno ☾, tum eius in diuerſo / Hypotheſeos ſitu conſtitutione, neutram artificum Hypotheſin apparentijs / cœleſtibus ſatisfacere aut eas ſaluare poſſe. Quod ex omnibus etiam antea / habitis obſeruationibus ſatis ſuperque perſpectum eſt.]

Observations of Saturn [OBSERUATIONES SATURNI.]

14 January [DIE 14 JANUARIJ.]

Saturn was observed ἀκρονύχιος [Greek: akronychios, "acronychal"], not far from the opposition to the Sun. [Obſeruabatur ♄ ἀκρονύχιος non pro-/cul a ☉ ☍.]

	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab / infer. cap. ♊]	Declination of Saturn [Decl. ♄]	The Lesser Dog, east, on the equator [Can. min. / or in / æquat.]
10 12 40	20° 54′		7° 49′
10 18	20° 54⅚′		
10 21 30	20° 55′		5° 29′
10 26	20° 55¼′		
10 29 30	20° 55′	19° 13¼′	
		19° 13⅓′	

	Distance of Saturn from the Lesser Dog [Diſt. ♄ / a Cane min.]	Declination of Saturn [Decl. ♄]	The Lesser Dog, east, on the equator [Can. min. / or in / æquat.]
10 42 30	24° 7⅚′	The Lesser Dog was crossing the meridian. [Tranſibat Can. / min. Mer.]	

	Distance of Saturn from the Lesser Dog [Diſt. ♄ / a Cane min.]	Declination of Saturn [Decl. ♄]	The Lesser Dog, west [Can. / min. occ.]
10 47 10	24° 8′		2 44
10 54 40	24° 7⅚′	19° 13½′ with one [vno]	4 46

	Vice versa, from cor ♌ [Viceverſa a corde ♌]	Declination of Saturn [Decl. ♄]	The Lesser Dog, west [Can. / min. occ.]
11 10	16° 26′ nearly		
11 14 20	16° 25⅚′		9 39
11 20 20	16° 26⅙′		10 9
11 32	16° 25¾′		

	Vice versa, from the bright foot of ♊ [Viceverſa a luc. pede ♊]	Declination of Saturn [Decl. ♄]	The Lesser Dog, west [Can. / min. occ.]
11 39 20	35° 4⅙′		
11 42 40	35° 4¾′		
11 51 30	35° 4⅚′		

12 2 50: Saturn crossed the meridian, having an altitude [12 2 50 Tranſijt ♄ per meridianum / habens Altit.]

by the revolving quadrant [per Q. Volub.]	53° 16⅚′
Declination by the armillae [Decl. per Armill.]	19° 13′
	19° 13¼′

The easternmost in the head of Hydra, west [Orientaliſſima in capite Hydræ / occid.]: 0 24

	Distance of Saturn from the tail of ♌ [Diſt. ♄ / a Cauda ♌]	The Lesser Dog, west [Can. min. / occ.]
12 18 10	39° 37¼′	25 13
12 20 40	39° 37′	25 52
12 22 10	39° 37′	26 7

For the place of Saturn from the preceding observations. [Pro loco ♄ ex præcedentibus / obſeruationibus.]

$10^h\ 30^m$ [H. 10 30′]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. / cap. ♊]	20° 55′ 0″
	Declination of Saturn [Declin. ♄]	19° 11½′
	Declination of the head of ♊ [Declin. cap. ♊]	28° 57½′
	Angular difference of ascension, computed [Ang. differ. aſcenſ. / ſupput.]	20° 19′
	Right ascension of the lower head of ♊ [Aſc. R. inf. cap. ♊]	110° 5′ 30″
	Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	130° 24′ 30″
$11^h\ 20^m$ [H. 11 20′]	Distance from cor ♌ [Diſt. a corde ♌]	16° 26′
	Declination of cor ♌ [Declin. cordis ♌]	13° 56½′
	Angular difference of ascension [Ang. differ. aſcenſ.]	16° 15½′
	Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	130° 23′ 55″
	For the right ascension of cor is [Nam Aſc. R. cordis eſt]	146° 39′ 25″
$11^h\ 20^m$ [H. 11 M. 20]	Put the right ascension of Saturn [Pone Aſcenſ. rectam ♄]	
	reduced and limited [reductam ac limit.]	130° 24′ 5″
	Declination, north [Declinationem B.]	19° 11′ 30″
	Resp. longitude [Reſp. Longitudo]	7° 45′ 0″ ♌
	Latitude [Latitudo]	0° 49′ 20″ north [B.]

Computation of the daily motion of Saturn from the Prutenic tables, with the restored motion of the apogee of Saturn and of the longitude presupposed. [Supputatio motus diurni ♄ ex Tabu-/lis Prutenicis præſuppoſito reſtituto / motu Apogæi ♄ & Longitudinis.]

			Difference [Differentia]
January [Januarij]	14	7° 52′ 35″	
			25′ 16″
on the day, at [Die ad]	19	7 27 19	
			25 32
M. N.	24	7 1 47	

From these the daily motion is drawn out as 5′ 4″ 40‴ precisely, between the day from which the observations of Saturn were made and its opposition with the Sun. [Ex his elicitur motus diurnus 5′ 4″ / 40‴ præciſe inter diem ex quo obſer-/uationes in ♄ ſunt factæ & eius ☍ cum / ☉$^{l e}$.]

Calculation for the opposition of Saturn with our Simplex of the Sun. [Calculus pro ☍ ♄ cum Simplici ☉$^{l ı^{s}}$ / noſtro.]

Our simplex of the Sun at the prescribed time [Noſter ſimplex ☉$^{l ı^{s}}$ ad / tempus præſcriptum]	3° 53′ 53″ ♒
The observed place of Saturn [Locus ♄ obſeruatus]	7° 45′ 0″ ♌
Difference [Differentia]	3 51 7

The aggregate of the daily motion of the Sun and of Saturn, 64′ 13″ 0‴; resp. to the difference 3^{d} 14^{h} 22^{m}, add. [Aggregatum motus diurni ☉ & ♄ 64′ / 13″ 0‴, reſp. ad differentiam D. 3 H. / 14 M. 22 add.]

And so the opposition of Saturn with the simplex of the Sun took place in the month of January, 18^{d} 1^{h} 42^{m}. [Ideoque ☍ ♄ cum ſimplici ☉$^{l ı^{s}}$ / facta eſt Menſe D. H. M. / Januario 18 1 42]

Saturn being in [♄ exiſtente in]		7° 26¾′ ♌
Latitude [Latitudo]		0° 49½′ north [B.]
Copernicus's calculation [Calculus / Copernici]	Longitude [Longitudo]	7° 32′ ♌
	Latitude [Latitudo]	0° 6′ south [M.]
Alphonsine calculation [Calculus / Alphonſin.]	Longitude [Longitudo]	10° 4′ ♌
	Latitude [Latitudo]	0° 48′ north [B.]
From the Tables Prut. [Ex Tabu-/lis Prut.]	Simplex longitude [Simplex Long.]	1^{s} 35° 35′ 13″
	Apogee of Saturn [Apogæum ♄]	4 1 14 37
Our precession of the equinox [Noſtra præceßio / Æquinoctij]		28 10 0

25 January [DIE 25 JANUARIJ.]

In the evening Saturn was observed, carried a little past the meridian, and also somewhat past the point opposite the Sun. [Veſperi obſeruabatur ♄ paululum / meridianum tranſuectus, & etiam op-/poſitum ☉ nonnihil prætergreßus.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab / inf. cap. ♊]	Declination of Saturn, north [Declin. ♄ / B.]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
$12^h\ 27^m\ 30^s$	20° 3½′	19° 26½′ 19° 27′	54 42

Moderate, among clouds. *A doubtful observation.* [mediocris inter / nubes. Dubia obſerv.]

26 January [DIE 26 JANUARIJ.]

In the evening Saturn was observed again. [Veſperi denuo obſeruabatur ♄.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab / inf. cap. ♊]	Declination of Saturn, north [Declin. ♄ / B.]	The bright shoulder of Orion, east [Luc. hum. / Orion. or.]
$8^h\ 7^m\ 40^s$	19° 57′	19° 29′ 19° 29½′	10 13
$8^h\ 16^m\ 30^s$	19° 58½′ better [melior]		8 0
$8^h\ 30^m$	19° 57⅓′	19° 29½′ with one [vno]	
$8^h\ 31^m\ 20^s$	19° 57½′		4 23

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the Lesser Dog [Diſt. ♄ a / Cane min.]	Declination of Saturn, north [Declin. ♄ / B.]	The bright shoulder of Orion, east [Luc. hum. / Orion. or.]
$8^h\ 40^m$	23° 26¼′		2 39
$8^h\ 42^m\ 10^s$	23° 27′		
$8^h\ 44^m\ 50^s$	23° 26⅔′		1 15
$8^h\ 47^m\ 50^s$	23° 27¼′ *	19° 29⅔′ with one [vno]	

* doubtful because of the clouds. [* ambigua propter nubes.]

The bright shoulder of Orion crossed the meridian, half a degree short. [Tranſiuit luc. hum. Orionis per me-/rid. deficiente ſemigradu.]

N.B. The two fixed ones named above, the lower head of ♊ *and the Lesser Dog, made with Saturn a triangle almost isosceles, so that the place will have to be sought by a triangular demonstration.* [N.B. Fecerunt duæ prænominatæ / fixæ, inferius caput ♊ & Canis minor / cum ♄ Triangulum quaſi iſoſceles, / vnde per Triangularem demonſtra-/tionem inquirendus locus erit.]

At 11^{h} 53^{m} Saturn crossed the meridian and had an altitude [H. 11 M. 53 Tranſiuit ♄ / meridianum habuitque Alt.]

by the steel instrument [per Chalyb.]	*53° 32⅓′*
by the revolving quadrant [per Volub.]	*53° 34½′*
Declination of Saturn [Declin. ♄]	*19° 29⅙′ with both* [vtroque.]

When it was crossing, the bright shoulder of Orion was west 46 8. Do not trust the clock, because it was moving too unevenly this evening. [Cum tranſiret fuit Lucidus hume-/rus Orionis occid. 46 8. Horologio / non fidas, quia nimis inæqualiter / hac veſpera mouebatur.]

Hours, minutes [H. M.]	Distance of Saturn from the bright foot of ♊ [Diſt. ♄ a / luc. pede ♊]	Declination of Saturn [Declin. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occid.]
12^{h} 10^{m}	34° 8′		50 20
12^{h} 12^{m}	34° 7⅓′		
12^{h} 15^{m}	34° 7¼′		

Hours, minutes [H. M.]	Distance from the Lesser Dog [Diſt. a Cane min.]	Declination of Saturn [Declin. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occid.]
12^{h} 19^{m}	23° 27½′	19° 28′ with both [vtroque]	
12^{h} 24^{m}	23° 27½′		54 5

Hours, minutes [H. M.]	Saturn from the lower head of ♊ [♄ ab infer. cap. ♊]	Declination of Saturn [Declin. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occid.]
12^{h} 35^{m}	19° 59′		56 42
12^{h} 38^{m}	19° 59′		
12^{h} 41^{m}	19° 58⅚′	19° 28′ with both [vtroque]	

27 January [DIE 27 JANUARIJ.]

The eye of ♉ was crossing the meridian, having an altitude [Tranſibat oculus ♉ / per meridianum habens Altit.]

by the steel instrument [per Chalyb.]	49° 42½′
by the revolving quadrant [per Volub.]	49° 42½′
Declination [Declinationem]	15° 38′

	15° 38⅓′

At this transit the clock was corrected to 7^h 12½^m. For the examination of the instruments, which today have been corrected exactly. [Ad hunc tranſitum correctum eſt / horologium ad Hor. 7 M. 12½. Pro ex-/aminatione inſtrumen-torum quæ ho-/die ſunt ad amußim correcta.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the foot of ♊ [Diſt. ♄ / a pede ♊]	Declination of Saturn [Decl. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
9^h 10^m	34° 3⅔′	19° 31′	
		19° 30′	
9^h 11^m	34° 4′		13 39
9^h 17^m 40^s	34° 3½′		
9^h 26^m 10^s	34° 4′		

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the Lesser Dog [Diſt. ♄ a Cane min.]	Declination of Saturn [Decl. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
9^h 29½^m	23° 24⅓′	19° 30′	
		19° 31′ nearly [ferme]	
9^h 36^m	23° 24′		19 39
9^h 41½^m	23° 24⅓′	19° 30′ with both [vtroque]	

9 51 The upper head of ♊ *crossed the meridian and had an altitude* [9 51 Tranſiuit ſuperius caput ♊ / per meridianum & habuit Altit.]

by the steel instrument [per Chalyb.]	*66° 46⅓′*
by the revolving quadrant [per Volub.]	*66° 46⅙′*

Hours, minutes [H. M.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab / infer. cap. ♊]	Declination of Saturn [Declin. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
10^h 1^m	19° 54¾′		
10^h 15½^m	19° 54⅓′		30 29
10^h 19⅔^m	19° 54⅔′		31 35

Hours, minutes [H. M.]	Distance from cor ♌ [Dist. a corde ♌]	Declination of Saturn [Declin. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
$10^h\ 25^m$	17° 28¾′		
$10^h\ 29^m$	17° 28⅓′		
$10^h\ 34½^m$	17° 28½′	good because outside the clouds [bona quia extra nubes]	35 48
$10^h\ 38^m$	17° 28⅔′	19° 30′ with both [vtroque]	

Hours, minutes [H. M.]	Distance from the bright foot of ♊ [Dist. a luc. pede ♊]	Declination of Saturn [Declin. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
$10^h\ 47^m$	34° 3′		39 8
$10^h\ 49^m$	34° 2⅝′		
$11^h\ 5^m$	34° 2¾′		

At $11^h\ 11^m\ 40^s$ Saturn crossed the meridian, having an altitude [11 11′ 40″ Tranſiuit ♄ / meridianum habens altit.]

by the revolving quadrant [per Volub.]	53° 34⅓′
by the steel instrument [per Chalyb.]	53° 34⅙′

Among clouds. [inter / nubes]

Declination of Saturn 19° 30′ with both pinnules. [Declin. ♄ 19 30 vtroque pinnac.]

The bright shoulder of Orion, west 46 42. [Luc. humerus Orion. occ. 46 42]

Hours, minutes [H. M.]	Distance of Saturn from the bright foot of ♊ [Dist. ♄ a luc. / pede ♊]	Declination of Saturn [Declin. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
$11^h\ 32^m$	34° 2⅔′		
$11^h\ 35^m$	34° 2½′		52 0

Hours, minutes [H. M.]	Distance of Saturn from cor ♌ [Dist. ♄ a corde ♌]	Declination of Saturn [Declin. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
$11^h\ 38^m$	17° 28¼′		
$11^h\ 42⅔^m$	17° 28⅓′		
$11^h\ 49^m$	17° 28½′	19° 30′	

Moderate, but nevertheless among clouds. [Mediocres / ſed tamen / inter nubes]

Calculation for finding the places of Saturn from the preceding observations made on 26 and 27 January. [Calculus pro locis ♄ni indagandis ex / præcedentibus obſeruationibus / die 26 & 27 Jan. factis.]

I. On 26 January. [I. Die 26 Januarij.]

8½h [H. 8½]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab infer. cap. ♊]	19° 58½′
	Declination of Saturn, north [Declin. ♄ B.]	19° 27′ 0″
	Angular difference of ascension, computed [Angulus differ. aſc.aliſ / ſupput.]	19° 18¾′
	Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	129° 24′ 15″
8⅔h [H. 8⅔]	Distance of Saturn from the Lesser Dog [Diſt. ♄ a Cane min.]	23° 27′
	Declination of the Lesser Dog [Declin. Canis min.]	6° 13′ north [B.]
	Right ascension of the Lesser Dog [Aſc. R. Canis min.]	109° 31′ 20″
	Angular difference of ascension [Angulus differ. aſc.]	19° 54′ 40″
	Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	129° 26′ 0″

At 8½h put the limited right ascension of Saturn, adhering more closely to the head of ♊ [Pone H.8½ Aſcenſ. Rectam ♄ limitatam / adhærendo propius Capiti ♊]	129° 25′
Declination, north [Declinationem B.]	19° 27′
Resp. longitude [Reſp. Longitudo]	6° 47⅙′ ♌
Latitude [Latitudo]	0° 50′ 5″ north [B.]

On the following day, from more exact observations. [Die ſequente ex obſeruationibus / exquiſitioribus.]

10¼h [H. 10¼]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	19° 54½′
	Declination of Saturn [Declin. ♄]	19° 28′ 45″
	Angular difference of ascension [Angulus differ. aſc.]	19° 14′ 45″
	Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	129° 20′ 15″
10½h [H. 10½]	Distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	17° 28½′
	Angular difference of ascension [Ang. diff. aſc.]	17° 19′ 20″
	Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	129° 20′ 0″
11h 0m [H. 11.0]	Distance of Saturn [Diſt. ♄]	
	from the bright foot of ♊ [a luc. pede ♊]	34° 4′
	Declination of the foot of ♊ [Declin. pedis ♊]	16° 40′
	Right ascension of this [Aſc. R. huius]	93° 32′ 0″
	Angular difference of ascension [Ang. differ. aſc.]	35° 46′ 30″

	Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	129° 18′ 30″
From these, put for 10½^{h} [Pone ex his ad H. 10½]		
	the limited right ascension of Saturn [Aſc. R. ♄ limitatam]	129° 19′ 50″
	Declination, north [Declinationem B.]	19° 28′ 45″
	Resp. longitude [Reſp. Longitudo]	6° 42′ 0″ ♌
	Latitude [Latitudo]	0° 50′ 32″ north [B.]

Investigation of the daily motion of Saturn around the opposition, from the comparison of the observations of 14 and 27 January. [Inquiſitio motus diurni ♄ circa ☍ / ex collatione obſeruationum / 14 & 27 Januarij.]

On 14 January [Die 14 Jan.]	11½^{h} [H. 11½]	Longitude of Saturn [Longit. ♄]	7° 45′ 0″ ♌
On 27 January [Die 27 Jan.]	10½^{h} [H. 10½]		6 42 0

Difference of time 12^{d} 23^{h} [Differ. temp. D. 12 H. 23,]; difference of motion 1° 3′ [Differ. motus 1° 3′]; resp. from these the daily motion 4′ 52″ 0‴ [Reſp. ex his motus diurnus 4′ 52″ 0‴].

From these it is gathered that the daily motion of Saturn around the opposition with the Sun, or at least between 14 January and the 18th, namely the very day of the opposition, was at most 5′ 0″, although the Prutenic tables (with the perigee of Saturn reformed) put the same at 5′ 4⅔″. Therefore, the term of the opposition of Saturn with the Sun having been investigated again according to this motion, with respect both to the time and to the motion, it fell on the 18th day of January at 1^{h} 47^{m}, the longitude of Saturn in 7° 27′ 0″ ♌ nearly. [Ex his colligitur motum diurnum ♄ / circa ☍ cum Sole, vel ſaltem inter 14 / Jan. & 18, diem videlicet ipſum ☍ fu-/iße ad ſummum M. 5′ 0″, licet Tabulæ / Prutenicæ (reformato Perigæo ♄) eun-/dem ponunt 5′ 4⅔″. Inueſtigato itaque / denuo iuxta hunc motum ☍ ♄ cum ☉ / termino tum temporis reſpectu tum / motus, incidit illa in 18 diem Ianuarij / H. 1 M. 47, Longit. ♄ in 7 27 0 ♌ fere.]

14 February, evening [DIE 14 FEBRUARIJ, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the bright foot of ♊ [Diſt. ♄ a / luc. pede ♊]	Declination of Saturn [Declin. / ♄]	Altitude of Saturn [Alt. / ♄]
7^{h} 17½^{m}	32° 44′		
7^{h} 24^{m} 50^{s}	32° 44½′	19° 51′	44° 0′
		19° 51½′	
7^{h} 38^{m} 50^{s}	22° 44′		

Hours, minutes, seconds [H. M. S.]	Vice versa, from cor ♌ [Viceverſa a corde ♌]	Declination of Saturn [Declin. / ♄]	Altitude of Saturn [Alt. / ♄]	The bright shoulder of Orion, west [Luc. hum. / Orion. occ.]
7^h 57^m	18° 53½′	among clouds [inter nubes]		
7^h $58\frac{2}{3}^m$	18° 51⅚′	better [melior]		15 35
8^h 4^m 20^s	18° 52½′	19° 51′ 19° 51½′	48° 30′	
9^h 30^m	18° 51½′			
9^h 32^m 10^s	18° 51′ 25″	good [bona]		42 7
9^h 40^m 50^s [9 40′ 50″]	Saturn crossed the meridian, having an altitude [Tranſiuit ♄ per / meridianum habens altit.]			44 43

by the steel instrument [per Chalyb.]	53° 45′ 0″
by the revolving quadrant [per Volub.]	53° 45′ 0″

19 February, evening [DIE 19 FEBRUARIJ, VESPERI.]

At 9^h 29^m Saturn crossed the meridian, having an altitude [H. 9 M. 29 Tranſiuit ♄ / per meridianum habens Altit.]

by the revolving quadrant [per Q. Volub.]	53° 58½′
by the steel quadrant [per Q. Chalyb.]	53° 59′

Cor ♌ was then east 18 35. [Erat tunc cor ♌ orient. 18 35]

9 35 20	Distance of Saturn from the bright foot of ♊ [Diſt. ♄ a / lucido / pede ♊]	32° 32⅓′	Declination of Saturn [Decl. ♄]
9 42 10		32° 32½′ twice [bis]	19° 54′
9 48½		32° 32′ nearly [fere]	with both [vtroque]

The brightness of the Moon somewhat hindered these observations. [Splendor ☾ nonnihil obſeruatio-/nibus hiſce obfuit.]

	Vice versa [Viceverſa]	
10 4	Distance of Saturn from cor ♌ [Diſt. ♄ / a / corde ♌]	19° 7⅓′ twice [bis]
10 7		19° 7′

	Vice versa [Viceverſa]	
10 25 40		19° 7⅔′

These observations are better, because Cor ♌ was farther away from the brightness of the Moon. [Hæ obſeruationes meliores ſunt, / quod a ſplendore ☾ Cor ♌ longius / abfuit.]

28 February, evening [DIE 28 FEBRUARIJ, VESPERI.]

8 59 35	Distance of Saturn from the bright foot of ♊ [Diſt. ♄ a / lucido / pede ♊]	32° 4′	Cor ♌, east [Cor ♌ orient.]
9 6 40		32° 4½′	20 24
9...		32° 4′	
9 13	Saturn crossed the meridian, having an altitude [Tranſiuit ♄ / per meridianum habens altit.]		19 10

by the steel instrument [per Chalyb.]	54° 5⅔′
by the revolving quadrant [per Volub.]	54° 6′
Declination of Saturn [Declinatio ♄]	20° 2′
	20° 1½′

	Vice versa [Viceverſa.]	
9 19 55	Distance of Saturn from cor ♌ [Diſt. ♄ / a / corde ♌]	19° 32′
9 22 35		19° 32½′
9 27 5		19° 31⅔′

It was quite clear. [Erat / bene / ſudum]

9 March, evening [DIE 9 MARTIJ, VESPERI.]

7 49 20	Distance of Saturn [Diſt. ♄]	
	from the bright foot of ♊ [a lucido pede ♊]	31° 44′
	Cor ♌, approximately [ἐν πλάτει], east [Cor ♌ ἐν πλάτει or.]	27 20
7 59	The same distance repeated [Eadem diſt. repetita]	31° 44⅙′
	Declination of Saturn [Declin. ♄]	20° 7′
		20° 6′ doubtful [dubia]

1 May, evening [DIE 1 MAIJ, VESPERI.]

10 9 10	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]		18° 25⅔′
	Declination of Saturn [Declin. ♄]	19° 51′	Altitude of Saturn [Altit. ♄]
		19° 52′	24° 20′
	Spica, west [Spica ♍ occid.]		6 33
10 19 10	The same distance repeated [Eadem diſt. repetita]		18° 26⅓′

	Vice versa [Viceverſa]	
10 33	Distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	18° 58⅓′
	Altitude of Saturn [Altit. ♄]	21° 0′
	Spica, west [Spica ♍ occid.]	12 50
10 39 10	The same distance [Eadem diſt.]	18° 57½′ better [melior.]

9 October, morning [DIE 9 OCTOBRIS, MANE.]

Distance of Saturn from the tail of ♌ [Diſt. ♄ a / cauda ♌]	Declination of Saturn [Decl. / ♄]	Altitude of Saturn [Alt. / ♄]	The Lesser Dog, west [Canis min. / occid.]
24° 38⅔′			1 37
24° 39¼′			2 13

Here it was not observed well from the tail of ♌, because of the dawn. [Non bene hic obſeruabatur a cau-/da ♌ propter auroram.]

Vice versa, from the Lesser Dog [Viceverſa a cane min.]	Declination of Saturn [Decl. / ♄]	Altitude of Saturn [Alt. / ♄]	The Lesser Dog, west [Canis min. / occid.]
37° 20½′	13° 56⅓′ 13° 55½′	40° 34′	3 3
37° 21′			4 41
37° 20′ nearly [fere]			5 13
37° 20⅓′			5 42

19 October, morning [DIE 19 OCTOBRIS, MANE.]

Before the observation of the eclipse of the Moon, Saturn, approaching the square of the Sun, was taken in the following manner. [Ante obſeruationem eclipſeos ☾ / capiebatur ♄ □ ☉ appropinquans / in modum ſequentem.]

The clock corrected. [Horologium correctum.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the Lesser Dog [Diſt. ♄ a / Cane min.]	Declination [Declin.]	Altitude of Saturn [Altit. / ♄]	The Greater Dog, east [Canis / maior or.]
$4^h\ 9^m\ 40^s$	36° 59′			1 3

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the Lesser Dog [Diſt. ♄ a / Cane min.]	Declination [Declin.]	Altitude of Saturn [Altit. / ♄]	West [occ.]
$4^h\ 12^m\ 40^s$	36° 59′	14° 50½′	34° 32′	0 20

Hours, minutes, seconds [H. M. S.]	Vice versa: distance of Saturn from the bright star of the back of ♌ [Viceverſa / Diſt. ♄ a luc. dorſi ♌]	Declination [Declin.]	Altitude of Saturn [Altit. / ♄]	West [occ.]
$4^h\ 21^m\ 30^s$	17° 45½′			2 41

28 October, morning [DIE 28 OCTOBRIS, MANE.]

Saturn was observed around the square of the Sun. [Obſeruabatur ♄ circa □^{tum} ⊙$^{li^s}$.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the Lesser Dog [Diſt. ♄ a / Cane minore]	Declination of Saturn [Declin. / ♄]	Cor ♌, east [Cor ♌ / orient.]
$4^h\ 59^m$	37° 26¼′		22 57
$5^h\ 1^m\ 25^s$	37° 27⅓′		22 18
$5^h\ 3^m\ 40^s$	37° 27¼′	14° 40⅓′	21 45
		14° 40½′	

Hours, minutes, seconds [H. M. S.]	Vice versa, from the tail of ♌ [Viceverſa a cauda ♌]	Declination of Saturn [Declin. / ♄]	Cor ♌, east [Cor ♌ / orient.]
$5^h\ 16^m\ 10^s$	24° 33′ nearly [fere]		18 27
$5^h\ 18^m\ 45^s$	24° 32⅚′		17 47
$5^h\ 20^m\ 45^s$	24° 33′	*14° 40¼′*	
		14° 41′	
$5^h\ 24^m$	*The same repeated* [Eadem repetita]	*14° 41′*	

N.B. Saturn had not yet come to conjunction with cor ♌, although the Prutenic calculation required it, so that that conjunction had already passed days before. [N. B. ♄ nondum ad ☌ cum corde ♌ / peruenerat, quamuis calculus Pru-/tenicus id exigeret, vt iam ante dies / præterierit illa ☌.]

Saturn seemed to be on the straight line drawn from Cor ♌ to the lowest of the three of the neck, except that it had passed this line somewhat toward the rising, by the amount of the diameter of its own body, that is, by about 3 minutes. It was, moreover, more northerly by about a lunar diameter, or at most 45′, so that the star

Saturn was more northerly than cor ♌; and it had a greater latitude, although the canons do not show so great a one. [Videbatur ♄ in linea recta, quæ / ducitur a Corde ♌ in infimam trium / ceruicis, nisi quod hanc lineam non-/nihil versus ortum prætergreßus fu-/erit, ad quantitatem diametri sui cor-/poris, id est 3 circiter minutis. Fuit / autem borealior quasi ad diametrum / lunarem seu ad summum 45′, ita vt / stella ♄ corde ♌ foret septentrionali-/or, maioremque habuit latitudinem, / quamuis Canones tantam non exhi-/beant.]

At 6 27 16 Saturn crossed the meridian, having an altitude [6 27 16 Transiuit ♄ / Merid. habens Altitud.]

by the steel instrument [per Chalyb.]	*48° 46⅔′*
by the revolving quadrant [per Volub.]	*48° 44½′*

At 6 27 25 Cor ♌ crossed the meridian, having an altitude [6 27 25 Transiuit Cor ♌ / Merid. habens Altitud.]

by the steel instrument [per Chalyb.]	*48° 0½′*
by the revolving quadrant [per Volub.]	*48° 0½′*

The revolving quadrant is rather to be trusted, and the difference of declination of the two is to be put at 44′, and the difference of right ascension at 2½′, by which Saturn has less than Cor ♌. [Fidendum potius Volubili & ponen-/da differentia declinationis vtrius-/que 44′ & differentia Asc. rectæ 2½′, / quibus ♄ minus habet quam Cor ♌.]

Investigation of the place of Saturn from the comparison with Cor ♌ at the transit through the meridian. [Inuestigatio loci ♄ ex collatione cum / Corde ♌ in transitu per meridianum.]

At $6\frac{1}{2}^{h}$ Saturn crossed the meridian earlier than cor ♌ by 2½′ in right ascension. [H. 6½ ♄ citius transibat Merid. corde / ♌ 2½′ in Asc. R.]

Right ascension of cor ♌ [Ascensio recta cordis ♌]	146° 40′ 0″
Therefore the right ascension of Saturn [Ergo Ascensio R. ♄]	146° 37′ 30″

Declination of Saturn, to be put [Declin. ♄ ponenda]	14° 40′ 0″
Resp. longitude [Resp. Longitudo]	23° 55′ ♌
Latitude [Latitudo]	1° 8′ north [B.]

If you suppose that about this time Saturn was removed 3′ toward the rising from the straight line drawn from cor ♌ to the lowest of the neck, as you have

it noted above, then, the trial having afterwards been made on the great globe, this position of Saturn agrees exactly with the one above as to latitude, the distance between Cor ♌ and Saturn being put, namely, at 45′; in longitude, however, it is earlier by scarcely one minute. [Si poſueris circa hoc tempus ♄ re-/motum fuiße 3′ ad ortum a linea recta / ducta a corde ♌ in infimam ceruicis, / vt ſuperius annotatum habes, facta / experimentatione deinde in Globo / magno, conuenit hic ſitus ♄ cum ſu-/periori exacte quoad Latitudinem, / poſita ſcilicet diſtantia inter Cor ♌ & ♄ / 45′, in Longitudine vero vix vno mi-/nuto anterior eſt.]

Resp. longitude [Reſp. Longitudo]	23° 54′ ♌ or a little more [vel paulo plus]
Latitude [Latitudo]	1° 8′ north [B.]

29 October, evening [DIE 29 OCTOBRIS, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the Lesser Dog [Diſt. ♄ / a Cane min.]	Declination of Saturn [Decl. / ♄]	The Lesser Dog, west [Canis minor / occid.]
$4^h\ 46^m\ 15^s$	37° 29¾′		
$4^h\ 53^m\ 5^s$	37° 30⅔′		8 15
$4^h\ 56^m\ 30^s$	37° 30′	14° 42′ 14° 41½′ among clouds [inter nubes.]	9 4

Afterwards clouds interfered. [Poſtea nubes impediuerunt.]

27 November, morning [DIE 27 NOUEMBRIS, MANE.]

Saturn was observed stationary. [Obſeruabatur ♄ ſtationarius.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab / infer. cap. ♊]	Declination of Saturn [Declin. / ♄]	Cor ♌, west [Cor ♌ / occ.]
$7^h\ 8^m\ 20^s$	37° 23′	14° 31⅓′ 14° 31′	32 47
$7^h\ 13^m\ 40^s$	37° 23′		34 10
$7^h\ 15^m\ 55^s$	37° 23′		34 45

29 November, morning [DIE 29 NOUEMBRIS, MANE.]

At 2½^h after midnight I saw that Saturn, stationary and beginning to retrograde, stood on the straight line drawn from Cor ♌ to the one that is unformed and brighter, below the tail of the Greater Bear, which, namely, is as it were in one line between the tail of the Greater Bear and the tail of ♌. Saturn, however, was distant from Regulus itself not much beyond a degree, toward the north and the rising. But take a more exact observation by the instruments. [Hora 2½ poſt mediam noctem vidi / quod

♄ ſtationarius & incipiens re-/gredi ſteterit in linea recta ducta a / Corde ♌ in eam, quæ eſt informis & / lucidior infra caudam Vrſæ maioris, / quæ videlicet quaſi in vno ductu eſt / inter caudam Vrſæ maioris & cau-/dam ♌. Diſtabat vero ♄ ab ipſo Re-/gulo non multum vltra gradum ver-/ſus ſeptentrionem & ortum. Sed ex-/actiorem obſeruationem accipe per / inſtrumenta.]

Let the difference of the transit of Saturn and Regulus through the meridian be observed exactly, together with the altitude of each by both quadrants, and let the interval of time be noted both by the clock, first carefully corrected, and by the equator. [Obſeruetur diſcrimen tranſitus ♄ & / Reguli per Meridiem exacte vna cum / vtriusque altitudine vtroque Qua-/drante, & notetur interuallum tem-/poris tam per Horologium prius dili-/genter correctum quam per æquato-/rem.]

Let careful attention be paid to Mars before dawn, in case it can perhaps be seen and observed. [Attendatur diligenter ad ♂ ante / Auroram, ſi forte videri & obſeruari / queat.]

In the morning Saturn was observed *in station for the first time*. [Mane obſeruabatur ♄ *in ſtatione / primo.*]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the Lesser Dog [Diſt. ♄ a / Cane min.]	Declination of Saturn [Declin. / ♄]	Cor ♌, east [Cor ♌ / or.]
$4^h\ 12^m\ 0^s$	38° 8¾′		7 38
$4^h\ 16^m\ 25^s$	38° 9′	14° 32½′	6 24
		14° 33′	
$4^h\ 19^m\ 0^s$	38° 9′		5 39

Hours, minutes, seconds [H. M. S.]	Vice versa, from cor ♌ [Viceverſa a corde ♌]	Declination of Saturn [Declin. / ♄]	Cor ♌, east [Cor ♌ / or.]
$4^h\ 26^m\ 10^s$	23° 49⅓′		3 51
$4^h\ 28^m\ 5^s$	23° 50⅓′		
$4^h\ 40^m\ 35^s$	Cor ♌ crossed the meridian, having an altitude [Cor ♌ tranſiuit / per meridianum habens Altitud.]		0 2

by the steel instrument [per Chalyb.]	48° 0⅓′
by the revolving quadrant [per Volub.]	48° 0⅙′

At $4^h\ 43^m\ 25^s$ Saturn crossed the meridian, having an altitude [4 43 25 Tranſiuit ♄ / Merid. habens Altit.]

		Cor ♌, west [Cor ♌ occid.]
by the steel instrument [per Chalyb.]	48° 38′	
by the revolving quadrant [per Volub.]	48° 37¾′	0 42⅔

Difference in time [Differ. in tempore] $0^h\ 2^m\ 50^s$ [0 2 50]; difference in degrees [Differ. in gr.] 44′ 40″.

gives 42′ 30″ [facit 42′ 30″]

add 30 [adde 30]

gives 43 0 [facit 43 0]

Meanwhile the clock was running slower than it should by ½ minute, from the proportion of the rest; so there could have been a difference in the transits. Take the mean of the two, 43′ 45″. Difference of declination M. 38. [Horologium interea iuſto tardius / mouebatur ½ m^to ex proportione re-/liquarum, poterat igitur eße differen-/tia tranſituum. Accipe medium vtri-/usque 43′ 45″. Diff. decl. M. 38.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the tail of ☋ [Diſt. ♄ a / cauda ☋]	Cor ☋, west [Cor ☋ / occ.]
$4^h\ 52^m\ 0^s$	23° 50½′	3 3
$4^h\ 54^m\ 10^s$	23° 50′	

Hours, minutes, seconds [H. M. S.]	Again at the setting: distance of Saturn from the lower head of ♊ [Ad occaſum denuo / Diſt. ♄ ab / inf. Cap. ♊]	Declination of Saturn [Declin. / ♄]	Cor ☋, west [Cor ☋ / occ.]
$4^h\ 57^m\ 30^s$	37° 19⅚′		5 37
$4^h\ 59^m\ 30^s$	37° 20½′	14° 32½′ with both pinnules [vtroque pinnac.]	
$5^h\ 4^m\ 50^s$	37° 20¼′		

This morning it was exceedingly clear, and the air fairly steady. [Fuit hoc mane apprime ſerenum & / ſatis tranquillus aër.]

From this it is clear that Saturn, since the 27th, on which it was distant from the same star 37° 23′, went back by three minutes in two days. It was therefore stationary earlier, which does not agree with the tables. [Hinc patet quod ♄ a die 27, quo di-/ſtabat ab eadem ſtella 37 23 per bidu-/um retroceßiße minutis tribus. Fuit / igitur prius ſtationarius, quod non / concordat cum tabulis.]

For the place of Saturn [Pro loco ♄]

At $4¾^h$, from the transit of Saturn through the meridian, a comparison having been made with Cor ☋, its right ascension is found [H. 4¾ Ex tranſitu ♄ per Meridianum, / collatione cum Corde ☋ facta, in-/uenitur eius Aſc. Recta]	147° 25′
Declination [Declinatio]	14° 33⅓′ north [B.]
Resp. longitude [Reſp. Longitudo]	24° 50⅔′ ☋

Latitude [Latitudo]	1° 16⅔′ north [B.]

4 December, morning [DIE 4 DECEMBRIS, MANE.]

At 4^{h} 25^{m} Cor ♌ crossed the meridian, having an altitude [H. 4 M. 25 Cor ♌ / tranſiit Meridianum habens Alt.]

by the steel instrument [per Chalyb.]	48° 0¼′
by the revolving quadrant [per Volub.]	48° 0⅔′
Cor ♌ on the equator, east [Cor ♌ in æquatore orient.]	0° 5′

At 4 28 15 Saturn crossed the meridian, having an altitude [4 28 15 Tranſiuit ♄ / Merid. habens Alt.]

		Cor ♌, west [Cor ♌ / occid.]
by the steel instrument [per Chal.]	48° 39¾′	0 41
by the revolving quadrant [per Volub.]	48° 39½′	

	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab / infer. cap. ♊]	Declination of Saturn [Declin. / ♄]	
4 38 15	37° 16½′		3 17
4 40 45	37° 14⅚′	14° 36′	among clouds [inter / nubes]
		14° 35½′	
4 43 10	37° 17′		
4 47 25	37° 16′		

	Vice versa, from the tail of ♌ [Viceverſa a cauda ♌]	Declination of Saturn [Declin. / ♄]	The Lesser Dog, west [Canis min. / occ.]
4 54 20	23° 52¾′		44 39
4 57 10	23° 52¾′	14° 35⅓′	
		14° 35½′	
5 5 20	23° 53½′		47 22
5 9 20	23° 52⅚′		48 29

In these last observations from the tail of ♌ it was fairly clear. [In his poſtremis obſeruationibus / a cauda ♌ fuit ſatis ſerenum.]

10 December, morning [DIE 10 DECEMBRIS, MANE.]

$6^h\ 44^m\ 0^s$ [H. 6 44′ 0″]	Saturn on the equator [♄ in æquatore] east [orient]	57° 7⅔′
6 44 23	Cor ♌ on the equator [Cor ♌ in æquatore]	57° 48¾′
7 47 corrected [corr.]	Declination of Saturn [Declin. ♄]	14° 38′
		14° 37⅓′
6 49 45	Saturn on the equator [♄ in æquatore]	38° 40′
6 50 25	Cor ♌ on the equator [Cor ♌ in æquatore]	39° 25¾′
7 53¾ corrected [corr.]	Spica, west [Spica ♍ occ.]	10 14

The first observation of Saturn [Prima obſeruatio ♄]	*57 7 40*
Cor ♌	*57 48 45*
Difference on the equator [Differ. in æquat.]	*41′ 5″*
The difference in time gives [Differ. in tempore facit]	$5^m\ 45^s$
Equatorial distance [Diſt. æquatoria]	*35′ 20″*
The other of Saturn on the equator [Altera ♄ in æquat.]	*38° 40′*
Cor ♌	*39° 25¾′*
	0 45¾
Time subtracted [Tempus ſubt.]	*10*
	35¾

At $7^h\ 50^m$, therefore, put the equatorial difference of Saturn and of Cor at 0° 35½′, the declination at 14° 38′, and from this gather its place. [H. 7.50 Pone itaque differentiam / æquatoriam ♄ & Cordis 0 35½ / Declinationem 14 38 / hincque collige locum eius.]

Right ascension of Cor ♌ [Aſcenſio R. Cordis ♌]	146° 40′ 0″
Therefore the right ascension of Saturn [Ergo Aſc. R. ♄]	147° 15′ 30″

From the observation its longitude comes out [Ex obſeruatione prouenit eius / Longitudo]	*24° 30⅓′* ♑	*latitude* [Lat.] *1 18½ north* [B.]
Prutenic calculation [Calc. Prutenicus]	*24° 45′* ♑	*0 29 north* [B.]
Alphonsine calculation [Calc. Alphonſin.]	*26° 46′* ♑	*1 15 north* [B.]

It is clear, therefore, that the Prutenic calculation comes as close as possible in longitude, in latitude too much, whereas the Alphonsine exceeds by 2 degrees in longitude and nearly agrees in latitude. [Patet itaque quod calculus Prute-/nicus in Longitudine quam proxime / accedit, in Latitudine nimis, Alphon-/ſinus vero in Longitudine 2 gradibus / excedit, in Latitudine fere conuenit.]

11 December, morning [DIE 11 DECEMBRIS, MANE.]

Saturn was observed with the zodiacal armillae in the manner that follows. The armilla having been verified and set to Spica, its place being put at 18° 11′ ♎, the longitude of Saturn was found. At 7ʰ 1ᵐ, when Spica was 7° 42′ [7ᵍ 42′] west, Saturn was at 24° 11′ ♑ and Cor ♌ at 23° 56′ ♌. Cor ♌ should have been at 24° 12′ ♌, 16′ being lacking; therefore the same amount in Saturn, so that its place is at 24° 27′ ♑. [Per Armillas Zodiacales obſerua-/batur ♄ in hunc qui ſequitur modum. / Verificata & diſpoſita Armilla ad / Spicam ♍, conſtituto eius loco / in 18 11 ♎, inueniebatur long. ♄. / H. 7 M. 1 Cum Spica eßet occiden-/talis 7ᵍ 42′, ♄ in 24 11 ♑ / Cor ♌ in 23 56 ♌ / Debuit Cor ♌ eße in 24 12 ♑, / deficientibus 16′, ergo tantun-/dem in ♄, quare Locus eius in / 24 27 ♑.]

At 7ʰ 9ᵐ, declination of Saturn [H.7 M.9 Declin. ♄]	*14° 40½′*
	14° 39¾′
And immediately of Cor ♌ [Et ſtatim Cor-/dis ♌]	*13° 59½′*

Put the observed declination of Saturn at 14° 40′. Corrected 14° 36′. [Pone decl. / ♄ obſerua-/tam 14 40 / Corr. 14 36]

7 13 20	*Cor* ♌	*60 24½ west* [occid.]
7 13 35	*Saturn* [♄]	*59 59*
		25½
	Time added [Tempus add.]	*4*
		29½

7 14 50	*Cor* ♌	*60 51 west* [occid.]
7 15 10	*Saturn* [♄]	*60 24*
		27
	Time [Tempus]	*5*
		32

It was at dawn, and Cor ♌ was seen with difficulty; but by limiting the two earlier observations, let the difference of ascension of Saturn and Regulus be put at 0° 31′ and the declination of Saturn at 14° 37′.[1] [Erat in Aurora & difficulter Cor ♌ / videbatur, ſed limitando duas ante-/riores obſeruationes ponatur diffe-/rentia Aſc. ♄ & Reguli 0 31 & Declin. / ♄ 14 37[1].]

N.B. By the reckoning above, through the zodiacal armillae, the longitude of Saturn comes out at 24° 27′ ♑. By this lower reckoning, through the equatorial armilla, the same Saturn comes out at 24° 26⅔′ ♑. The latitude in both cases comes to 1° 17⅙′ north [B.]. [N.B. Ex ſuperiori ratione per Ar-/millas Zodiacales prouenit

♄ Longi-/tudo in 24 27 ♌. Iuxta hanc inferi-/orem rationem per Armillam æqua-/toriam prouenit idem ♄ in 24 26⅔ ♌, / Latitudo vtrobique euadit 1 17⅙ B.]

16 December, morning [DIE 16 DECEMBRIS, MANE.]

Saturn was observed from the lower head of ♊. [Obſeruabatur ♄ ab inferiori capite ♊]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab / inf. cap. ♊]	Declination of Saturn [Declin. / ♄]
$6^h\ 7^m\ 0^s$	36° 57½′	
$6^h\ 9^m\ 30^s$	36° 58⅓′	14° 42½′
		14° 42′
$6^h\ 11^m\ 45^s$	36° 57′ among clouds [inter nubes]	

Hours, minutes, seconds [H. M. S.]	Vice versa, from Spica [Viceverſa a Spica ♍]	Declination of Saturn [Declin. / ♄]	Spica, east [Spica or.]
$6^h\ 15^m\ 15^s$	53° 59½′	14° 42½′	
$6^h\ 18^m\ 0^s$	53° 58½′	with one [vno]	7 17
$6^h\ 20^m\ 20^s$	53° 59½′		6 40
$6^h\ 23^m\ 0^s$	53° 59½′	14° 42′	6 4
		14° 42⅙′	
Declination of Cor ♌ for correcting the armillae [Declin. Cordis ♌ / pro Armillis corri-/gendis]		13° 54½′ twice [bis]	
		13° 54′	
$6^h\ 47^m\ 10^s$	Distance of Saturn on the equator [Diſt. æquat. ♄]	48° 48¼′	0 4 east [or.]
$6^h\ 48^m\ 15^s$	of Cor ♌ [Cordis ♌]	49° 26′*	0 15½ west [occ.]

*Doubtful because among clouds. [*dubia quia inter nubes.]

20 December, morning [DIE 20 DECEMBRIS, MANE.]

Saturn was observed from the lower head of ♊. [Obſeruabatur ♄ ab inferiori capite ♊.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination of Saturn [Decl. ♄]	Cor ♌, east [Cor ♌ or.]
$2^h\ 54^m\ 25^s$	36° 47′		3 59
$2^h\ 57^m\ 40^s$	36° 47⅓′	14° 46½′	3 13
		14° 45⅓′	
$3^h\ 1^m\ 15^s$	36° 47½′		2 16

[1] In the margin, in another hand, is written: »Right ascension of Cor ♌ 146° 40′ 0″; therefore the right ascension of Saturn 147° 11′ 0″«. [In margine alia manu adſcriptum eſt: »Aſc. R. Cordis ♌ 146 40 0 / Ergo Aſc. R. ♄ 147 11 0«.]

Hours, minutes, seconds [H. M. S.]	Vice versa, from the tail of ♌ [Viceverſa a cauda ♌]	Declination of Saturn [Decl. ♄]	Cor ♌, east [Cor ♌ or.]
$3^h\ 4^m\ 15^s$	24° 16⅓′	14° 47′	1 31
$3^h\ 6^m\ 30^s$	24° 16⅓′	with both [vtroque]	0 59
$3^h\ 7^m\ 35^s$	24° 17′		0 38
$3^h\ 10^m\ 15^s$	Cor ♌ crossed the meridian, having an altitude [Tranſijt Cor ♌ / per Merid. habens Alt.]		

by the steel instrument [per Chalyb.]	48° 0⅓′	
by the revolving quadrant [per Volub.]	48° 0′	
Cor ♌, west [Cor ♌ occid.]		0 1

At $3^h\ 11^m\ 15^s$ Saturn crossed the meridian, having an altitude [3 11 15 tranſijt ♄ / per Merid. habens Alt.]

by the revolving quadrant [per Volub.]	48° 51⅔′	
by the steel instrument [per Chalyb.]	48° 52′	
Cor ♌, west [Cor ♌ occ.]		0 15¼

Declination of Cor ♌ [Decl. Cordis ♌]	13° 55′	Declination of Saturn [Decl. ♄]	14° 46½′
	13° 54½′		14° 47′

Cor ♌ had crossed the meridian, as computed, at $3^h\ 10½^m$.[1] [Cor ♌ tranſierat per Merid. iuxta ſup-/put. H. 3 M. 10½[1].]

On this day Saturn had deviated perceptibly from the straight line drawn from Cor ♌ to the middle, or Bright one, of the neck, and that toward the setting, by as much as the diameter of Saturn would have been, or a little more. From this the conjunction of Saturn and Regulus can be established (it could have been about 3 minutes). [Hoc die ♄ declinarat ſenſibiliter ab / ea recta linea quæ ducitur a Corde ♌ / in mediam ſeu Lucidam ceruicis, id-/que ad occaſum, quantum diameter ♄ / fuißet, vel paulo plus. Hinc conſtare / poteſt de ☌ ♄ & Reguli (poterat eße cir-/citer 3 minuta).]

22 December, morning [DIE 22 DECEMBRIS, MANE.]

Saturn was observed in this way. [Obſeruabatur ♄ in hunc modum.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab / inf. cap. ♊]	Declination of Saturn [Declin. / ♄]	Cor ♌, west [Cor ♌ / occid.]
$4^h\ 57^m\ 50^s$	26° 43′		28 37
$5^h\ 3^m\ 30^s$	26° 42′	14° 49′	29 44
		14° 48½′	
$5^h\ 8^m\ 0^s$	26° 41⅔′		31 2
$5^h\ 9^m\ 40^s$	26° 41½′	14° 49′	31 34
		14° 49½′	

Hours, minutes, seconds [H. M. S.]	Vice versa, from Spica [Viceverſa a Spica ♍]	Declination of Saturn [Declin. / ♄]	Cor ♌, west [Cor ♌ / occid.]
$5^h\ 14^m\ 30^s$	54° 14⅔′		32 35
$5^h\ 16^m\ 30^s$	54° 15¼′		33 4
$5^h\ 18^m\ 20^s$	54° 15¼′	14° 49′	33 37
		14° 48¾′	

Observations of Jupiter [OBSERUATIONES IOUIS.]

25 July [DIE 25 JULIJ.]

Jupiter, tending toward opposition with the Sun, was observed, and that around the meridian, in this way. [Obſeruabatur ♃ tendens in ☍ ☉ idque / circa meridianum in hunc modum.]

Hours, minutes [H. M.]	Distance of Jupiter from the Vulture [Diſt. ♃ a / Vulture]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	The mouth of Pegasus, east [Os Pegaſi / orient.]
$11^h\ 46⅓^m$	40° 22⅓′			5 3
$11^h\ 50⅚^m$	40° 22⅔′			
$11^h\ 54½^m$	40° 22⅓′			2 50

Hours, minutes [H. M.]	Vice versa, from the first of the wing of Pegasus [Viceverſa / a prima alæ Pegaſi]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	The mouth of Pegasus, east [Os Pegaſi / orient.]
$12^h\ 1⅓^m$	31° 17⅙′ better [melior]			
$12^h\ 4½^m$	31° 16½′	14° 41½′	19° 15′	0 20
		14° 41⅓′		
$12^h\ 20⅓^m$	31° 17¼′			
$12^h\ 26⅙^m$	Jupiter was crossing the meridian, having an altitude [Tranſibat ♃ / per Meridianum habens Altit.]			

by the steel instrument [per Chalyb.]	19° 24′
by the revolving quadrant [per Volub.]	19° 23⅙′

These observations are middling, as far as it was possible to take them amid the brightness of the Moon and the rather sparse clouds. But in investigating the place of Jupiter from this side and that, you can proceed by either route, both by right ascensions with respect to the equator and by a triangle with respect to the zodiac; for both fixed stars were placed conveniently enough with Jupiter for setting up this last treatise. [Sunt hæ obſeruationes mediocres, / quantum inter ☾ ſplendorem & nubes / rariuſculas eas accepiße licuit. Potes / autem pro loco ♃ hinc inde indagan-/do vtraque via procedere, tam per / Aſcenſiones rectas reſpectu Æquato-/ris, quam per triangulum reſpectu / Zodiaci, fuerunt enim vtræque fixæ / ad hanc vltimam pragmatiam inſti-/tuendam ſatis commode cum ♃ diſ-/poſitæ.]

27 July [DIE 27 JULIJ.]

Jupiter was observed again, a little before its transit through the meridian, in this way. [Iterum ♃ paulo ante tranſitum per / Merid. in hunc modum obſeruatus eſt.]

Hours, minutes [H. M.]	Distance of Jupiter from the Vulture [Diſt. ♃ a / Vulture]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	Jupiter, east [♃ / orient.]
10^h $44½^m$	40° 12⅓′	14° 46′ 14° 46¼′	17° 30′	19 44

Hours, minutes [H. M.]	Vice versa, from the first of the wing of Pegasus [Viceverſa / a prima alæ Peg.]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	Jupiter, east [♃ / orient.]
10^h $56½^m$	31° 29′			
11^h $0¼^m$	31° 28⅔′			

Hours, minutes [H. M.]	Repeated, from the Vulture [Repetita a Vulture]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	Jupiter, east [♃ / orient.]
11^h $3½^m$	40° 13⅔′ not certain enough [non ſatis certa]			
11^h 6^m	40° 12⅔′			

Observations made among clouds. [Obſeruationes factæ inter nubes.]

[1] Written in the margin. [In margine adſcriptum.]

31 July [DIE 31 JULIJ.]

Hours, minutes [H. M.]	Distance of Jupiter from the lower horn of ♍ [Diſt. ♃ ab / inf. cornu ♍]	Declination [Declin.]	Altitude [Alt.]	The bright star of the tail of the Dolphin, cr. [Luc. / caudæ / Delph. cr.]
$10^h\ 25\frac{5}{6}^m$	25° 16½′		15° 30′	4 17
$10^h\ 33\frac{2}{3}^m$	25° 16¾′	14° 56⅚′		
		14° 56½′		
$10^h\ 41^m$	25° 17′		16° 40′	

Hours, minutes [H. M.]	Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab extr. alæ Peg.]	Declination [Declin.]	Altitude [Alt.]	The bright star of the tail of the Dolphin, cr. [Luc. / caudæ / Delph. cr.]
$10^h\ 49\frac{1}{2}^m$	42° 25½′			2 0
$10^h\ 55\frac{2}{3}^m$	42° 26′			nearly [fere]
$11^h\ 58\frac{1}{2}^m$	42° 25¾′		17° 32½′	

Another observation of Jupiter [Alia ♃ obſeruatio]

Hours, minutes [H. M.]	Distance of Jupiter from the bright star of the Vulture [Diſt. ♃ a / luc. Vult.]	Declination [Declin.]	Altitude [Alt.]	The Vulture, west [Vultur / occ.]
$11^h\ 9\frac{1}{2}^m$	39° 53½′		18° 2½′	18 10
$11^h\ 15\frac{1}{2}^m$	39° 53½′			
$11^h\ 17\frac{5}{6}^m$	39° 54′			

Hours, minutes [H. M.]	Vice versa, from Scheat of Pegasus [Viceverſa a Scheat Peg.]	Declination [Declin.]	Altitude [Alt.]	The Vulture, west [Vultur / occ.]
$11^h\ 23^m$	43° 28⅓′			
$11^h\ 31\frac{1}{2}^m$	43° 28½′	14° 57′		24 11
		14° 57⅓′		
$11^h\ 40\frac{1}{2}^m$	43° 27′ doubtful [dubia]			
$12^h\ 3\frac{1}{6}^m$	Jupiter crossed the meridian, having an altitude [Tranſiuit ♃ / Merid. habens Altitud.]			

by the steel instrument [per Chalyb.]	19° 8¼′
by the revolving quadrant [per Volub.]	19° 8′

These observations are very well suited for investigating the acronychal position of Jupiter, being adapted, that is, to both of the usual methods of calculation. For this evening it was clear well enough, and the air entirely

steady. [Sunt hæ obſeruationes admodum / accommodæ pro ſitu ♃ Acronychio / inquirendo, applicatæ videlicet vtri-/que vſitatæ Calculi methodo. Fuit / enim hac veſpera ſatis bene ſerenum / & aër omnino tranquillus.]

1 August [DIE 1 AUGUSTI.]

Hours, minutes [H. M.]			The Vulture, west [Vultur. / occid.]
$11^h\ 15\frac{2}{3}^m$	Distance of Jupiter from the lower [Diſt. ♃ ab infer.]	25° 11′	19 25
$11^h\ 19\frac{1}{2}^m$	horn of ♉ [cornu ♉]	25° 10½′	

Hours, minutes [H. M.]		Vice versa, from the Vulture [Viceverſa a Vulture]	The Vulture, west [Vultur. / occid.]
$11^h\ 23\frac{1}{4}^m$	among clouds [inter nubes]	39° 47′	21 18
$11^h\ 29\frac{1}{2}^m$		39° $48\frac{2}{3}$′	
$11^h\ 33\frac{1}{2}^m$		39° $48\frac{2}{3}$′	
$11^h\ 36^m$	Declination of Jupiter [Declin. ♃] 15° 1′ 15° 0½′	Altitude of Jupiter [Altit. ♃]	18° 31′

4 August [DIE 4 AUGUSTI.]

In the evening. Jupiter very near opposition with the Sun. [Veſperi. ♃ proxime ☍ ☉.]

Distance of Jupiter from the lower horn of ♉ [Diſt. ♃ ab / inf. cornu ♉]	Declination of Jupiter [Declin. / ♃]	The left shoulder of ♒, east [Sin. hum. / ♒ orient.]	Resp. time corrected [Reſp. tem- / correct.]
24° 47′		3 48	$11^h\ 20^{m}1$
24° 46½′		2 40	$11^h\ 24^m$

Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab extr. alæ Peg.]	Declination of Jupiter [Declin. / ♃]	The left shoulder of ♒, east [Sin. hum. / ♒ orient.]	Resp. time corrected [Reſp. tem- / correct.]
42° 55′	15° 9½′ south [M.] 15° 9′	1 13	$11^h\ 30^m$
42° 56′ doubtful [dubia]		0 44 west [occ.]	$11^h\ 38^m$
42° 55′		1 44	$11^h\ 42^m$

Again, toward the west, from the Vulture [Denuo ad occidentem a Vulture]	Declination of Jupiter [Declin. / ♃]	The left shoulder of ♒, east [Sin. hum. / ♒ orient.]	Resp. time corrected [Reſp. tem- / correct.]
39° 35¾′		3 10	11^h $47\frac{2}{3}^m$
39° 35⅚′		3 47	11^h 50^m

Vice versa, from the first of the wing of Pegasus [Viceverſa a prima alæ Peg.]	Declination of Jupiter [Declin. / ♃]	The left shoulder of ♒, east [Sin. hum. / ♒ orient.]	Resp. time corrected [Reſp. tem- / correct.]
32° 17⅓′		5 21	11^h $56\frac{1}{3}^m$
32° 16′		5 55	11^h $58\frac{2}{3}^m$
32° 16′		6 34	12^h $1\frac{1}{3}^m$

At 12^h 6^m, the meridian altitude of Jupiter [H. 12 M. 6 Altit. ♃ meridiana]

by the steel instrument [per Chalyb.]	18° 57′
by the revolving quadrant [per Volub.]	18° 56½′
the left shoulder of ♒, west [Sin. hum. ♒ occid.]	7.50

This evening it was moderately clear, but with the west wind blowing a little more strongly. [Fuit hac veſpera mediocriter ſere-/num, ſed vento Zephyri paululum ve-/hementius flante.]

5 August [DIE 5 AUGUSTI.]

The clock from the fixed stars. [Horologium a fixis.]

Hours, minutes [H. M.]	Distance of Jupiter from the lower horn of ♉ [Diſt. ♃ ab / inf. cornu ♉]	Declination [Decl.]	Altitude [Altit.]	The left shoulder of ♒, east [Sin. hum. / ♒ or.]
11^h 24^m	24° 39¾′	15° 12½′	18° 23′	1 37
		15° 12′		west [occid.]
11^h $31\frac{5}{6}^m$	24° 39′		18° 36′	0 12
11^h 36^m	24° 39½′			1 16

Hours, minutes [H. M.]	Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab extr. alæ Peg.]	Declination [Decl.]	Altitude [Altit.]	The left shoulder of ♒, east [Sin. hum. / ♒ or.]
11^h $41\frac{1}{2}^m$	43° 2⅚′			2 38
11^h 46^m	43° 2¾′			3 48

Hours, minutes [H. M.]	Again, toward the setting, from the Vulture [Denuo ad occaſum a Vulture]	Declination [Decl.]	Altitude [Altit.]	The left shoulder of ♒, east [Sin. hum. / ♒ or.]
$11^h\ 51^m$	39° 30′			4 58
$11^h\ 53^m$	39° 30¾′			5 26
$11^h\ 56^m$	39° 30¾′			6 17

Meridian altitude of Jupiter [Altit. ♃ Merid.]		7 25[2]
by the steel instrument [per Chalyb.]	18° 55′	
by the revolving quadrant [per Volub.]	18° 54⅙′	

Hours, minutes [H. M.]	Vice versa, from the first of the wing of Pegasus [Viceverſa a prima alæ Peg.]	Declination [Decl.]	Altitude [Altit.]	The left shoulder of ♒, east [Sin. hum. / ♒ or.]
$12^h\ 7⅓^m$	32° 22⅙′			9 5
$12^h\ 9¾^m$	32° 22¼′			9 41
$12^h\ 12⅔^m$	32° 22′			10 24

It was quite clear, and the air quite steady. [Fuit bene ſerenum & aër bene tran-/quillus.]

[1] The times have been computed from the hour angles of the star of Aquarius. [Tempora ex angulis horalibus ſtellæ Aquarii ſupputata ſunt.] [2] Struck through with thin lines. [Lineis tenuibus inducta.]

8 AUGUST [DIE 8 AUGUSTI.]

Hours, minutes [H. M.]	Distance of Jupiter from the lower horn of ♉ [Diſt. ♃ ab / inf. cornu ♉]	The left shoulder of ♒, east [Sin. hum. / ♒ or.]
$11^h\ 9¼^m$	24° 16⅓′	2 33
$11^h\ 16^m$	24° 16¼′	1 7

Hours, minutes [H. M.]	Distance of Jupiter from the Vulture [Diſt. ♃ / a Vulture]	Declination of Jupiter [Decl. / ♃]	The same shoulder, west [Idem hum. / occ.]
$11^h\ 23^m$	39° 16′		0 28
$11^h\ 26⅙^m$	39° 17′		1 23
$11^h\ 31½^m$	39° 16′	15° 19¼′	2 41½
		15° 20′	

Hours, minutes [H. M.]	Distance from the first of the wing of Pegasus [Dist. a prima alæ Peg.]	Declination of Jupiter [Decl. / ♃]	The same shoulder, west [Idem hum. / occ.]
$11^h\ 37^m$	32° 40⅙′		5 14
$11^h\ 43⅓^m$	32° 39½′		doubtful [dubia]
$11^h\ 52^m$	Meridian altitude of Jupiter [Altit. ♃ meridiana]		

by the steel instrument [per Chalyb.]	18° 47½′
by the revolving quadrant [per Volub.]	18° 46⅚′

It was not clear enough. [Non fuit satis serenum.]

The phenomena of Jupiter, computed from the more select observations, two on each side being limited, when it was very near opposition with the simple Sun, so that its acronychal place may afterwards be worked out from them. [Phænomena ♃ supputata ex selectiori-/bus observationibus, binis vtrinque / limitatis, cum proximus esset ☍ / Simplicis ☉is, vnde locus eius / Acronychius postea / enucleatur.]

Day of August [Augusti / die]	Hours, minutes [H. M.]	Longitude of Jupiter [Longit. / ♃]	Latitude [Latitudo]
4	$11^h\ 35^m$	22° 31⅓′ ♒	1° 8′ 45″
5	$11^h\ 45^m$	22° 23′ ♒	1° 8′ 40″

The daily motion in longitude 8¼′; in latitude imperceptible. [Motus diurnus Longit. 8¼′, Latitudinis / insensibilis.]

The altitude when Jupiter was being observed was for the most part 18¾°, so that the refraction in the circle of altitude could be 45″. But I neglected it because of the parallax, which would correct this aberration from the opposite side. [Altitudo quando obseruabatur ♃ / fuit vt plurimum part. 18¾, vnde re-/fractio in circulo Altitudinis esse posset / 45″. Hanc autem neglexi ob paral-/laxin hanc aberrrationem ex adverso / emendaturam.]

On 4 August at $11\frac{3}{5}^h$, our simple Sun 23° 0′ 33″ ♌. From this the time of the opposition of the true motion of Jupiter with the simple Sun is computed to have been [Die 4 Augusti H. $11\frac{3}{5}$ noster simplex / ☉ ♌ 23° 0′ 33″. Hinc supputatur tem-/pus ☍ veri motus ♃ cum simplici ☉ / fuisse]

on 4 August at $1^h\ 10^m$, at 22° 35′ ♒. [Die 4 Augusti H. 1 M. 10 in 22 35 ♒.]

The motion of Jupiter from the Prutenic Tables [Motus ♃ ex Tab. / Prutenicis]	of longitude [Longit.]	4 sixties 57° 53′ 34″ [4sex57°53′34″]

	of the apogee [Apogæi]	2 38 43 35
Our precession of the equinox [Præceßio æquinoctij / noſtra]		0 28 10 24

[1] The codex has 37 24⅓. [Codex habet 37 24⅓.]

4 October, evening [DIE 4 OCTOBRIS, VESPERI.]

Distance of Jupiter from the Vulture [Diſt. ♃ a Vulture]	The left shoulder of ♒, west [Sin. hum. ♒ occ.]
…[1]	0 43
36° 42½′	1 18
36° 42¼′	1 55
Meridian altitude of Jupiter [Altit. ♃ meridiana]	3 2

by the steel instrument [per Chalyb..]	17° 24¾′
by the revolving quadrant [per Volub.]	17° 25′
Declination of Jupiter, south [Decl. ♃ M.]	16° 41′
	16° 41¼′

	Vice versa [Viceverſa]	The left shoulder of ♒, west [Sin. hum. ♒ occ.]
Distance of Jupiter from [Diſt. ♃ ab]	47° 39⅓′	6 2
the outermost of the wing [extrem. alæ]	47° 38¾′	6 48
of Pegasus [Pegaſi]	47° 38¾′	7 24
Declination of Jupiter with both [Decl. ♃ vtroq.]	16° 41′	

8 October [DIE 8 OCTOBRIS.]

Distance of Jupiter from the bright star of the Vulture [Diſt. ♃ a / lucida Vulturis]	Declination of Jupiter [Declin. / ♃]	The left shoulder of ♒, east [Sin. hum. / ♒ or.]
36° 44′		2 32
36° 43½′		1 59
36° 43⅔′	16° 40′	1 22
	16° 40⅙′	

Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab / extrema alæ Peg.]	Declination of Jupiter [Declin. / ♃]	The same shoulder of ♒, west [Idem hum. / ♒ occid.]
47° 38⅙′ between the chasms [inter chasmata]		0 27
47° 37′		1 1
47° 37′		1 31

Transit of Jupiter through the meridian, having an altitude [Tranſitus ♃ / per Merid. habens Altit.]

by the steel instrument [per Chalyb.]	17° 26¼′
by the revolving quadrant [per Volub.]	17° 26′

28 October [DIE 28 OCTOBRIS.]

In the evening Jupiter was observed around the square of the Sun. [Veſperi obſeruabatur ♃ / circa □tum ☉lis.]

Hours, minutes, seconds [*H. M. S.*]	*Distance of Jupiter from the lower horn of* ♉ [*Diſt.* ♃ *ab / inferiori cornu* ♉]	*Declination of Jupiter* [*Decl.* / ♃]	*The Vulture, west* [*Vultur / occid.*]
5h 36m 5s		*16° 20′ south* [*M.*]	
		16° 19⅚′	
6h 6m 20s	*20° 54⅚′*		*21 40*
6h 9m 20s	*20° 56′*		*22 28*
6h 11m 20s	*20° 55′*		*22 59½*
6h 14m 45s	*20° 55⅔′*		*23 45*
6h 16m 50s	*20° 55¾′*	*16° 19½′*	*24 19*
		16° 19′	
6h 22m 36s	*20° 56′*		*25 43*

Hours, minutes, seconds [*H. M. S.*]	*Distance of Jupiter from the lower horn of* ♉ [*Diſt.* ♃ *ab / inferiori cornu* ♉]	*Declination of Jupiter* [*Decl. / ♃*]	*The Vulture, west* [*Vultur / occid.*]
6h 32m 5s	*The rearmost tail of* ♉ *crossed the meridian, and then had an altitude* [*Tranſiuit poſtrema / cauda* ♉ *per Merid., / habuitque tunc Alt.*]		*28 5*
	by the revolving quadrant [*per Volub.*] *16° 12½′*		
	by the steel instrument [*per Chalyb.*] *16° 13¾′*		
6h 33m 45s	*The star Jupiter crossed the meridian, having an altitude* [*Tranſiuit* ♃ *ſtella / Merid. habens Alt.*]		*28 28*
	by the revolving quadrant [*per Volub.*] *17° 49′*		
	by the steel instrument [*per Chalyb.*] *17° 48′*		
	Difference in the transit of the Vulture [*Differentia / in tranſitu Vult.*]		*0 23*

(It was 17 47 by the steel instrument, which agrees more correctly and better with the declination)[1]. [(Fuit per Chalyb. 17 47, quod rec-/tius & melius conuenit cum declina-/tione)[1].]

The clock gave a difference of 1^m 40^s between the transits of the outermost tail of ♍ and of Jupiter, which make 25′ of arc; but the transit of the Vulture through the equatorial armilla gave an ascensional difference of 23′. Taking therefore half of these, which is 24, and adding it to the right ascension of the star, the right ascension of Jupiter will result accurately enough. Its declination, moreover, was less than the declination of the same star by 1° 35½′, and in this way its place near the square of the Sun, at the greatest prosthaphaeresis of the parallax, will become evident. [*Horologium fecit differentiam in / tranſitu extremæ caudæ ♍ & ♃ M. 1 / 40″, quæ faciunt 25 Minuta graduum: / aſt tranſitus Vulturis per Armil-/lam æquatoriam dedit differentiam / Aſcenſionalem 23′, accipiendo ita-/que horum dimidium, quod eſt 24, / & addendo ad Aſc. rectam ſtellæ / prodibit Aſc. recta ♃ ſatis exacte. / Declinatio vero eius minor erat De-/clinatione eiusdem ſtellæ 1 M. 35½′, / & ſic patebit locus eius iuxta Solis / □ in maxima proſtaphæreſi paral-/laxeos.*]

Jupiter was observed again, vice versa, from the outermost of the wing of Pegasus, in the manner that follows. [*Rurſus obſeruabatur ♃ viceuerſa / ab extrema alæ Pegaſi in hunc mo-/dum qui ſequitur.*]

6 46	*Distance of Jupiter* [*Diſt. ♃*]	*46° 40¾′*	*the Vulture* [*Vult.*]	*31 41*
6 48½	*from the outermost* [*ab extr.*]	*46° 40⅔′*	*west* [*occ.*]	
6 50½	*of the wing of Pegasus* [*alæ Peg.*]	*46° 40½′*		*32 45½*
6 54	*Declination of Jupiter* [*Declin. ♃*]			
	with one pinnule [*vno pinn.*]	*16° 19′*		
	with the other [*altero*]	*16° 19¼′*		

And from this the place of Jupiter can also be verified, by comparing its distance from the lower horn of ♍ noted above and by applying the declination from the meridian altitude. Account must, however, be taken of refraction. [*Atque hinc etiam poteſt verificari / locus ♃ conferendo diſtantiam eius / ab inferiori cornu ♍ ſuperius anno-/tatam & adhibendo declinationem / ex Altitudine meridiana. Habenda / tamen eſt ratio refractionis.*]

Investigation of the place of Jupiter from its immediately preceding observations. [Inquiſitio loci ♃ ex obſeruationibus / eius proxime antecedentibus.]

On the 28th, at 6^h 17^m, distance of Jupiter from the lower horn of ♍ [Die 28 H. 6 M. 17 Diſt. ♃ / ab infer. cornu ♍]	20° 55⅔′
Limited declination of Jupiter [Declinatio ♃ limitata]	16° 18′ 0″ south [M.]
Declination of the lower horn of ♍ [Declin. inf. cornu ♍]	15° 57′ south [M.]
Right ascension of the lower horn of ♍ [Aſc. R. inf. cornu ♍]	299° 34′ 0″

Angular difference of ascension [Ang. diff. aſc$^{a|s}$]	21° 47′ 30″
Therefore the right ascension of Jupiter [Ergo Aſc. R. ♃]	321° 21½′
At 6^h 48^m, distance of Jupiter from the outermost of the wing of Pegasus [H. 6 M. 48 Diſt. ♃ / ab extrema alæ Pegaſi]	46° 40⅔′
Declination of the outermost of the wing of Pegasus [Decl. extr. alæ Peg.]	12° 56′
Right ascension of the outermost of the wing of Pegasus [Aſc. R. extr. alæ Peg.]	358° 9½′
Angular difference of ascension [Ang. diff. aſc.]	36° 49½′
Therefore the right ascension of Jupiter [Ergo Aſc. R. ♃]	321° 20′ 0″
At 6^h 34^m, the limited right ascension of Jupiter [H. 6 M. 34 Aſc. R. ♃ limit.]	321° 20′ 45″
Declination of Jupiter [Declin. ♃]	16° 18′
Resp. longitude [Reſp. Longitudo]	18° 43⅚′ ♒
Latitude [Latitudo]	1° 2⅙′ south [M.]

From the calculation [Ex Calculo]	Longitude [Longitudo]	Latitude [Latitudo]
of Copernicus [Copernici]	18° 32′ ♒	0° 53′ south [M.]
Alphonsine [Alphonſino]	18° 45′ ♒	1° 10′ south [M.]

13 November [DIE 13 NOUEMBRIS.]

In the evening Jupiter was observed in this manner. [Veſperi obſeruabatur ♃ in / hunc modum.]

Hours, minutes [H. M.]	Distance of Jupiter from the Vulture [Diſt. ♃ a / Vulture]	Declination of Jupiter [Declin. / ♃]	The bright star of the Vulture, west [Luc. Vult. / occid.]
5^h 20^m	38° 8⅙′		26 5
5^h 23^m	38° 8′	15° 45⅔′ 15° 46′	26 54
5^h 26⅙^m	38° 8½′		27 47

Hours, minutes [H. M.]	Vice versa, from the first of the wing of Pegasus [Viceverſa a prima alæ Peg.]	Declination of Jupiter [Declin. / ♃]	The bright star of the Vulture, west [Luc. Vult. / occid.]
5^h 29^m	33° 59½′		
5^h 30½^m	34° 0⅙′		
5^h 31⅔^m	34° 0′		29 9
5^h 35⅔^m	Jupiter crossed the meridian [Tranſiuit ♃ Merid.]		30 10

having an altitude, by the steel instrument [habens Altit. per Chalyb.]	18° 20⅙′
by the revolving quadrant [per Volub.]	18° 20½′

17 November [DIE 17 NOUEMBRIS.]

In the evening. Jupiter was observed around the meridian, in quadrature with the Sun. [Veſperi. Obſeruabatur ♃ circa Merid. / in □tura ☉.]

At 5^h 20⅚^m Jupiter crossed the meridian at an altitude [H. 5 M. 20⅚ ♃ Meridianum / tranſijt in Altitudine]

by the steel instrument [per Chalyb.]	18° 30⅓′
by the revolving quadrant [per Volub.]	18° 31½′
the bright star of the Vulture, west [Lucida Vult. occid.]	30 41

Hours, minutes [H. M.]	Distance of Jupiter from the bright star of the Vulture [Diſt. ♃ a / lucida Vult.]	Declination of Jupiter [Decl. / ♃]	The Vulture, west [Vultur / occid.]
5^h 27^m	38° 26⅔′	15° 36′	
		15° 35′	
5^h 30½^m	38° 27⅙′		33 12
5^h 33½^m	38° 27′		

[1] Added in another hand (probably Longomontanus's). [Alia manu (probabiliter Longomontani) adſcriptum.]

Hours, minutes [H. M.]	Vice versa, from the first of the wing of Pegasus [Viceverſa a I. alæ Pegaſi]	Declination of Jupiter [Decl. / ♃]	The Vulture, west [Vultur / occid.]
5^h 37½^m	33° 35⅓′		35 2
5^h 40⅓^m	33° 33′		
5^h 43^m	33° 34′		
5^h 46¼^m	33° 35′		37 10
5^h 49⅓^m	33° 35⅙′		
5^h 51⅔^m	33° 34½′	15° 36⅙′	38 32
		15° 35½′	

18 November [DIE 18 NOUEMBRIS.]

Jupiter was observed around the meridian. [Obſeruabatur ♃ circa Meridianum]

4 42	Distance of Jupiter from the Vulture [Diſt. ♃ a Vulture]	38° 30⅙′	
15			
	the Vulture, west [Vultur occid.]		27 30
4 46	*The outermost of the tail of ♍ crossed the meridian, having an altitude*		*the Vulture, west*
15	[*Tranſiuit extrema ♍ caudæ / Mer. habens Alt.*]		[*Vult. occ.*]
	by the steel instrument [*per Chalyb.*]	*16° 14′*	*28 29½*
	by the revolving quadrant [*per Volub.*]	*16° 15′*	

4 54 55	*Jupiter crossed the meridian at an altitude* [*Tranſiuit ♃ / Merid. ſuper Altitudinem*]	*30 39*
	by the steel instrument [*per Chalyb.*]	*18° 33½′*
	by the revolving quadrant [*per Volub.*]	*18° 33′*

The difference in time, 8^m 40^s, makes 2° 10′. [*Differ. in tempore 8^m40^s facit 2° 10′.*]

It therefore corresponds on both sides that the ascensional difference on the equator of Jupiter and the outermost of the tail was 2° 10′, or at the least 9½′. And from this the right ascension of Jupiter can be established, this difference being added to the right ascension of the star. Its declination, moreover, is evident from the meridian altitude, the difference between its own altitude and that of the said star being given or compared. [*Reſpondet itaque vtrinque quod fue-/rit differentia aſcenſionalis in Æqua-/tore ♃ & extremæ caudæ P. 2 M. 10 / vel ad minimum M. 9½. Hincque / Aſcenſio recta ♃ conſtare poteſt, ad-/dita hac differentia ad Aſc. rectam / ſtellæ. Declinatio vero eius patet ex / Altitudine Meridiana, data vel col-/lata differentia Altitudinis ipſius & / dictæ ſtellæ.*]

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the Vulture [Diſt. ♃ / a Vulture]	Declination of Jupiter [Decl. / ♃]	The Vulture, west [Vultur / occid.]
5^h 2^m 50^s	38° 30½′		32 43
5^h 7^m 10^s	38° 30′		33 51
5^h 9^m 53^s	38° 30⅓′	15° 33′ with both [vtroque]	34 36

Hours, minutes, seconds [H. M. S.]	Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab extr. alæ Peg.]	Declination of Jupiter [Decl. / ♃]	The Vulture, west [Vultur / occid.]
5^h 14^m 25^s	44° 26′		35 44
5^h 17^m 45^s	44° 28′		36 32
5^h 20^m 55^s	44° 27⅔′		37 18
5^h 23^m 50^s	44° 28′		38 4

24 NOVEMBER, EVENING [DIE 24 NOUEMBRIS, VESPERI.]

At 4^h 42^m, the meridian altitude of Jupiter [H. 4 M. 42 Altit. ♃ Merid.]

by the steel instrument [per Chalyb.]	18° 51′
by the revolving quadrant [per Volub.]	18° 50½′

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from Venus [Diſt. ♃ / a ♀]	Declination of Jupiter [Dec. / ♃]	Altitude of Venus with the Radius [Alt. ♀ / per Rad.]	The Vulture, west [Vult. / occ.]
$4^h\ 59^m\ 20^s$	22° 56′		8° 0′	
$5^h\ 3^m\ 30^s$	22° 55⅔′	15° 15⅙′ 15° 15½′	7⅔°	37 0

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the Vulture [Diſt. ♃ a Vult.]	Declination of Jupiter [Dec. / ♃]	Altitude of Venus with the Radius [Alt. ♀ / per Rad.]	The Vulture, west [Vult. / occ.]
$5^h\ 7^m\ 40^s$	39° 2′			38 3
$5^h\ 10^m\ 30^s$	39° 2′			38 53

Hours, minutes, seconds [H. M. S.]	Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab extr. alæ Peg.]	Declination of Jupiter [Dec. / ♃]	Altitude of Venus with the Radius [Alt. ♀ / per Rad.]	The Vulture, west [Vult. / occ.]
$5^h\ 13^m\ 20^s$	43° 39′			39 36
$5^h\ 15^m\ 55^s$	43° 38′			40 12
$5^h\ 17^m\ 40^s$	43° 39′	15° 15⅓′ with both pinnules [vtroque pin.]		40 45
$5^h\ 21^m\ 15^s$	43° 39⅙′			41 42

It was exceptionally clear and calm. [Fuit apprime ſerenum & tranquil-/lum.]

3 December, evening [DIE 3 DECEMBRIS, VESPERI.]

At $4^h\ 30^m\ 5^s$ the altitude of Jupiter was observed around the meridian, as soon as it had become clear. The azimuth was then nearly 2° west. [H. 4 M. 30 S. 5 Obſeruabatur Altitudo / ♃ circa meridianum, cum primum / factum eßet ſerenum. Fuit tunc / Azimuth occident. 2° fere.]

by the steel instrument [Per Chalyb.]	19° 21¼′
by the revolving quadrant [per Volub.]	19° 21⅙′
Declination of Jupiter [Declinatio ♃]	14° 46′
	14° 45⅓′

Doubtful because of clouds. [Dubia propter nubes.]

9 December [DIE 9 DECEMBRIS.]

6 19′ 25″	Distance of Jupiter from the Vulture [Diſt. ♃ a Vulture]	40° 33′
	Declination of Jupiter, with both [Declinatio ♃, vtroque]	14° 22′
	Altitude of Jupiter by the lesser quadrant [Altit. ♃ per Q. min.]	11° 0′
	the bright star of the jaw of the Whale, east [Lucid. mand. cete or.]	30 3
6 25 50	Distance [Diſtantia]	40° 33⅔′
	the bright star of the jaw of the Whale [Luc. mand. Cete]	28 24

10 December [DIE 10 DECEMBRIS.]

At 3^h 45⅔^m the star Jupiter crossed the meridian, having an altitude [H. 3 M. 45⅔ Tranſiuit ♃ ſtella meridi-/anum habens Altit.]

by the steel instrument [per Chalyb.]	*19° 46½′*
by the revolving quadrant [per Volub.]	*19° 45½′*
Declination by [Declin. per]	*14° 22′ with one [vno]*
the largest armillae [Armill. max.]	*14° 21′ with the other [altero]*

Afterwards Venus was observed from Jupiter in this manner. [Poſtea obſeruabatur ♀ a ♃ in / hunc modum.]

Hours, minutes [H. M.]	*Distance [Diſt.]*	*Declination [Declin.]*	*Altitude [Altit.]*	*The Vulture, west [Vult. occ.]*
4^h 58^m	*8° 34′*	*Jupiter 14° 22′ Venus 17° 42′*	*Jupiter 17⅔*	*52 37*
5^h 2½^m	*8° 33½′*		*Venus 12⅔*	*53 51*
5^h 6^m	*8° 33¼′*	*Jupiter 14° 21′ Venus 17° 41½′*		*54 34*
5^h 9¾^m	*8° 32½′*		*Jupiter 17¼ Venus 12*	*55 39*

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the left shoulder of ♒ [Diſt. ♃ a / ſin. hum. ♒]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter by the lesser quadrant [Alt. ♃ / per min. Q.]	
5^h 21^m 40^s	11° 40½′		16⅚	uncertain because of the light of the Moon [incerta / propter / lumen ☾]
5^h 25^m 30^s	11° 43½′	14° 21′ 14° 20½′		

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the left shoulder of ♒ [Diſt. ♃ a / ſin. hum. ♒]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter by the lesser quadrant [Alt. ♃ / per min. Q.]	
$5^h\ 28^m\ 45^s$	11° 43½′		16¼	the first of the wing of Pegasus, west [Prima alæ / Peg. occ.]
$5^h\ 33^m\ 20^s$	11° 43′	14° 20′		
		14° 20⅙′		13 14

Hours, minutes, seconds [H. M. S.]	Vice versa, from the bright star of the tail of the Whale, which is in the lower part [Viceverſa a lucida caudæ Cete, quæ / eſt in inferiori parte.]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter by the lesser quadrant [Alt. ♃ / per min. Q.]	
$5^h\ 42^m\ 15^s$	37° 19½′		15⅓	15 29
$5^h\ 45^m\ 15^s$		14° 20½′		16 22
		14° 20′		
$5^h\ 49^m\ 0^s$	37° 21′*		14⅔	17 12
$5^h\ 52^m\ 0^s$	37° 21′*	14° 20⅓′		17 51
	*good [*bonæ]	14° 19⅔′		
$5^h\ 54^m\ 30^s$	37° 20½′		14	18 34
$5^h\ 57^m$	37° 19¾′	14° 20½′		19 15
		14° 20′		
$6^h\ 0^m$	37° 20′			

Put, therefore, at $5^h\ 40^m$ the distance of Jupiter from the left shoulder of ♒ as 11° 43′; from the bright star in the tail of the Whale put the distance as 37° 20½′, and the declination of Jupiter as 14° 20′. From this, investigate its place, and by means of it examine the place of Venus found from the preceding distances, taking account of the motion of Venus in the meantime. [*Pone itaque hora 5 M. 40 diſt. ♃ a / ſiniſtro humero ♒ 11 43, a lucida in / cauda Cete pone diſt. 37 20½ & Declin. / ♃ 14 20, hinc locum eius inueſtiga, & / per ipſum ♀ locum inquiſitum exa-/mina per diſtantias antecedentes, / habita ratione motionis ♀ interea.*]

Afterwards we observed Jupiter with the zodiacal armillae in this way. [*Poſtea per Armillas Zodiacales / ♃ obſeruauimus hoc modo.*]

The armillae having been verified by Aldebaran at 4° 8′ ♊. [*Verificatis Armillis per Aldeboram / in 4ᵍ 8′ ♊.*]

At $6^h\ 37½^m$, the first of the wing of Pegasus being distant 29° 24′ from the meridian, the longitude of Jupiter was 24° 30′ ♒, twice. [*H.6 M.37½, Prima alæ Pegaſi diſtante / a meridiano 29 24, erat ♃ longit. / 24 30 ♒ bis.*]

With the same instrument the apparent declination of Jupiter was 14° 19′, and the altitude of Jupiter 10°. [*Fuit eodem inſtrumento / declinatio ♃ viſa 14 19 / Altitudo ♃ 10 p.*]

For the correction of the clock [Pro correctione horologij]

6^h 48⅙^m [H.6 48⅙′]	the first of the wing of Pegasus, west [Prima alæ Pegaſi occid.]	32 9
6 50⅚		32 49
6 53⅓		33 28

ii December, evening [DIE ii DECEMBRIS, VESPERI.]

At 3^h 43^m 20^s Jupiter crossed the meridian, having an altitude [H.3 43′ 20″ Tranſiuit ♃ / per meridianum habens altitud.]

by the steel instrument [per Chalyb.]	19° 48⅔′
by the revolving quadrant [per Volub.]	19° 48⅚′

Venus was then west by the equator 7 24. [*Fuit ♀ tunc occ. per æquat. 7 24*]

Afterwards Jupiter was observed in the zodiacal armillae. [Poſtea obſeruabatur ♃ in Armillis / zodiacalibus.]

5 32	With the place of Aldebaran set at 4° 8′ ♊, Jupiter at 24° 39′ ♒, [Poſito loco Aldeboræ	
20	in 4 8 ♊ / ♃ in 24 39 ♒,]	
	the mouth of Pegasus, west [Os Pegaſi occ.]	34 48
5 36	the right shoulder of ♒ [Dexter hum. ♒]	27° 45′ ♒
50		
	observed in the same way [*eodem modo obſeruatus*]	
	the mouth of Pegasus, west [Os Pegaſi occid.]	35 56

These observations were made after the zodiacal armillae had today been corrected precisely. [Obſeruationes hæ ſunt factæ, poſt-/quam hodie Armillæ Zodiacales eßent / ad amußim correctæ.]

Then Jupiter was observed in the same way, the armillae having been verified by Aldebaran. [*Deinde ♃ eodem modo obſeruabatur. / Verificatis Armillis per Aldeboram*]

5^h 54^m [*H. 5 54′*]	*as before, Jupiter at* [*vt prius ♃ in*]	*24° 42′ ♒*
	altitude of Jupiter 14⅙, declination of Jupiter [*Altit. ♃ 14⅙, Declin. ♃*]	*14° 16½′ with one* [*vno*]
		14° 17⅓′ with the other [*alt.*]
5 59	*the same place of Jupiter, in the same way* [*Idem locus ♃ eodem modo*]	
	altitude 13¾ [*Altit. 13¾*]	*at 24° 42′ ♒* [*in 24 42 ♒*]

6 1	*the right shoulder of ♒, in the same way* [*Dexter humer. ♒ eodem modo*]	
	altitude of Jupiter 13⅓ [*Altit. ♃ 13⅓*]	*27° 45′ ♒*
	The declination of Jupiter was then [*Fuit tunc ♃ declin.*]	*14° 15′*
		14° 16′

To test the armillae, the declination of the fixed stars was taken: of the right shoulder of ♒, southern, 2° 16′ with one pinnule, 2° 16⅓′ with the other pinnule; of the left shoulder of ♒, 7° 18⅓′, 7° 18′. [*Pro examinandis Armillis capie-/batur declinatio fixarum dextri hu-/meri ♒ auſtrina 2 16 vno pin. / 2 16⅓ alt. pin. / Siniſtri humeri ♒ 7 18⅓ / 7 18*]

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the Vulture [Diſt. ♃ / a Vulture]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Altit. / ♃]	The first of the wing of Pegasus, west [Prima alæ / Peg. occ.]
$6^h\ 25^m\ 10^s$	40° 47½′		11° 30′	28 16
$6^h\ 27^m\ 40^s$	40° 48′	14° 15⅙′		29 0
		14° 15½′		

Hours, minutes, seconds [H. M. S.]	Vice versa, from the lower of the tail of the Whale [Viceverſa ab infer. caudæ Cete]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Altit. / ♃]	The first of the wing of Pegasus, west [Prima alæ / Peg. occ.]
$6^h\ 32^m\ 20^s$	37° 12′	uncertain [incerta]	10° 40′	
$6^h\ 35^m\ 35^s$	37° 10′	14° 15′ with both [vtroque]	10° 20′	
$6^h\ 40^m\ 0^s$	37° 10½′		10° 10′	32 15

15 December, evening [DIE 15 DECEMBRIS, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Declination of Jupiter [Decl. ♃]	Jupiter, west [♃ occid.]
$3^h\ 57^m\ 50^s$		5 38
$4^h\ 2^m\ 55^s$	14° 0⅝′	6 53
	14° 1′	

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the Vulture [Diſt. ♃ / a Vulture]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Altit. / ♃]	The Vulture, west [Vultur. / occid.]
$5^h\ 49^m\ 40^s$	41° 17′	14° 2′	14° 35′	40 28
		14° 1½′		

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the Vulture [Diſt. ♃ / a Vulture]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Altit. / ♃]	The Vulture, west [Vultur. / occid.]
$5^h\ 52^m\ 45^s$	41° 18′		14° 15′	41 22
$5^h\ 54^m\ 50^s$	41° 18′	14° 1½′ with one [vno]	14° 0′	41 51

Hours, minutes, seconds [H. M. S.]	Vice versa, from the bright star of the tail of the Whale [Viceverſa a lucida caudæ Ceti]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Altit. / ♃]	The Vulture, west [Vultur. / occid.]
$6^h\ 2^m$	36° 40′		13° 30′	43 31

No more distances could be taken from this star because of small clouds. [Plures diſtantiæ ab hac ſtella capi / non poterant propter nubeculas.]

Both fixed stars were set nearly level with Jupiter with respect to the horizon, though the Vulture was a little higher. [Fuerunt vtræque fixæ fere cum ♃ / ſitæ ad æquilibrium Horizontis, ſed / Vultur tamen paulo eleuatior.]

Declination of the left shoulder of ♒ [Declinatio ſiniſtri humeri ♒]	7° 14⅔′
for testing the armillae [pro Armillis examinandis]	7° 15′

17 December [DIE 17 DECEMBRIS.]

Hours, minutes, seconds [H. M. S.]	Distance of Jupiter from the Vulture [Diſt. ♃ / a Vulture]	Declination [Declin.]	Altitude [Altit.]	The Vulture, west [Vultur / occid.]
$5^h\ 49^m\ 50^s$	41° 32′		13° 45′	72 3
$5^h\ 52^m\ 30^s$	41° 33′	13° 52½′ 13° 52′	13° 30′	72 42
$5^h\ 57^m\ 0^s$	41° 32½′		13° 5′	73 57

Hours, minutes, seconds [H. M. S.]	Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab extr. alæ Pegaſi]	Declination [Declin.]	Altitude [Altit.]	The Vulture, west [Vultur / occid.]
$6^h\ 1^m\ 45^s$	39° 51⅔′	13° 53′ with both [vtroque]	12° 40′	75 10
$6^h\ 5^m\ 45^s$	39° 51⅓′		12° 20′	76 9
$6^h\ 8^m\ 5^s$	39° 51′	13° 52⅔′ 13° 52½′	12° 5′	76 43

Put, for 6^h, the distance of Jupiter from the bright star of the Vulture — with which it was level with respect to the horizon, so that no sensible refraction entered

into the distance — and let it be 41° 32½′; from the one that is outermost in the wing of Pegasus, however, the distance will then have been 39° 51½′. And so the refraction, raising Jupiter, made the distance a little shorter than it should be. But since its apparent place is established, the true one can easily be found from the tables of parallaxes. [*Pone ad horam 6 diſtantiam ♃ a / lucida Vulturis, cum qua erat in / æquilibrio Horizontis, ideoque nul-/la refractio in diſtantia ſenſibilis in-/gerebatur, ſitque ea 41 32½, ab ea / vero, quæ extrema eſt in ala Pegaſi, / fuerit tunc diſtantia 39 51½. Atque ſic / refractio ♃ attollens diſtantiam pau-/lulum, iuſto breviorem reddidit. Ve-/rum cum locus eius viſus conſtet, / facile verus ex tabulis Parallaxium / perquiri poterit.*]

At 6^h, the right ascension of Jupiter from the Vulture, from the distance stated above [H. 6 Aſcenſ. R. ♃ a Vulture ex diſtan-/ſtantia dicta ſuperius]	328° 24′ 30″
Right ascension of Jupiter from the distance on the equator from the Vulture[1] [Aſc. R. ♃ ex diſt. æquat. / a Vulture[1]]	328° 23′ 30″
At $5½^h$, declination of Jupiter [H. 5½ Declinatio ♃]	13° 52′
At 6^h 0^m, right ascension of Jupiter from the outermost of the wing of Pegasus [H. 6.0 Aſc. R. ♃ / ab extr. alæ Peg.]	328° 22′ 44″
Put at $5¾^h$ the right ascension of Jupiter [Pone H. 5¾ Aſc. R. ♃]	328° 23⅔′

20 December, evening[2] [DIE 20 DECEMBRIS, VESPERI[2].]

Observations of Jupiter from the tail of the Whale [Obſeruationes ♃ a cauda Cete]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	The Vulture, west [Vultur / occ.]
5^h 34^m 30^s	35° 47¼′		14° 40′	70 58
5^h 38^m 30^s	35° 47½′	13° 41′	14° 10′	71 58
		13° 40¾′		
	Declination of Venus [Decl. ♀]	13° 42′ with both [vtroq.]		
5^h 43^m 55^s	35° 47⅔′		13° 40′	73 14

Afterwards Jupiter was observed from the bright star of the Vulture in the manner that follows. [*Poſtea obſeruabatur ♃ a lucida Vul-/turis in hunc qui ſequitur modum.*]

Hours, minutes, seconds [*H. M. S.*]	*Distance* [*Diſt.*]	*Declination of Jupiter* [*Decl. / ♃*]	*Altitude of Jupiter* [*Alt. / ♃*]	
5^h 48⅔^m	*41° 55¼′*	*13° 41′ with one* [*vno*]	*13° 15′*	*the mouth of Pegasus, west* [*Os Peg. / occ.*]
	Declination of Venus [*Decl. ♀*]	*13° 40⅚′ with one* [*vno*]		
5^h 53½^m	*41° 55½′*		*12° 50′*	*47 37*
5^h 55^m	*41° 55⅓′*	*13° 40′*	*12° 35′*	*48 6*
		13° 40½′		

Hours, minutes, seconds [*H. M. S.*]	*Distance* [*Diſt.*]	*Declination of Jupiter* [*Decl. / ♃*]	*Altitude of Jupiter* [*Alt. / ♃*]
	Declination of Venus [*Decl. ♀*]	*13° 42′*	
		13° 41½′	

N.B. These stars, namely the bright star of the Vulture and the tail of the Whale, were at almost the same altitude as Jupiter and Venus, so that as regards the distance the difference due to refraction is insensible. But the other interval, which now has to be taken, for the most part carries down through this one the difference that arises in the refraction. [*N. B. Hæ ſtellæ, vtpote lucida Vul-/turis & cauda Cete, erant in eadem / quaſi altitudine cum ♃ & ♀, vnde quo / ad diſtantiam inſenſibilis eſt diffe-/rentia per refractionem. At altera / intercapedo, quæ iam ſumenda ve-/nit, magna ex parte in refractione / differentiam incidentem per hanc / deuoluit.*]

Afterwards Jupiter was taken from the outermost of the wing of Pegasus. [*Poſtea ſumebatur ♃ ab extrema / alæ Pegaſi.*]

Hours, minutes [*H. M.*]	*Distance* [*Diſt.*]	*Declination of Jupiter* [*Decl. / ♃*]	*Altitude of Jupiter* [*Alt. / ♃*]	*The outermost of the wing of Pegasus, west* [*Extr. alæ / Peg. occ.*]
6^h *27½*^{m}	*39° 12⅔′*	*13° 40′ with one* [*vno*]	*9° 40′*	*18 49*
		Venus 13° 40⅔′ with both [*vtroq.*]		
6^h *30½*^{m}		*Jupiter 13° 39⅔′ with one* [*vno*]	*9° 20′*	*19 41*
6^h *36*^{m}	*39° 13′*		*8° 45′*	*20 57*
6^h *39*^{m}	*39° 13¼′*	*13° 39′*	*8° 25′*	*21 42*
		13° 39⅓′		
		Venus 13° 40′		
		13° 40⅙′		

22 December [DIE 22 DECEMBRIS.]

In the evening Jupiter was observed from the outermost of the wing of Pegasus in this manner. [Veſperi obſeruabatur ♃ ab extrema / alæ Pegaſi in hunc modum.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	The Vulture, west [Vult. / occ.]
5^h 11^m 55^s	38° 55½′			66 10
5^h 13^m 35^s	38° 55½′			66 32
5^h 15^m 35^s	38° 56′	13° 33⅙′	15° 43′	67 4
		13° 33⅓′		

[1] Cf. below, among the observations of Venus. [Cfr. infra inter obſervationes Veneris.] [2] Jupiter and Venus were in conjunction; cf. below, among the

observations of Venus. [Jupiter et Venus in conjunctione erant, cf. infra inter obſervationes Veneris.]

Hours, minutes, seconds [H. M. S.]	Vice versa, from the Vulture [Viceverſa a Vulture]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	The Vulture, west [Vult. / occ.]
$5^h\ 20^m\ 25^s$	42° 10⅔′			68 16
$5^h\ 23^m\ 20^s$	42° 10⅓′			69 0
$5^h\ 25^m\ 10^s$	42° 10⅓′	13° 32′ 13° 32½′	15° 0′	

25 December, evening [DIE 25 DECEMBRIS, VESPERI.]

Hours, minutes, seconds [*H. M. S.*]	*Declination of Jupiter* [*Decl. / ♃*]	*Azimuth of Jupiter, west* [*Azim. / occ. ♃*]	*Altitude of Jupiter* [*Alt. / ♃*]	*The outermost of the wing of Pegasus, west* [*Extr. alæ / Peg. occ.*]
$6^h\ 50^m\ 45^s$	*13° 15′* *with both* [*vtroque*]	*57° 0′*	*5° 14½′*	*30 55*
$6^h\ 55^m\ 24^s$	*13° 14½′* *13° 15′*	*58° 0′*	*4° 42½′*	*32 9*
$7^h\ 0^m\ 8^s$	*13° 13½′* *with both* [*vtroque*]	*59° 0′*	*4° 10⅚′*	*33 16½*
$7^h\ 5^m\ 24^s$	*13° 11⅔′* *13° 12′*	*60° 0′*	*3° 33′*	*34 38*
$7^h\ 9^m\ 28^s$	*13° 10′* *13° 10⅔′*	*61° 0′*	*3° 5⅓′*	*35 41*
$7^h\ 14^m\ 8^s$	*13° 9′* *at least with a single pinnule* [*vnico ſaltem pinn.*]	*62° 0′*	*2° 32′*	*36 49*

It could not be observed any further. [*Non poterat amplius obſeruari.*]

On the same evening Jupiter was observed from the Vulture. [Eadem veſpera obſeruabatur ♃ / a Vulture.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	The Vulture, west [Vult. / occ.]
$6^h\ 7^m\ 5^s$	42° 35′			85 16
$6^h\ 9^m\ 40^s$	42° 35⅔′	13° 19′ 13° 18′	9⅔	85 55
$6^h\ 14^m\ 40^s$	42° 36′			

Hours, minutes, seconds [H. M. S.]	Vice versa, from the tail of the Whale [Viceverſa a cauda Cete]	Declination of Jupiter [Decl. / ♃]	Altitude of Jupiter [Alt. / ♃]	
$6^h\ 17^m\ 55^s$	34° 56¼′	13° 19′ 13° 18⅔′		
$6^h\ 22^m\ 55^s$	34° 56⅔′		9° 10′	the outermost of the wing of Pegasus, west [Extr. alæ / Peg. occ.]
$6^h\ 28^m\ 10^s$	34° 56⅔′	13° 18′ 13° 18⅓′		25 17

While these distances were being observed, both the Vulture and the tail of the Whale were nearly level with Venus and Jupiter with respect to the horizon, so that no refraction crept in here. [Cum hæ diſtantiæ obſeruarentur, / fuit tam Vultur quam cauda Cete in / æquilibrio fere Horizontis cum ♀ & / ♃, adeo vt refractionis inſinuatio hic / nulla eßet.]

26 December, evening [DIE 26 DECEMBRIS, VESPERI.]

The clock having been rectified at noon. Then[1] Jupiter was observed in like manner, as follows. [*Horologio in meridie rectificato. / Deinde[1] ♃ pari ratione ob-/ſeruabatur vt ſequitur.*]

Hours, minutes, seconds [*H. M. S.*]	*Jupiter, west, in azimuth* [♃ *occ. / in Azim.*]	*Altitude of Jupiter* [*Altit. / ♃*]	*Declination of Jupiter* [*Decl. / ♃*]	*Jupiter, west, on the equator* [♃ *occ. in / æquat.*]
$4^h\ 4^m\ 5^s$	*17° 0′*	*19° 29¼′*		*16° 22½′*
$4^h\ 8^m\ 20^s$	*18° 0′*	*19° 19⅓′*	*13° 16½′ with both* [*vtroque*]	
$4^h\ 12^m\ 6^s$	*19° 0′*	*19° 9⅙′*	*13° 16⅓′* *13° 16½′*	*18° 21′*
$4^h\ 15^m\ 58^s$	*20° 0′*	*18° 58′*	*13° 16⅔′*	*19° 21½′*
$4^h\ 19^m\ 45^s$	*21° 0′*	*18° 46½′*		*20° 20′*
$4^h\ 23^m\ 40^s$	*22° 0′*	*18° 33½′*	*13° 15½′* *13° 15⅚′*	*21° 20½′*

N.B. You may trust these observations of Jupiter and Venus, especially those taken today, because they were careful and I myself was present. The air, too, was clear, limpid and calm right up to the setting of both. [*N.B. Potes fidere his obſeruationi-/bus in ♃ & ♀ hodierno præſertim die / habitis, quia fuere diligentes & ipſe-/met aderam. Aër quoque erat ſere-/nus, limpidus & tranquillus vſque / in occaſum vtriuſque.*]

27 December [DIE 27 DECEMBRIS.]

In the evening Jupiter was observed as follows. [Veſperi obſeruabatur ♃ vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Azimuth of Jupiter [Azim. / ♃]	Altitude of Jupiter [Alt. / ♃]	Declination of Jupiter [Decl. / ♃]	Jupiter on the equator, west [♃ in / æquat. occ.]
$4^h\ 7^m\ 40^s$	19° 0′	19° 13′	13° 11′	18° 16′
			13° 11½′	
$4^h\ 11^m\ 50^s$	20° 0′	19° 2½′		19° 20′
$4^h\ 15^m\ 50^s$	21° 0′	18° 51′	13° 12′	20° 21′
			13° 11½′	
$4^h\ 19^m\ 55^s$	22° 0′	18° 39⅓′	13° 11⅔′	21° 24′
			with both [vtroque]	
$4^h\ 23^m\ 45^s$	23° 0′	18° 26⅓′	good [bona]	22° 22½′
$4^h\ 27^m\ 54^s$	24° 0′	18° 12⅔′	13° 11⅓′	23° 20′
			13° 11¼′	
$4^h\ 32^m\ 10^s$	25° 0′	17° 59′		

Afterwards Jupiter and Venus were observed in the same way[2]. [Poſtea obſeruabantur ♃ & ♀ eodem / modo[2].]

28 December [DIE 28 DECEMBRIS.]

Hours, minutes, seconds [H. M. S.]	Declination [Declin.]	Azimuth [Azim.]	Altitude [Altit.]	Jupiter on the equator [♃ in æq.]
$4^h\ 7^m\ 42^s$	13° 5′	20° 0′	19° 5½′	19° 28′
	13° 4′			
$4^h\ 11^m\ 38^s$		21° 0′	18° 53½′	20° 26′
$4^h\ 15^m\ 30^s$	13° 8½′	22° 0′	18° 42⅔′	
	13° 8′			

[1] That is, after the observations of Venus. Among these you will also find observations of Jupiter. [Id eſt, poſt obſervationes Veneris. Inter has etiam obſervationes Iovis inuenies.] [2] See below, among the observations of Venus. [Vide infra inter obſervationes Veneris.]

Hours, minutes, seconds [H. M. S.]	Declination [Declin.]	Azimuth [Azim.]	Altitude [Altit.]	Jupiter on the equator [♃ in æq.]
$4^h\ 19^m\ 35^s$		23° 0′	18° 30½′	22° 21′
$4^h\ 23^m\ 35^s$	13° 7¼′	24° 0′	18° 17′	
	13° 7½′			
$4^h\ 27^m\ 30^s$		25° 0′	18° 2½′	24° 21′

Afterwards Jupiter was observed in a lower position, as before. [Poſtea obſeruabatur ♃ in decliuiori / ſitu vt antea.]

Hours, minutes, seconds [H. M. S.]	Declination [Declin.]	Azimuth [Azim.]	Altitude [Altit.]	The bright star of the jaw of the Whale, east [Luc. mand. / Cete or.]
$6^h\ 53^m\ 20^s$	13° 0½′ 13° 1′	58° 0′	4° 54′	*9 34*
$6^h\ 58^m\ 10^s$		59° 0′	4° 22½′	*8 20*
$7^h\ 2^m\ 40^s$	13° 2′ 13° 2¼′	60° 0′	3° 50⅔′	*7 9*
$7^h\ 7^m\ 42^s$	12° 59′ 12° 59½′	61° 0′	3° 14⅔′	*5 58*
$7^h\ 12^m\ 15^s$	12° 57′ with one [vno]	62° 0′	2° 44⅙′	*4 53*
$7^h\ 17^m\ 10^s$	12° 56′ with one [vno]	63° 0′	2° 11⅓′	*3 39*
$7^h\ 21^m\ 50^s$		64° 0′	1° 41⅓′	2 29
$7^h\ 24^m\ 10^s$		64° 30′	1° 21′	1 54
$7^h\ 26^m\ 0^s$		65° 0′ doubtful [dubia]	1° 7½′	1 22

Jupiter was seen to graze the visible horizon at $7^h\ 35^m$ by the clock. [♃ *viſus eſt Horizontem viſibilem / ſtringere H. 7 M. 35 iuxta horologium.*]

31 DECEMBER [DIE 31 DECEMBRIS.]

Hours, minutes, seconds [H. M. S.]	Azimuth, west [Azim. occ.]	Altitude [Altit.]	Declination [Decl.]	Jupiter, west [♃ occid.]
$4^h\ 14^m\ 5^s$	24° 0′	18° 31′	12° 55⅔′ 12° 55′ nearly [fere]	17 15
$4^h\ 18^m\ 10^s$	25° 0′	18° 16⅔′	12° 55′ 12° 54¼′	
$4^h\ 22^m\ 5^s$	26° 0′	18° 3′	12° 54¾′ 12° 54′	19 11½

Afterwards Jupiter and Venus were observed in equatorial distance². [Poſtea obſeruabantur ♃ & ♀ in æqua-/toria diſtantia².]

Afterwards Jupiter was observed in a lower position. [Poſtea obſeruabatur ♃ in decliuiori / ſitu.]

Hours, minutes, seconds [H. M. S.]	Azimuth, west [Azim. occ.]	Altitude [Altit.]	Declination [Decl.]	The outermost of the wing of Pegasus, west [Extr. alæ / Pegaſi occ.]
$6^h\ 5^m\ 30^s$	50° 0′	9° 17′	12° 51½′ 12° 51⅓′	23 44
$6^h\ 10^m\ 10^s$	51° 0′	8° 50′	12° 51⅓′ 12° 51⅙′	

Hours, minutes, seconds [H. M. S.]	Azimuth, west [Azim. occ.]	Altitude [Altit.]	Declination [Decl.]	The outermost of the wing of Pegasus, west [Extr. alæ / Pegaſi occ.]

Observations of Mars [OBSERUATIONES MARTIS.]

3 January, evening [DIE 3 JANUARIJ, VESPERI.]

Mars crossed the meridian, having an altitude [Tranſiuit ♂ / meridianum habens altitudinem]

by the steel quadrant [per Q. Chalyb.]	41° 50′
by the revolving quadrant [per Q. Volub.]	41° 49⅔′
Declination by the armillae [Declinatio per Armillas]	7° 45¼′
	7° 45′

Corrected clock [Horologium / correctum]	Distance of Mars from the outermost of the wing of Pegasus [Diſt. ♂ ab / extr. alæ Peg.]	The bright shoulder of Orion, east [Luc. hum. / Orion or.]
$6^h\ 0^m$	19° 13⅔′	57 46
$6^h\ 5^m$	19° 13⅚′	56 24
$6^h\ 9^m$	19° 14′	
$6^h\ 11^m$	19° 13⅚′	

Corrected clock [Horologium / correctum]	Vice versa, from the eye of ☿ [Viceverſa ab oculo ☿]		The bright shoulder of Orion, east [Luc. hum. / Orion or.]
$6^h\ 15½^m$	45° 51′	Declination of Mars [Declin. ♂]	53 48
$6^h\ 20^m$	45° 51⅔′	7° 45′	
		7° 45½′	
$6^h\ 25^m$	45° 50⅚′		
$6^h\ 30½^m$	45° 20½′	Transit of the bright star of the shoulder of Orion through the meridian at $9^h\ 50⅔^m$, as computed [Tranſitus luc. hum. / Orionis per merid. H. 9 50⅔′ iuxta / ſupput.]	

For the place of Mars from the observations adjoined. [Pro loco ♂ / ex adiunctis obſeruationibus.]

At $6^h\ 5^m$, distance of Mars from the outermost of the wing of Pegasus [H. 6 M. 5 Diſt. ♂ ab extr. / alæ Peg.] 19° 13′ 50″

Declination of the wing, north [Declin. alæ B.]	12° 55½′
Angular difference of ascension [Angulus differ. aſc.]	18° 50′ 3″
Right ascension of the outermost of the wing [Extr. alæ Aſc. R.]	358° 8′ 10″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	16° 58′ 13″
At 6^h 20^m, distance of Mars from Aldebaran [H. 6 M. 20 Diſt. ♂ ab Aldeb.]	45° 51′ 0″
Declination of Aldebaran [Declin. Aldeb.]	15° 38′ north [B.]
Angular difference of ascension [Ang. differ. aſc.]	46° 13′ 8″
Therefore from this the right ascension of Mars [Ergo hinc Aſc. R. ♂]	16° 57′ 17″
At 6^h 12^m, the limited right ascension of Mars [H. 6 M. 12 Aſc. R. ♂ limitata]	16° 57′ 40″
Declination of Mars [Declin. ♂]	7° 44½′
Resp. longitude [Reſp. Longitudo]	18° 36′ 6″ ♈
Latitude [Latitudo]	0° 27′ 57″ north [B.]

14 February [DIE 14 FEBRUARIJ.]

Mars was observed when it was near its greatest digression from the mean motion, with respect to the annual orb, so that for this [Obſeruabatur ♂ cum eßet circa ma-/ximam digreßionem a medio motu, / reſpectu orbis annui, vnde pro huius]

[1] See below. [Vide infra.]

semidiameter's correction these observations are especially useful. [ſemidiametro corrigenda imprimis / conducunt hæ obſeruationes.]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a / luc. ♈]	Declination of Mars [Decl. ♂]	Altitude [Altit.]	The bright shoulder of Orion, east [Luc. hum. / Orion. or.]
6^h 34^m	15° 45⅓′	17° 20′ 17° 20½′	44° 0′	
6^h $41½^m$	15° 45½′			5 40
6^h $52½^m$	15° 45⅔′			

Hours, minutes [H. M.]	Vice versa, from the eye of ♉ [Viceverſa ab oculo ♉]	Declination of Mars [Decl. ♂]	Altitude [Altit.]	The bright shoulder of Orion, east [Luc. hum. / Orion. or.]
6^h 58^m 40^s	20° 8′			1 3
7^h 3^m	20° 8′ nearly [fere]	17° 21′ with both [vtroq.]		0 8
7^h 11^m 20^s	20° 7⅓′			

29 November, morning [DIE 29 NOUEMBRIS, MANE.]

Let a careful watch be kept for Mars before dawn, in case it can by chance be seen and observed[1]. [*Attendatur diligenter ad ♂ ante / Auroram ſi forte videri & obſeruari / queat[1].*]

Mars was observed, appearing for the first time and *having recently emerged from the rays of the Sun.* [Obſeruabatur ♂ primo apparens & / *nuper egreſſus radios* ☉.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from Spica ♍ [Diſt. ♂ / a Spica ♍]	Declination of Mars [Decl. ♂]	Altitude of Mars by the lesser quadrant [Alt. ♂ / per Min. Q.]	Cor ♌, west [Cor ♌ / occ.]
$6^h\ 32^m\ 50^s$	30° 20′		5⅓°	
$6^h\ 40^m\ 10^s$		16° 56⅔′	by the revolving quadrant [per Volub.]	
		16° 56′ nearly [fere]	5° 55′	
$6^h\ 46^m\ 50^s$	30° 15′			32 36½
$6^h\ 54^m\ 0^s$		16° 59′	7° 52′	
		16° 58′		

These distances of Mars could not be observed more exactly, both because of the nearness of the Moon to Mars and because of the dawn. The declinations are middling. [Hæ in ♂ diſtantiæ exactius obſer-/uari non poterant, tum ob ☾ vicinita-/tem cum ♂ tum Auroram. Declina-/tiones mediocres ſunt.]

N.B. At about this time Mars was in a straight line with the southern scale of ♎ and the third of the southern wing of ♍, as far as we could discern with the eyes, and it is nearly in a straight line with the tail of ♌ and Spica. [N. B. Fuit ♂ circa hoc tempus in / recta linea cum meridionali lance ♎ / & tertia meridionalis alæ ♍, quantum / diſcernere oculis potuimus, & eſt fere / cum cauda ♌ & Spica in recta linea.]

Investigation of the place of Mars from the observations above. [Inueſtigatio loci ♂ ex ſuperioribus / obſeruationibus.]

At $6^h\ 40^m$, distance of Mars from Spica [H. 6 M. 40 Diſt. ♂ a Spica]	30° 20′
Add for refraction in distance [Adde pro refract. in / diſt.]	4
True distance [Vera diſtantia]	30° 24′
True declination of Mars, south [Declin. ♂ vera M.]	17° 5′
Declination of Spica ♍, south [Declin. Spicæ ♍ M.]	8° 59′
Right ascension of Spica [Aſc. R. Spicæ]	196° 0′ 30″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	226° 8′ 0″
Resp. longitude [Reſp. Longitudo]	18° 31′ 0″ ♏
Latitude [Latitudo]	0° 19½′ north [B.]

	Copernican calculation [Calculus Copernici]	Alphonsine [Alphonſinus]
Longitude [Long.]	18° 13′ ♏	18° 10′ ♏
Latitude [Lat.]	0° 9′ north [B.]	0° 6′ north [B.]

These observations of Mars are not as certain as the following ones of 10 December. [*Hæ non ita certæ ſunt in* ♂ *obſer-/uationes atque ſequentes die 10 De-/cembris.*]

Repetition of the calculation from the observation of Mars made on 29 November, for determining its latitude near the conjunction with the Sun[2]. [Reiteratio calculi ex obſeruatione / ♂ die 29 Nouemb. habita pro eius la-/titudine circa ☌ ☉ dignoſcenda[2].]

At $6\frac{3}{5}^{h}$, distance of Mars from Spica ♍ [H. 6⅗ Diſtantia ♂ a Spica ♍]		30° 20′
Its observed declination [Declin. eius obſeruata]		16° 57′
From this, applying the prescribed place of Spica, there results [Hinc adhibito præſcripto / Spicæ loco prodit]		
Angular difference of ascension [Ang. diff. aſc.]		30° 40′
And therefore [Atque propterea]		
Right ascension of Mars [Aſc. R. ♂]		226° 5⅓′
Resp. longitude [Reſp. Longitudo]	apparent [viſæ]	18° 26¼′ ♏
Latitude [Latitudo]		0° 26½′ north [B.]
Altitude of Mars from the horizon [Altitudo ♂ ab horizonte]		5° 30′
Resp. refraction [Reſp. Refr.]	9′ 30″	
Parallax [Parall.]	1 50	
Difference [Differentia]	7 40	
Refraction in longitude [Refract. Longit.]	5¼ added [add.]	
Latitude [Latit.]	6 subtracted [ſubt.]	
Therefore the true longitude [Ergo vera longitudo]		18° 31½′ ♏
latitude [latitudo]		0° 20½′ north [B.]

10 December, morning [DIE 10 DECEMBRIS, MANE.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from Spica ♍ [Diſt. ♂ / a Spica ♍]	Declination of Mars [Decl. / ♂]	Altitude of Mars [Alt. / ♂]	Spica on the equator, east [Spica in / æquat. or.]
$6^{h}\ 10^{m}\ 10^{s}$	37° 55¾′		8° 25′	0° 15′
$7^{h}\ 11\frac{3}{4}^{m}$ corrected [corr.]	good [bona]			west [occid.]
$6^{h}\ 19^{m}\ 30^{s}$	37° 55′	19° 3′		2° 3′
$7^{h}\ 21^{m}$ corrected [corr.]		19° 0⅓′ good [bona]		
$6^{h}\ 22^{m}\ 45^{s}$	37° 56½′			2° 54′

Mars was very faint because of the dawn. [Fuit admodum exilis ♂ propter Au-/roram.]

Put, at $7^{h}\ 15^{m}$, the distance of Mars from Spica as 37° 55½′ and its declination as 19° 1′ south; from this the apparent longitude and latitude of Mars will be given. By parallax and refraction: then take the refraction of the stars at altitude 8½, and subtract from it the mean parallax of the Sun; with the remainder, look up in the Table

of Parallaxes the side of longitude and latitude, and both parallaxes. [*Pone H. 7 M. 15 ♂ diſtantiam a Spi-/ca 37 55½ & declinationem eius 19 1 / Meridionalem, hinc dabitur Longi-/tudo & Latitudo ♂ viſa. Per Paral-/laxin & refractionem: accipiatur de-/inde refractio ſtellarum in altitudine / 8½ & hinc dematur media Parallaxis / ⊙, cum reſiduo quæratur in Tab. / Parallaxium latus long. & lat. atque / Parallaxes ambæ.*]

[1] Compare above, p. 336. [Cf. ſupra p. 336.] [2] From codex V. Compare T. V p. 336. [E codice V. Cf. T. V p. 336.]

For the place of Mars from the observations of 10 December, morning. [Pro loco ♂ ex obſeruationibus / die 10 Decembris Mane.]

At 7^h 15^m, distance of Mars from Spica [H. 7 M. 15 Diſt. ♂ a Spica]	37° 55½′
Apparent declination of Mars [Declin. ♂ viſa]	19° 1′
Declination of Spica [Declin. Spicæ]	8° 59′
Right ascension of Spica [Aſc. R. Spicæ]	196° 0′
Angular difference of ascension [Ang. diff. aſc.$^{a^{l}i^{s}}$]	37° 47′ 10″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]	233° 47′ 10″
Resp. longitude [Reſp. Longitudo]	26° 2′ 34″ ♏
Latitude [Latitudo]	0° 19′ 34″ north [B.]

For the refraction and parallax of Mars at altitude 8½. [Pro refractione & parallaxi / ♂ in altit. 8½.]

Refraction [Refractio]	6′ 30″
Parallax [Parallaxis]	1 30 subtracted [ſubt.]
Remaining refraction of altitude [Relicta refractio altit.]	5 0
Resp. in longitude [Reſp. in longum]	2 23 added [add.]
in latitude [latum]	4 20 subtracted [ſubt.]
Therefore the true longitude of Mars [Ergo vera ♂ Longitudo]	26° 5′ ♏
Latitude [Latitudo]	0° 15¼′ north [B.]

Copernican calculation [Calculus Copern.]	Longitude [Long.] 25° 51′ ♏	Latitude [Lat.] 0° 8′ north [B.]
Alphonsine [Alphonſ.]	26° 1′ ♏	0 4 north [B.]

Here the Alphonsine calculation comes closer in longitude, the Prutenic in latitude, but both have too little in latitude. [*Hic Alphonſinus calculus propius / accedit in Longit., Prutenicus in la-/titudine, ſed ambo in latitudine ni-/mis parum habent.*]

28 December, morning [DIE 28 DECEMBRIS, MANE.]

We watched Mars when the Moon, very much horned, was moving toward its meeting with it in a visible coupling, from which, however, it stood about a degree away. For a straight line drawn through the tip of each horn of the Moon left Mars about one degree toward the east, roughly [emplati], at 7^h in the morning. Mars, however, was much more northerly than the Moon itself. Mars appeared like a star of the 3rd magnitude. [*Attendimus ad ♂ cum ☾ admodum / corniculata ad ipſius congreßum ap-/plicaret viſibili copula, a qua tamen / circiter gradum diſtabat. Nam linea / recta per apicem vtriuſque cornu / ☾ ducta, relinquebat ♂ quaſi vno gra-/du verſus ortum emplati hora 7. A. M. / Fuit autem ♂ ipſa ☾ multo ſeptentri-/onalior. ♂ apparebat inſtar ſtellæ 3 / magnitudinis.*]

The clock had not been corrected since the previous day, so the times are to be corrected from the distance of Spica from the meridian. [*Horologium ab heſterna die non / erat correctum, quare tempora ex / diſtantia Spicæ a meridie emen-/danda.*]

First, however, the star Mars was observed in this way. [*Obſeruabatur autem primo / ♂ ſtella hoc modo.*]

Time, hours, minutes, seconds [*Tempus / H. M. S.*]	*Distance of Mars from Spica* [*Diſt. ♂ a / Spica*]	*Declination of Mars* [*Decl. ♂*]	*Altitude* [*Altit.*]	*Spica from the meridian* [*Spica a / merid.*]
7^h 0^m 0^s		21° 39½′	7° 10′	13° 20′
7^h 2^m 50^s	50° 32′	21° 41′	7° 30′	14° 30′
7^h 8^m 24^s	50° 33½′	21° 41′	7° 50′	15° 34′
7^h 12^m 55^s	50° 35′	21° 40′	8° 5′	16° 40′
7^h 16^m 55^s	50° 33½′	21° 40½′	8° 30′	17° 40′
7^h 21^m 10^s	50° 31′ *doubtful* [*dub.*]	21° 41½′	9° 20′	

To test the instrument and investigate the refractions, Spica and Cor ♏ were taken in this way. [*Pro examinando inſtrumento & / rimandis refractionibus capiebatur / Spica & Cor ♏ hoc modo.*]

At 7½^h, when Spica was 21° 0′ from the meridian, it was 45° 56½′ from cor ♏. The declination of cor ♏ itself was then 25° 17′, and its altitude 7¼°. [*H. 7½ Cum Spica eßet a meridiano / p. 21 0′, diſtabat a corde ♏ p. / 45 56½′. Fuit tunc declinatio ip-/ſius cordis ♏ p. 25 M. 17 & alti-/tudo p. 7¼.*]

N.B. Put at 7¼^h the distance of Mars from Spica as 50° 34′ and the declination as 21° 41′. [*N. B. Pone hora 7¼ diſtantiam ♂ / a Spica p. 50 M. 34 & declinationem / 21 41.*]

N.B. The true declination of cor ♏ ought now to have been 25° 25′. Therefore refraction diminished it by 8′, and the true distance from Spica is 45° 56⅙′, which differs imperceptibly. [*N. B. Vera declinatio Cordis ♏ / nunc eße debuit P. 25 M. 25. Ergo re-/fractio eam 8 minutis minuit, & di-/ſtantia a Spica vera eſt 45 56⅙, quod / inſenſibiliter differt.*]

Observations of Venus [OBSERUATIONES VENERIS.]

28 October [DIE 28 OCTOBRIS.]

In the evening Venus was observed. [Veſperi obſeruabatur ♀.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from Jupiter [Diſt. ♀ a / ♃]	Declination of Venus [Decl. / ♀]	Altitude of Venus with the Radius [Alt. ♀ / per Rad.]	The Vulture, west, on the equator [Vult. occ. / in æquat.]
$5^h\ 49^m\ 50^s$	50° 25′	25° 36⅙′		
$5^h\ 54^m$	50° 23⅔′	with one pinnule [vno pin.]	1° 20′	18° 42½′

But this observation is hardly sufficient, because Venus was very low, 1½° high. [*Sed hæc obſeruatio vix eſt ſuffi-/ciens, quia valde fuit decliuis ♀ 1½ / grad. alta.*]

18 November [DIE 18 NOUEMBRIS.]

Venus was observed heliacal, tending toward its greatest digression from the Sun. [Obſeruabatur ♀ Heliaca tendens ad / maximam digreßionem a ☉.]

Correct the clock yourself from the equatorial distances, because we first directed approximately [ἐν πλάτει] toward the Sun. [Corrige ipſe horologium ex diſtan-/tijs æquatorijs, quia ἐν πλάτει ad ☉ / primum direximus.]

Hours, minutes, seconds [H. M. S.]	Distance between Venus and Jupiter [Diſt. inter / ♀ & ♃]	Declination of Venus [Decl. / ♀]	Altitude by the lesser quadrant [Alt. per / Q. min.]	The Vulture, west [Vultur / occid.]
$4^h\ 13^m\ 45^s$	28° 47′	24° 9½′	8½	
		24° 10⅓′		
$4^h\ 22^m\ 10^s$	28° 46½′		7½	22 11
$4^h\ 26^m\ 0^s$	28° 44⅔′	24° 10⅙′		23 12
		24° 10′		
$4^h\ 33^m\ 10^s$	28° 44⅙′		7⅓	

19 November [DIE 19 NOUEMBRIS.]

In the evening Venus was observed heliacal, from Jupiter. [Veſperi obſeruabatur ♀ Heliaca a ♃.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from Jupiter [Diſt. ♀ a / ♃]	Declination of Venus [Decl. / ♀]	Altitude by the lesser quadrant [Alt. per / min. Q.]	Jupiter, east, equat. [♃ or. / æquat.]
$4^h\ 41^m\ 15^s$	27° 48′	23° 58½′	9⅓°	12 1
		23° 58⅔′		
$4^h\ 47^m\ 50^s$	27° 46½′		8⅔°	10 27
$4^h\ 53^m\ 15^s$	27° 46′	23° 58⅙′	8⅓°	9 5
$5^h\ 3^m\ 0^s$	27° 45½′		8° 0′	6 49

Hours, minutes, seconds [H. M. S.]	Distance of Venus from Jupiter [Dist. ♀ a / ♃]	Declination of Venus [Decl. / ♀]	Altitude by the lesser quadrant [Alt. per / min. Q.]	Jupiter, east, equat. [♃ or. / æquat.]

N.B. We corrected the clock at $5\frac{1}{2}^{h}$, because it had then run 21^{m} faster than it should since noon; and so we took away from it again the small piece of lead that had been added to its weight at noon. [N. B. Correximus horologium H. 5½, / quod tunc citius iusto promotum fuit / a meridie 21 M., ideoque particulam / plumbi ponderi eius in meridie adiec-/tum rursus ei detraximus.]

3 December, evening [DIE 3 DECEMBRIS, VESPERI.]

At 4^{h} 30^{m}, declination of Venus [H. 4 M. 30 Declinatio ♀]	20° 19′ 20° 19⅔′

9 December [DIE 9 DECEMBRIS.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Dist. ♀ a / Vulture]	Declination of Venus [Decl. / ♀]	Altitude of Venus [Alt. / ♀]	The last of the wing of Pegasus, west [Vlt. alæ / Peg. occ.]
5^{h} 51^{m} 20^{s}	35° 39′1	18° 0⅙′ 17° 59⅔′	7° 0′	4 37

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Dist. ♀ a / Vulture]	Declination of Venus [Decl. / ♀]	Altitude of Venus [Alt. / ♀]	The bright star of the jaw of the Whale, east [Luc. mand. / Ceti or.]
5^{h} $59\frac{1}{3}^{m}$	35° 57½′		6½°	35 24

From these distances you can investigate the place of Venus, which is to be used in finding the place of the Moon. [Ex his distantijs potes inuestigare / locum ♀ in ☾ loco inquirendo vsurpan-/dum.]

But it should rather be seen on the following day what the place of Venus was at about $3\frac{1}{2}^{h}$ from Jupiter; and this is to be applied here by its daily motion, since it is now at its greatest distance from the Sun. [*Sed videndum potius sequenti die, / quis fuerit locus ♀ circa horam 3½ / ex ♃, & is per motum eius diurnum / cum iam sit in maxima remotione a / Sole huc applicandus.*]

10 December [DIE 10 DECEMBRIS.]

At 3^{h} $13\frac{1}{2}^{m}$ the star Venus crossed the meridian, having an altitude [*H. 3 13½′ Transiuit ♀ stella per meri-/dianum habens altit.*]

by the steel instrument [*per Chalyb.*]	*16° 26⅔′*
by the revolving quadrant [*per Volub.*]	*16° 24′*
Declination of Venus with one pinnule [*Declin. ♀ vno pinnac.*]	*17° 43′*
with the other [*altero*]	*17° 42⅓′*
True [*Vera*]	*17° 42½′*

At 3^h 16^m the lower limb of the Sun was seen to go below the horizon. [*H. 3 16′ Inferior limbus ⊙ ſubire / Horizontem viſus eſt.*]

3 19, the same altitude [*3 19 Altit. eadem*]	
by the steel instrument [*per Chalyb.*]	*16° 25½′*
by the revolving quadrant [*per Volub.*]	*16° 23½′*
Altitude [*Altitudo*]	*34° 5½′*
by the declination [*per declinationem*]	*17° 42′*
	16 23

From this it is clear that the altitude taken by the revolving quadrant is rather to be trusted than that taken by the steel instrument. But it must be examined by the stars. [*Hinc patet quod potius fidendum / altitudini per Q. Volubilem ſumptæ, / quam per Chalyb. Sed examinan-/dum per ſtellas.*]

Afterwards Venus was observed in this way. [*Poſtea ♀ obſeruabatur in hunc mo-/dum.*]

N.B. The place of Venus is to be sought by △ from the following. [*N.B. Locus ♀ per △ ex ſequentibus / quærendus.*]

Hours, minutes [*H. M.*]	*Distance of Venus from the Vulture* [*Diſt. ♀ / a Vult.*]	*Declination of Venus* [*Decl. / ♀*]	*Altitude by the lesser quadrant* [*Alt. per / min. Q.*]	*The Vulture², west* [*Vultur² / occ.*]
4^h 22^m	*36° 20′*	*17° 43′* *17° 42½′*	*15° 0′*	
4^h 26½^m	*36° 21′*		*14⅔°*	*44 30*
4^h 30^m	*36° 21⅙′*		*14½°*	*45 33*
4^h 39^m corrected [corr.]				
4^h 33^m	*36° 20½′*	17° 42⅓′ 17° 43′	*14⅓°*	

Hours, minutes [*H. M.*]	*Venus from the first of the wing of Pegasus* [*♀ a prima alæ Pegaſi*]	*Declination of Venus* [*Decl. / ♀*]	*Altitude by the lesser quadrant* [*Alt. per / min. Q.*]	*The Vulture², west* [*Vultur² / occ.*]
4^h 39^m	*37° 47½′*			*47 44*

Hours, minutes [*H. M.*]	*Venus from the first of the wing of Pegasus* [♀ *a prima alæ Pegaſi*]	*Declination of Venus* [*Decl. /* ♀]	*Altitude by the lesser quadrant* [*Alt. per / min. Q.*]	*The Vulture*[2]*, west* [*Vultur*[2] */ occ.*]
4^h $48^2/_3{}^m$ corrected [corr.]				
4^h 41¼^m		*17° 42′*	*14⅙°*	*48 18*
		17° 41⅚′		
4^h 45½^m	*37° 48⅔′*			*49 18*
4^h 47^m	*37° 47½′*		*13⅔°*	*49 55*
4^h 51^m	*37° 46¼′*	*17° 42⅓′*		*50 49*
		17° 42⅔′		
4^h 54¼^m	*37° 46′*		*13⅙°*	*51 37*

Put, therefore, at about 4^h¾, the distance of Venus from the Vulture as 36° 21′, and at the same time from the first of the wing as 37° 48′, the declination as 17° 42′, the altitude as 14. [*Pone igitur circa horam 4¾ diſt.* ♀ */ a Vulture 36 21 & eodem tempore a / prima alæ 37 48, Declinationem 17 42, / Altit. 14.*]

Afterwards Venus was observed from Jupiter in this way. [*Poſtea obſeruabatur* ♀ *a* ♃ *in hunc / modum.*]

[1] Tycho wrote beside it: *59, I think.* [Tycho adſcripſit: *59 puto.*] [2] Added in another hand: the Vulture crossed the meridian, according to computation, at 1^h $36^2/_3{}^m$. [Alia manu adſcriptum eſt: Vultur per Merid. tranſiuit iuxta ſupp. H. 1 M. 36⅔.]

Hours, minutes [*H. M.*]	*Distance* [*Diſt.*]	*Declination* [*Decl.*]	*Altitude* [*Altit.*]	*The Vulture, west* [*Vult. occ.*]
4^h 58^m	*8° 34′*	♃ *14° 22′*	♃ *17⅔*	*52 37*
		♀ *17° 42′*		
5^h 2½^m	*8° 33½′*		♀ *12⅔*	*53 51*
5^h 6^m	*8° 33¼′*	♃ *14° 21′*		*54 34*
		♀ *17° 41½′*		
5^h 9¾^m	*8° 32½′*		♃ *17¼*	*55 39*
			♀ *12*	

Afterwards we observed Venus by the zodiacal armillae in this way. [*Poſtea per Armillas zodiacales / obſeruauimus* ♀ *hoc modo.*]

With the armillae verified by Aldebaran at 4° 8′ ♉, *Venus appeared at 6^h 16^m in* [*Verificatis Armillis per Aldeboram / in 4 g. 8′* ♉ *apparuit* ♀ */ H. 6 16′ in*]	*16° 5′* ♒
And soon the bright tail of ♏ *was seen by the same instrument in* [*Et mox lucida cauda* ♏ *fuit / per idem inſtrumentum viſa in*]	*18° 0′* ♒
The first of the wing of Pegasus, west, was then [*Fuit tunc prima alæ Peg. occ.*]	*23 54*

This little star, however, was at the same altitude as Venus, about 5½°, and therefore the refraction was the same. [*Erat autem hæc ſtellula in eadem / cum ♀ Altitudine quaſi 5½ g., ideoque / refractio eadem.*]

But since the place of the star ought in truth to have been 5′ earlier at this time, the same amount must therefore also be taken from the place of Venus, so that the longitude of Venus was then 16° 0′ ♒. [*At cum ſtellæ locus deberet eße 5′ / anterior re vera hoc tempore, igitur / etiam tantundem Veneris loco detra-/hendum, vt fuerit tunc Longitudo ♀ / 16 0 ♒.*]

ii December, evening [DIE ii DECEMBRIS, VESPERI.]

At 3^h 17^m 0^s Venus crossed the meridian, having an altitude [H. 3 17′ 0″ Tranſiuit ♀ / per Meridianum habens altitud.]	
by the steel instrument [per Chalyb.]	16° 45¾′
by the revolving quadrant [per Volub.]	16° 45⅔′
Declination of Venus, south, with both pinnules [Decl. ♀ auſt. vtroque pin.]	17° 20′

The lower limb of the Sun set at 3^h 20¼^m [*Inferior limbus ☉ / occid. hora 3 M. 20¼*]	
The upper limb of the Sun set at 3^h 25⅙^m [*Superior limbus ☉ / occid. hora 3 M. 25⅙*]	

Afterwards the distance of Jupiter and Venus was observed. [*Poſtea obſeruabatur diſtantia ♃ & ♀.*]

At 3^h 50^m 30^s, distance between Jupiter and Venus [*H. 3 M. 50 30″ Diſt. inter ♃ & ♀*]	*7° 43′*	
The declination was then [*Fuit tunc Decl.*]	*♃ 14° 18′,*	*♀ 17° 19½′*
with the other pinnule [*altero pin.*]	*14° 17½′*	*17° 19⅓′*

But the declination of each, derived from the meridian altitude, is rather to be trusted. About this time, moreover, the altitude of Venus was 16¾° by the movable lesser steel quadrant. [*Sed fidendum potius declinationi / vtriusque ex altitudine meridiana / derivatæ. Fuit autem circa hoc tem-/pus altitudo ♀ 16¾ g. per mobilem / Quadrantem minorem chalybeum.*]

At 3^h 56^m, the same distance of Venus and Jupiter [*H. 3 M. 56 Eadem diſt. ♀ & ♃*]	*7° 42⅔′*
The altitude of Venus was then [*Fuit tunc altit. ♀*]	*16° 30′*

The same, repeated in this way. [*Eadem in hunc modum repetita.*]

Hours, minutes [*H. M.*]	*Distance of Jupiter and Venus* [*Diſt.* ♃ / & ♀]	*Declination of each* [*Declin. / vtriusque*]	*Altitude: Venus* [*Altitudo* / ♀]	*Jupiter* [♃]
$4^h\ 0^m$	7° 43⅓′	♀ 17° 20′ ♃ 14° 18′	16¼°	
$4^h\ 6^m$	7° 42⅔′		16° 5′	19° 50′
$4^h\ 10^m$	7° 42⅓′			

Afterwards Venus was observed from the Vulture in this way. [*Poſtea obſeruabatur ♀ a Vulture / in hunc modum.*]

Hours, minutes [*H. M.*]	*Distance of Venus from the Vulture* [*Diſt.* ♀ / *a Vult.*]	*Declination of Venus* [*Decl.* / ♀]	*Altitude of Venus* [*Alt.* / ♀]	*The Vulture, west* [*Vultur / occid.*]
$4^h\ 13½^m$	36° 49⅚′	17° 20′		42 23
$4^h\ 22⅙^m$ corrected [corr.]				
$4^h\ 16¼^m$	39° 49½′		15° 40′	43 2

Hours, minutes [*H. M.*]	*Vice versa, from the first of the wing of Pegasus* [*Viceverſa a prima alæ Pegaſi.*]	*Declination of Venus* [*Decl.* / ♀]	*Altitude of Venus* [*Alt.* / ♀]	*The Vulture, west* [*Vultur / occid.*]
$4^h\ 20½^m$	36° 55′			44 22
$4^h\ 23^m$	36° 55⅔′	17° 19⅔′	15° 25′	
$4^h\ 32^m$ corrected [corr.]				
$4^h\ 25^m$	36° 55⅙′		15° 20′	45 23

Afterwards Venus was observed by the zodiacal armillae. [*Poſtea obſeruabatur ♀ per Armil-/las Zodiacales.*]

At $5^h\ 19^m\ 10^s$, with the place of Aldebaran set at 4° 8′ ♊, the place of Venus was found in the zodiacal armillae at [H. 5 19′ 10″ Poſito loco Aldeboræ 4° 8′ / ♊ inueniebatur locus ♀ in Armil-/lis zodiacalibus in]	17° 4′ ♒
The mouth of Pegasus, west [Os Pegaſi occ.]	31 30
At $5^h\ 25^m\ 30^s$, with the place of Aldebaran remaining as before, the place of the left shoulder of ♒ came out at [H. 5 25′ 30″ manente loco Aldeboræ / vt prius, prouenit locus ſiniſtri / humeri ♒ in]	17° 51′ ♒
The mouth of Pegasus, west [Os Pegaſi occ.]	33 2
At $5^h\ 44½^m$ the mouth of Pegasus was [*H. 5 44½ Fuit os Pegaſi*]	*38 0 west* [*occ.*]
With the place of Aldebaran set at [*Poſito loco Aldeboræ in*]	*4° 8′ ♊*
the star Venus was seen in [*videbatur ♀ ſtella in*]	*17° 5′ ♒*
The altitude of Venus was then [*Fuit tunc altit. ♀*]	*9° 42′*

At 5^h 47½^m the same was again seen, as before, in [*H. 5 47½ Rurſus eadem / videbatur vt prius in*]	*17° 5′ ♒*
5 50: soon the left shoulder of ♒ was seen, as above, in [*5 50 Mox videbatur ſin. / hum. ♒ vt ſupra*]	*17° 51′ ♒*
Then the altitude of Venus [*Tunc altitudo ♀*]	*9° 30′*
Declination of Venus, with one [*Declin. ♀ vno*]	*17° 17½′*
with the other [*altero*]	*17° 16′*

Computation of the place of Venus from the immediately preceding observations, for 9, 10 and 11 December. [Supputatio loci ♀ ex obſeruationibus / antecedentibus proximis ad dies / 9, 10 & 11 Decembris.]

On 10 December, at $4¾^h$ [Die 10 Decembris H. 4¾]	
Distance of Venus from the Vulture [Diſt. ♀ a Vulture]	36° 21′
from the first of the wing of Pegasus [a prima alæ Peg.]	37° 48′
Declination of Venus [Decl. ♀]	17° 42′ south [M.]

Altitude of Venus [Altit. ♀]	14° 0′
Declination of the Vulture [Declin. Vulturis]	7° 52′ north [B.]
Declination of the first of the wing of Pegasus [Decl. 1 alæ Pegaſi]	13° 4′ north [B.]
Angular difference of ascension from the Vulture [Ang. diff. aſc.$^{a|s}$ a Vulture]	26° 9¾′
from the first of the wing of Pegasus [1 alæ Peg.]	22° 15′ 0″
Right ascension of the Vulture [Aſc. R. Vulturis]	292° 44⅙′
of the first of the wing of Pegasus [1 alæ Peg.]	341° 9¼′
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	
from the Vulture [a Vulture]	318° 53′ 50″
from the first of the wing [a 1 alæ]	318° 54′ 15″
Limited right ascension [Aſc. R. limitata]	318° 54′ 0″
Resp. longitude [Reſp. Longitudo]	15° 54½′ ♒
Latitude [Latitudo]	1° 39⅙′ south [M.]

Another way of investigating the place of Venus, in triangles from the same fixed stars, with the declination left out, so that its latitude may be explored in different ways. [Alius inueſtigandi locum ♀ modus / in triangulis ab ijsdem fixis omißa / Declinatione, vt Latitudo eius varie / exploretur.]

Given: the longitude of the Vulture [Datur Vult. Long.]	26° 3⅔′ ♑
Latitude [Lat.]	29° 21½′ north [B.]
Longitude of the first of the wing of Pegasus [1 alæ Peg. Long.]	17° 51⅔′ ♓
Latitude [Lat.]	19° 26′ 0″ north [B.]
Therefore the longitude from the Vulture [Ergo Long. a Vulture]	15° 53′ 58″ ♒

from the first of the wing of Pegasus [1 alæ Peg.]	15° 53′ 52″
Latitude [Latitudo]	1° 38′ 55″
By this method, therefore, at 4^h 45^m [Ex hac itaque ratione H. 4 M. 45]	
Longitude of Venus [♀ Longitudo]	15° 53′ 55″ ♒
Latitude [Latitudo]	1° 38′ 55″ south [M.]
At 4^h 45^m, limited by both methods [H. 4 M. 45 limitata vtroque modo]	
Longitude [Longitudo]	15° 54⅙′ ♒
seen at an altitude of 14° [in altit. 14° viſa]	
Latitude [Latit.]	1° 39′ south [M.]

Our mean motion of the Sun is 28 53½ ♐. [Medius motus ☉ noſter 28 53½ ♐.]

The difference is 47 0⅔, in accordance with the greatest elongation from the Sun; but the parallax and refraction of Venus have to be guarded against here. [Differentia 47 0⅔ iuxta maximam / a ☉ elongationem, ſed parallaxis & / refractio ♀ hic cavendæ veniunt.]

On 11 December, at $4½^h$, corrected [Die 11 Decembris H. 4½ correct.]	
Distance of Venus from the Vulture [Diſt. ♀ a Vulture]	36° 49′ 40″
from the first of the wing of Pegasus [1 alæ Peg.]	36° 55′ 20″
Therefore the longitude of Venus from the Vulture [Ergo ♀ long. a Vulture]	16° 56′ 0″
from the first of the wing of Pegasus [a 1 alæ Peg.]	16° 56′ 20″ ♒
Put, therefore, at $4½^h$, the limited longitude of Venus [Pone itaque ad H. 4½ ♀ limitatam / longitudinem]	16° 56⅙′ ♒
latitude [latitudinem]	1° 35′ 20″ south [M.]

And this at an altitude of 15½°. From this the parallax and refraction may afterwards be eliminated. [Idque in altitudine 15½°. Vnde paral-/laxis & refractio poſtea eliminen-/tur.]

If, however, the place of Venus is reduced to 9 December, the day on which the Moon was observed from it, the result is: [Si autem locus Veneris reducatur ad / diem 9 Decembris, quo ☾ ab eo / obſeruata eſt, prouenit]

At 3^h 34^m, the place of Venus: longitude [H. 3 34′ Locus ♀ Longit.]	14° 48⅓′ ♒
of latitude [Latitudinis]	1° 43′ south [M.]
Resp. right ascension, to be assumed [Reſp. Aſc. R. ſupponenda]	317° 49′ 7″

N.B. In these observations of Venus near its greatest elongation from the Sun, the same parallax is applied as the solar parallax at its nearest distance from the Earth, with a quarter of it added, at a like altitude in every case. The refraction to be applied to the fixed stars, however, assigned likewise at a like altitude, will

be made equal. But afterwards the separation of the difference of the parallaxes and refractions into longitude and latitude will be made according to the tables. [N.B. In his obſeruationibus ♀ iuxta / maximam a ☉ elongationem adhibe-/tur parallaxis eadem quæ ☉$^{l;s}$ in ci-/tima a terra diſtantia, addita eius-/dem quarta parte in conſimili vbi-/que altitudine. Refractio autem adhi-/benda ſtellis fixis, deputata etiam in / conſimili altitudine æquabitur. At po-/ſtea diſcretio differentiæ parallaxium / & refractionum in longum & latum / iuxta tabulas fiet.]

15 December [DIE 15 DECEMBRIS.]

At 3^h $18½^m$ Venus was crossing the meridian, having an altitude [H. 3 18½′ Tranſibat ♀ / per meridianum habens altit.]

by the steel instrument [per Chalyb.]	18° 18⅚′
by the revolving quadrant [per Volub.]	18° 18⅙′
Declination of Venus by the armillae [Declin. ♀ per Armillas]	15° 46½′
	15° 47′

Hours, minutes, seconds [H. M. S.]	Distance of Venus from Jupiter [Diſt. ♀ / a ♃]	Declination of Venus [Decl. / ♀]	Altitude of Venus [Alt. / ♀]	Jupiter, west [♃ / occid.]
3^h 57^m 50^s	4° 26⅓′		17° 50′	5 38
4^h 2^m 55^s	4° 26⅙′	15° 46½′ with both [vtroq.]		6 53
4^h 9^m 25^s	4° 26½′		17° 10′	
4^h 15^m 0^s	4° 26⅓′	15° 46⅔′		9 53
		15° 46⅓′		

Afterwards Venus was observed near its greatest digression from the Sun. [*Poſtea ♀ obſeruabatur iuxta maxi-/mam digreßionem a Sole.*]

Hours, minutes [*H. M.*]	*Distance of Venus from the Vulture* [*Diſt. ♀ / a Vulture*]	*Declination of Venus, south* [*Declin. / ♀ M.*]	*Altitude* [*Altit.*]	*The Vulture, west* [*Vultur / occ.*]
4^h 30^m	*38° 48′*	*15° 46′*	*16° 45′*	*48 52*
		15° 45½′		
4^h 33^m	*38° 47½′*			*49 34*
4^h $35¾^m$	*38° 46⅚′*	*15° 46′*	*16° 25′*	*50 17*
		with both [*vtroque*]		
4^h $39⅔^m$	*38° 47⅚′*		*16° 10′*	*51 16*
4^h 42^m	*38° 47¼′*	*15° 46′*	*16° 0′*	*51 52*
		15° 45⅚′		
4^h 45^m	*38° 47⅓′*		*15° 50′*	*52 39*

Afterwards Venus was observed from the other side, vice versa, from the first of the wing of Pegasus, in the following way. [*Poſtea ab altera parte obſeruabatur / ♀ viceverſa a prima alæ Pegaſi / in hunc qui ſequitur modum.*]

4 51⅔	33 32[1]	15 45⅔	15 30	54 10
		15 45½		
4 55½	33 33½		15 20	55 16
4 58	33 33⅙	15 46	15 5	55 51
		15 45		
5 1½	33 32¾		14 55	
5 4½	33 31⅓	15 46 with one [vno]		

		The mouth of Pegasus, west [Os Pegaſi / occ.]	
5 7⅔	33 31⅓	14 30	30 25

And with these two distances you can compute the place of Venus by triangles from the poles of the ecliptic, putting, at about $4^h\ 50^m$, the distance of Venus from the bright star of the Vulture as 38° 47½′, and then its distance from the first of the wing of Pegasus as 33° 33½′. Afterwards the refraction will have to be guarded against. [*Atque his duabus diſtantijs potes / vti triangulariter a polis Eclipticæ / ſupputando locum ♀, ponendo iuxta / horam 4 M. 50 diſtantiam ♀ a lucida / Vulturis 38 47½, & hinc diſtantiam / eiusdem a prima alæ Pegaſi 33 33½. / Poſtea cauenda erit refractio.*]

Afterwards Venus was observed from the bright star in the tail of the Whale, which is of the second magnitude and was at about the same altitude as Venus; and so the refraction hinders little. [*Poſtea ♀ obſeruabatur a lucida in / cauda Cete, quæ eſt ſecundæ / magnitudinis, quæ erat quaſi / in eadem cum ♀ altitu-/dine, ideoque refrac-/tio parum im-/pedit.*]

Hours, minutes [*H. M.*]	*Distance* [*Diſt.*]	*Declination of Venus* [*Decl. / ♀*]	*Altitude of Venus* [*Alt. / ♀*]	*The mouth of Pegasus, west* [*Os Peg. / occ.*]
$5^h\ 14^m$	40° 5′		14° 15′	31 40
$5^h\ 16½^m$	40° 5⅙′	15° 45′	14° 0′	32 17
$5^h\ 19½^m$	40° 5′		13° 50′	32 58
$5^h\ 22½^m$	40° 4⅔′		13° 35′	33 48

Afterwards Venus was observed again from the Vulture, because the Vulture did not have a much greater altitude than Venus; and so the refraction introduces little into the distance. [*Poſtea denuo ♀ obſeruabatur a Vul-/ture, eo quod Vultur non multo / maiorem haberet altitudinem / quam ♀, ideoque refrac-/tio in diſtantia pa-/rum infert.*]

Hours, minutes [*H. M.*]	*Venus from the Vulture* [♀ *a / Vulture*]	*Declination of Venus* [*Decl. / ♀*]	*Altitude of Venus* [*Alt. / ♀*]	*The mouth of Pegasus, west* [*Os Peg. / occid.*]
$5^h\ 29^m$	38° 48⅔′	15° 45′	13° 10′	35 19
$5^h\ 33^m$	38° 49⅙′		12° 50′	36 17
$5^h\ 35½^m$	38° 49⅙′	15° 44′	12° 35′	36 59
$5^h\ 38^m$	38° 49⅓′	15° 44½′	12° 20′	37 33

From these you will be able, vice versa, to investigate the right ascension and declination of Venus by the equatorial interval, putting, at $5½^h$, the distance of Venus from the bright star of the Vulture as 38° 49′ and from the bright star of the Whale as 40° 5⅔′, and applying the declination corrected from the right shoulder of ♒, which was in about the same position as Venus, in this way. [*Ex his poteris per Æquatoriam / intercapedinem viceverſa inueſti-/gare Aſcenſ. Rectam & declinatio-/nem ♀, ita vt ponatur H. 5½ diſt. ♀ a / Vulturis lucida 38 49, a lucida Cete / 40 5⅔, & adhibeatur declinatio emen-/data ex dextro humero ♒, qui erat / in eodem quaſi cum ♀ ſitu, in hunc / modum.*]

The right shoulder of ♒ had a declination by the armillae [*Habuit dexter humerus ♒ declina-/tionem per Armillas*]	
with one pinnule [*vno pinn.*]	2° 15⅙′
with the other [*altero*]	2° 14⅓′
The declination ought to be [*Deberet eſſe Declin.*]	2° 14′ 45″

For the place of Venus on 15 December. [Pro loco ♀ ad diem 15 Decembris.]

At $4^h\ 50^m$, distance of Venus from the Vulture [H. 4 50′ Diſt. ♀ a Vulture]	38° 47½′
from the first of the wing of Pegasus [1 alæ Peg.]	33° 33½′
Therefore the latitude of Venus, south [Ergo Latitudo ♀ M.]	1° 16′ 48″
Angular difference of longitude from the Vulture [Ang. diff. long. a Vult.]	24° 53′ 46″
from the first of the wing [a 1 alæ]	26° 53′ 25″
From this the longitude of Venus is gathered: from the Vulture [Hinc colligitur ♀ Longitudo a Vulture]	20° 57′ 26″ ♒
from the first of the wing [a 1 alæ]	20° 58′ 15″
Limited longitude [Longitudo limitata]	20° 57⅚′ ♒
Latitude [Latitudo]	1° 16⅚′ south [M.]

Another method of finding the place of Venus for this day, using the declination of Venus. [Alia ratio inquirendi locum ♀ / ad hunc diem, adhibita / declinatione ♀.]

At 5½^{h}, distance of Venus from the Vulture [H. 5½ Diſt. ♀ a Vulture]	38° 49′
Declination of the Vulture [Declin. Vulturis]	7° 52′ north [B.]
Declination of Venus [Declin. ♀]	15° 45′ south [M.]
Distance from the bright star of the tail of the Whale [Diſt. a luc. caudæ Cete]	40° 4½′
Declination of the bright star of the tail of the Whale [Decl. luc. caudæ Cete]	20° 14′
Its right ascension [Aſc. R. eius]	5° 46′ 20″
Angular difference of ascension of Venus from the Vulture [Ang. diff. aſc. ♀ a Vult.]	31° 6′ 25″
Therefore, from this, the right ascension of Venus [Ergo hinc Aſc. R. ♀]	323° 50′ 35″
Angular difference of ascension of Venus [Ang. diff. aſc. ♀]	
from the tail of the Whale [a cauda Cete]	41° 58′ 50″
Therefore, from this, the right ascension of Venus [Ergo hinc Aſc. R. ♀]	323° 47′ 30″
Limited right ascension [Aſc. R. limitata]	323° 49′ 0″
Declination of Venus [Declin. ♀]	15° 45′ south [M.]
Resp. longitude [Reſp. Longitudo]	20° 59½′ ♒
Latitude [Latitudo]	1° 16′ south [M.]
Altitude of Venus 13° [Altit. ♀ 13 g.]	

17 December [DIE 17 DECEMBRIS.]

At 3^{h} 15^{m} 25^{s} Venus crossed the meridian, having an altitude [H. 3 15′ 25″ Tranſiuit ♀ / per meridianum habens altit.]	
by the steel instrument [per Chalyb.]	19° 5⅔′
by the revolving quadrant [per Volub.]	19° 5⅙′

Declination 15° 0′ exactly, with one pinnule, between clouds. [Declin. 15 0 exacte, vno pin., inter / nubes.]

[1] Struck through with lines. [Lineis inducta.]

N.B. Venus at its greatest digression from the Sun. [*N.B.* ♀ *in maxima digreſßione a* ☉.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Diſt. ♀ / a Vult.]	Declination of Venus [Decl. / ♀]	Altitude of Venus [Alt. / ♀]	Jupiter, west [♃ / occid.]
4^{h} 30^{m} 10^{s}		14° 58⅔′	17° 10′	16 9
		14° 59½′		
4^{h} 33^{m} 35^{s}	39° 48½′		17° 0′	17 *12*
4^{h} 35^{m} 45^{s}	39° 48⅔′	14° 59′		18 30
		14° 58½′		
4^{h} 38^{m} 40^{s}	39° 49′			

Afterwards Venus was observed vice versa from the first of the wing of Pegasus. [*Poſtea viceverſa* ♀ *obſeruabatur / a prima alæ Pegeſi.*]

				The Vulture, west [*Vult. occ.*]
4 42½	*31 55⅓*	*14 58* *with both* [*vtroque*]	*16 25*	*55 11*
4 45 *4 49* corrected [corr.]	*31 54⅔*			*55 45*
4 47		*14 57⅙* *14 58*	*16 15*	*56 19*
4 50½	*31 54½*			
4 52½	*31 54½*	*14 57⅔* *14 57½*	*16 5*	

Put, at 4^h 45^m, once corrected, the distance of Venus from the bright star of the Vulture as 39° 49′, from the first of the wing of Pegasus as 31° 55′. [*Pone hora 4 M. 45 emendatis di-/ſtantiam ♀ a lucida Vulturis 39 49, / a prima alæ Pegaſi 31 55.*]

Afterwards Venus was observed from the bright star of the tail of the Whale, in this way. [*Poſtea ♀ obſeruabatur a lucida / caudæ Ceti hoc modo.*]

Hours, minutes [*H. M.*]	*Distance* [*Diſt.*]	*Declination* [*Declin.*]	*Altitude* [*Altit.*]	*The mouth of Pegasus, west* [*Os Pegaſi / occ.*]
4^h $57¾^m$	38° 32⅓′		15° 55′	30 42
5^h 0^m	38° 32′ *nearly* [*fere*]	14° 57½′ *with both* [*vtroque*]	15° 45′	31 16
5^h $3⅓^m$	38° 30′		15° 30′	32 3
5^h $6½^m$	38° 30′	14° 57′	15° 10′	32 44
5^h $12¾^m$	38° 30½′		14° 55′	34 32
5^h $14⅙^m$	38° 31⅓′	14° 57⅙′	14° 45′	34 51
5^h 17^m	38° 32⅓′	14° 56⅚′	14° 30′	35 34

Venus, moreover, was with this star in the Whale almost in balance with respect to the horizon, so that the refraction brings no difference into the distance. You will be able to put, at about 5^h, the distance of Venus from the bright star in the Whale as 38° 32′, and with this compare the distance from the bright star of the Vulture, applying it here by the motion of Venus, so that it is 39° 49⅔′. [*Fuit autem ♀ cum hac ſtella in Cete / quaſi in æquilibrio Horizontis, quare / refractio nihil importat in diſtantia / diſcriminis. Poteris ponere circa ho-/ram 5 diſtantiam Veneris a lucida in / Cete 38 32, & cum hac confer diſtan-/tiam a lucida Vulturis, applicando / eam huc per motum ♀, vt ſit 39 49⅔.*]

For a test of the armilla by which the declinations of Venus were taken, there was taken soon afterwards, in an almost similar position, [*Pro examine vero Armillæ, qua de-/clinationes ♀ ſumebantur, capie-/batur mox in conſimili / quaſi ſitu*]

at 5^h 23^m, the declination of the left shoulder of ♒ [*H. 5 M. 23 Declin. ſiniſtri / hum. ♒*]	*7° 15⅙′*
with the other pinnule [*pinnacidio altero*]	*7° 15⅔′*

5 25, declination of the right shoulder of ♒ [*5 25 Declin. dextri hum.* ♒]	*2° 14½′*
With the other pinnule [*Altero pinnacidio*]	*2° 14′*

Afterwards Venus and Jupiter were observed by the equator, by equatorial distance, in quick succession, with the time applied exactly. [*Poſtea per Æquatorem obſeruaba-/tur* ♀ *&* ♃ *diſtantia æquatoria ſubito, / adhibito tempore exacte.*]

	The Vulture, west [*Vult. occ.*]	*West* [*Occid.*]	*Declination* [*Decl.*]
5 30 12	*67 11⅔*	*Venus 34 14½*	*14° 56′*
5 35 corrected [corr.]			
5 30 42	*67 19*	*Jupiter 31 39⅔*	*13° 53′*
Difference [Diff.] *0 30*	*7 20*	*2 34 50*	

This gives 7½, to be subtracted from Jupiter. The ascensional difference by both methods is therefore 2° 43′ 15″. And in this way you will also have the place of Venus, once the place of Jupiter has been corrected from the following observations and the corrected declination of each, observed here, has been applied. Venus, moreover, is on this day near its greatest digression from the Sun, and at the same time the Sun is in its perigee, without prosthaphaeresis, as is evident, which would be the same as the perigee of Venus. [*Facit 7½ ſubtrahenda a* ♃. *Eſt ita-/que differentia aſcenſionalis vtroque / modo 2ᵍ 43′ 15″. Atque ſic etiam lo-/cum* ♀ *habebis, correcto loco* ♃ *ex / ſequentibus obſeruationibus, & ad-/hibita vtriusque hic obſeruata cor-/recta declinatione. Eſt autem* ♀ *hoc / die prope maximam a* ☉ *digreßio-/nem, & vna* ☉ *eſt in ſuo perigæo / citra proſtaphæreſin vt patet, quod / idem ſit perigæum* ♀.]

Investigation of the place of Venus for 17 December. [Inueſtigatio loci ♀ ad diem 17 Dec.]

At $4\frac{3}{4}^{h}$, distance of Venus from the Vulture [H. 4¾ Diſt. ♀ a Vulture]	39° 49′
from the first of the wing of Pegasus [a 1 alæ Peg.]	31° 55′
Angular difference of longitude [Ang. differ. longit.]	26° 52′ 33″
	24° 55′ 20″
Latitude of Venus, south [Latitudo ♀ M.]	1° 4′ 27″
Longitude of Venus from the Vulture [Long. ♀ a Vulture]	22° 56′ 13″ ♒
from the first of the wing [a 1 alæ]	22° 56′ 20″
Therefore, at $4^{h}\ 45^{m}$, Venus as seen: longitude [Ergo H. 4 M. 45 / Viſa ♀ / Longitudo]	22° 56¼′ ♒
latitude [Latitudo]	1° 4½′ south [M.]
Altitude of Venus 16½° [♀ Altit. 16½ g.]	

II. Investigation of the place of Venus by another method, with respect to the position of the equator. [II. Inueſtigatio ♀ loci alio modo / ad ſitum æquatoris.]

At 5^h 0^m, distance of Venus [H. 5 M. 0 Diſt. ♀]	
from the bright star of the tail of the Whale [a luc. caudæ Cete]	38° 32′
Declination of Venus, south [Declin. ♀ M.]	14° 57′
Declination of the bright star of the tail of the Whale [Decl. luc. caudæ Cete]	20° 14′ south [M.]

At the same time, the distance reduced [Eodem tempore diſtantia reducta]	
from the Vulture [a Vulture]	39° 49⅔′
Declination of the Vulture [Declin. Vulturis]	7° 52′ north [B.]
Therefore the right ascension from the Vulture [Ergo Aſc. R. a Vulture]	325° 40′
from the tail of the Whale [a Cauda Cete]	325° 38′

But since the distances of Venus taken from the tail of the Whale are uncertain because of the brightness of the Moon, account will be taken of a third part of the difference from this star in limiting the right ascension of Venus. [Sed quia incertæ ſunt diſtantiæ ♀ a / cauda Cete acceptæ ob ſplendorem / ☾, habebitur ratio tertiæ partis diffe-/rentiæ ab hac ſtella pro Aſcenſione / recta ♀ limitanda.]

Let it be 325 39⅓, declination south [M.] 14° 57′ 0″. [Sitque illa 325 39⅓, Decl. M. 14 57 0]

Resp. longitude [Reſp. Longitudo]	22° $56\frac{1}{12}$′ ♒
Latitude [Latitudo]	1° 5′ 20″ south [M.]
Altitude of Venus nearly 15° [♀ Altit. 15° fere.]	

III. At $5\frac{3}{4}^h$ there was found by a threefold method [III. Hora 5¾ inuenta eſt triplici ratione]

the right ascension of Jupiter [Aſc. R. ♃]	328° 23⅔′
At $5\frac{3}{5}^h$, distance on the equator of Venus from Jupiter [H. 5⅗ Diſt. æquat. ♀ a ♃]	2° 42′ 15″
And therefore the right ascension of Venus [Ideoque Aſc. R. ♀]	325° 41′ 15″

IV. To explore the same from the Vulture by distance on the equator. [IV. Idem a Vulture explorare in / Diſt. Æquat.]

At $5\frac{3}{5}^h$, distance on the equator of Venus and the Vulture [H. 5⅗ Diſt. æquat. ♀ & Vult.]	32° 57′ 10″
Right ascension of the Vulture [Aſc. R. Vulturis]	292° 44′ 10″
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	325° 41′ 20″
Apparent declination [Declin. viſa]	14° 56′ 0″
Resp. longitude... [Reſp. Longit....]	

Venus at altitude 13¾; latitude...[1] [♀ in alt. 13¾ Latit....[1]]

For[2] the examination of the refractions in Venus, let the better meridian altitudes be compared with the declinations at altitudes of 4 and 3°, applying the change both of the daily motion in declination and of the parallaxes. [Pro[2] refactionum in ♀ examinatione / conferantur altitudines Merid. potio-/res cum declinationibus in Altit. 4 & / 3G., adhibita tam motus diurni in de-/clinatione quam parallaxium altera-/tione.]

20 December, evening [DIE 20 DECEMBRIS, VESPERI.]

At 3^h 15⅙^m Venus crossed the meridian, having an altitude [H. 3 15⅙′ Tranſiuit ♀ / per Merid. habens Alt.]	
by the steel instrument [per Chalyb.]	20° 20½′
by the revolving quadrant [per Volub.]	20° 20′
Declination of Venus by the armillae [Decl. ♀ per Armillas]	13° 45⅓′
	13° 45½′

Hours, minutes [H. M.]	Declination of Venus [Declin. ♀]	Altitude of Venus [Alt. ♀]	Az-imuth
3^h 28¾^m	13° 45⅓′	20° 16′	
	13° 45′		

Hours, minutes [H. M.]	Declination of Venus [Declin. ♀]	Altitude of Venus [Alt. ♀]	Azimuth
3^h 34⅙^m	13° 45⅙′ with one [vno]	20° 12½′	5° 0′ from the south [a meridie]
3^h 38^m 35^s	13° 45′	20° 9⅓′	6° 0′
	13° 44⅚′		

Resp. in declination, computed, 13° 45′ 57″. [Reſp. in de-/clinatione per ſupput. 13 45 57]

Observations with the Radius [*Obſeruationes per Radium*]

At 4¼^h the distance of Jupiter and Venus was [*H. 4¼ Fuit Diſt.* ♃ *&* ♀]	**0° 36′*3*
At 4⅓ the same distance was [*4⅓ Fuit eadem diſt.*]	*0° 34′*
At 4 M. 21 the same distance of the same was [*4 M. 21 Fuit eadem earun-/dem diſt.*]	*0° 33′*
The declination of Venus was then [*Fuit tunc Declinatio* ♀]	*13° 45′*
Jupiter [♃]	*13° 41½′*

Better ones follow. [*Sequuntur meliores.*]

The same distance was [*Fuit eadem diſt.*]		*The Vulture, west, was then* [*Fuit tunc Vult. occ.*]
$4^h\ 23^m$ [*H. 4 M. 23*]	*0 32½*	*53 1*
4 28	*0 33*	*53 40*
4 29⅓	*0 32*	*54 4*

Declination of Venus [*Declin.* ♀]	*13° 44½′*
Jupiter [♃]	*13° 41⅙′*

Afterwards Jupiter and Venus by the equator. [*Poſtea* ♃ *&* ♀ *per Æquatorem.*]

Hours, minutes, seconds [*H. M. S.*]	*The Vulture, west* [*Vultur / occid.*]	*West, on the equator* [*In æquat. / occid.*]	*Declination* [*Decl.*]	*Altitude of both* [*Altit. / vtriusque*]
$4^h\ 32^m\ 35^s$	*54 49⅔*	*Venus 19° 10½′*	*13° 44½′*	
$4^h\ 32^m\ 58^s$	*54 56¾*	*Jupiter 18° 52½′*	*13° 40½′*	*18½°*
$4^h\ 36^m\ 45^s$	*55 59½*	*Venus 20° 20⅓′*	*13° 44⅓′*	
$4^h\ 37^m\ 14^s$	*56 5*	*Jupiter 19° 53½′*	*13° 40⅔′*	
$4^h\ 39^m\ 48^s$	*56 52⅔*	*Venus 21° 15½′*	*13° 44⅓′*	*18° 0′*
$4^h\ 40^m\ 24^s$	*57 6*	*Jupiter 20° 51½′*	*13° 40⅓′*	*of both* [*vtriusq.*]

Hours, minutes, seconds [*H. M. S.*]	*The jaw of the Whale, east* [*Mand. Cete or.*]	*West, on the equator* [*In æquat. / occid.*]	*Declination* [*Decl.*]	*Altitude of both* [*Altit. / vtriusque*]
$4^h\ 49^m\ 34^s$	*47 51*	*Venus 24° 6′*		*17° 25′*
$4^h\ 49^m\ 58^s$	*47 48½*	*Jupiter 23° 48′*		
$4^h\ 53^m\ 15^s$	*47 1*	*Venus 25° 3′*	*13° 44′*	*17° 10′*
$4^h\ 53^m\ 58^s$	*46 52¼*	*Jupiter 24° 33⅚′*	*13° 40½′*	

Afterwards Venus was observed in the following way. [Poſtea obſeruabatur ♀ in hunc modum vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the bright star of the Vulture [Diſt. ♀ a Vult. / Lucida]	Declination of both [Declinatio vtriusque]: Jupiter [♃]	Venus [♀]	Altitude of Venus [Alt. / ♀]	The Vulture, west [Vultur / occid.]
$5^h\ 5^m\ 50^s$	41° 27′			16° 25′	63 46
$5^h\ 8^m\ 50^s$	41° 27′	13° 40½′	13° 44⅓′	16° 10′	64 30
		13° 40⅓′	13° 44′		
$5^h\ 12^m\ 50^s$	41° 27⅓′			15° 50′	65 32

Hours, minutes, seconds [H. M. S.]	Vice versa, from the bright star of the tail of the Whale [Viceverſa a lucida cauda Cete.]	Declination of both [Declinatio vtriusque]: Jupiter [♃]	Venus [♀]	Altitude of Venus [Alt. / ♀]	The Vulture, west [Vultur / occid.]
$5^h\ 17^m\ 25^s$	36° 18′	13° 40½′	13° 42½′	15° 40′	66 41
		13° 40⅓′	13° 43′		
$5^h\ 22^m\ 40^s$	36° 17½′			15° 10′	68 3
$5^h\ 26^m\ 0^s$	36° 17⅓′	13° 41′	13° 42½′	14° 55′	68 51
		13° 40⅚′	13° 42⅓′		

[1] Missing in the codex. [Deſunt in codice.] [2] From codex V alone. [E codice V. ſolo.] [3] Struck through with lines. [Lineis inducta.]

Afterwards Venus was taken from the outermost of the wing of Pegasus. [*Poſtea ſumebatur ♀ ab extrema alæ Pegaſi.*]

Hours, minutes [*H. M.*]	*Distance* [*Diſtantia*]	*Declination of Jupiter* [*Declin. ♃*]	Declination of Venus [Declin. ♀]	Altitude of Venus [Altit. ♀]	The mouth of Pegasus, west [Os *Pegaſi* occid.]
6^h 6½^m	*39° 39½′*			*11° 30′*	*50 39*
6^h 10¾^m	*39° 40⅔′*	*13° 39⅔′*	*13° 41′*	*11° 5′*	*51 39*
		13° 40′	*with both* [*vtroque*]		
6^h 17½^m	*39° 39½′*			*10° 25′*	*53 20*
6^h 20½^m	*39° 39⅔′*	*13° 40′*	*13° 40½′*	*10° 0′*	*54 9*
		13° 39¾′	*13° 41′*		

Afterwards, for investigating the refraction of Venus. That is, once a comparison with the observations above had been made, a comparison of Jupiter and of Venus itself was sought, since they were very close together and subject to the same refraction. [Poſtea pro inquirenda ♀ refractione. Collatione videlicet cum ſuperioribus / facta, inquirebatur Collatio ♃ & ipſius ♀, cum admodum eßent vicini & eidem / refractioni obnoxij.]

On the clock, hours, minutes, seconds [In horol. / H. M. S.]	By the revolving quadrant [Per Quadrantem Volubilem]: azimuth, west [Azim. occid.]	alti-tude [Alti-tudo]	Declination [Declinatio]: Venus [♀]	and Jupiter [& ♃]	Aldebaran, east [Aldebora / orient.]
$6^h\ 52^m\ 30^s$	53° 0′	Venus 7° 3¼′	13° 40′	13° 39⅔′	
$6^h\ 54^m\ 40^s$		Jupiter 6° 55′	13° 38′	13° 37⅔′	
$7^h\ 9^m\ 15^s$	56° 30′	Venus 5° 4′	13° 37′	with both [vtroque]	36 0
$7^h\ 11^m\ 15^s$		Jupiter 5° 6′	13° 35′	13° 35½′	35 30
$7^h\ 18^m\ 20^s$	58° 30′	Venus 4° 2½′	13° 36′	13° 36¼′	33 36

On the clock, hours, minutes, seconds [In horol. / H. M. S.]	By the revolving quadrant [Per Quadrantem Volubilem]: azimuth, west [Azim. occid.]	alti-tude [Alti-tudo]	Declination [Declinatio]: Venus [♀]	and Jupiter [& ♃]	Aldebaran, east [Aldebora / orient.]
$7^h\ 20^m\ 38^s$		Jupiter 4° 2⅓′	13° 35′		33 9
$7^h\ 23^m\ 20^s$	59° 30′	Venus 3° 30′	13° 35′	13° 35′	32 25
$7^h\ 25^m\ 28^s$		Jupiter 3° 29½′	13° 34′	13° 34½′	31 56
$7^h\ 28^m\ 35^s$	60° 30′	Venus 2° 54′	13° 32½′	13° 33′	31 9
$7^h\ 30^m\ 48^s$		Jupiter 2° 53½′	13° 32′	13° 32⅙′	30 38
$7^h\ 35^m\ 34^s$	62° 0′	Venus 2° 6½′	13° 29′	13° 29′	29 27
$7^h\ 37^m\ 10^s$		Jupiter 2° 8′	13° 29′	13° 29′	28 53
$7^h\ 40^m\ 18^s$	63° 0′	Venus 1° 34′			28 13
$7^h\ 42^m\ 10^s$		Jupiter 1° 34′			27 41

On the conjunction of Jupiter and Venus about this time. [*De ♂ ♃ & ♀ circa hoc tempus.*]

N.B. On 21 December, in the evening, the conjunction of Jupiter and Venus had already passed, as is evident from the following observations. For I too, being then at Landskrona, saw at $4¾^h$ that Venus had passed Jupiter by a little more than the semidiameter of the Sun, that is, by about a third part of one degree, and that in the line which ran from Jupiter through Venus to the first of the wing of Pegasus. On the following day, namely 22 December, at $5⅓^h$, Venus seemed to have passed Jupiter by a little more than two diameters of the Sun, that is, somewhat beyond a degree, and that in the straight line which was drawn from Jupiter through Venus to the outermost of the wing of Pegasus. And Venus itself was everywhere more northerly than Jupiter in latitude, so that in the conjunction itself, which was between the 20th and 21st, it had a southern latitude smaller than Jupiter's by a fourth part of one degree; it therefore appeared more northerly, although the Prutenic calculation makes Venus more southerly than Jupiter by 1° 12′, and the Alphonsine by exactly one degree. [*N.B. Die 21 Decembris Veſperi iam / præterierat ♂ ♃ & ♀, vt ex ſequenti-/bus obſeruationibus patet. Nam & / ego tunc Landskroniæ exiſtens vidi / Hora 4¾ quod ♀ eßet ♃ prætergreßa / paulo plus ſemidiametro Solari, id / eſt quaſi tertia parte vnius gradus, / idque in ea linea, quæ tendebat a ♃ / per ♀ vsque in primam alæ Pegaſi. / Die vero ſequente videlicet 22 De-/cembris H. 5⅓ videbatur ♀ præter-/greßa Iouem paulo plus duabus dia-/metris Solaribus, i. e. nonnihil vltra / gradum, idque in ea linea recta, quæ / ducebatur a ♃ per ♀ vsque in extre-/mam alæ Pegaſi. Eratque ipſa ♀ vbi-/que ſeptentrionalior ♃ue in latitudine, / adeo vt in ipſa ♂ quæ fuit inter diem / 20 & 21, habuerit parte quarta vnius / gradus minorem latitudinem Auſtri-/nam*

ipſo Ioue, quare borealior appa-/rebat, cum tamen calculus Pruteni-/cus faciat ♀ Ioue meridionaliorem / G. 1 M. 12, Alphonſinus exquiſite vno / gradu.]

21 December [DIE 21 DECEMBRIS.]

In the evening Venus and Jupiter were observed by the equator. [Veſperi obſeruabantur ♀ & ♃ / in Æquatore.]

Hours, minutes, seconds [H. M. S.]	West, on the equator [In æquat. / occ.]	Declination of Venus [Declin. / ♀]	Altitude of Venus [Alt. / ♀]
$4^h\ 40^m\ 35^s$	Venus 20° 5′	13° 20½′	
		13° 20⅔′	
$4^h\ 55½^m$	Venus 22° 17′		18° 20′
$4^h\ 59⅔^m$	Jupiter 23° 22½′		
$5^h\ 0^m$	Venus 23° 22½′		
$5^h\ 10^m\ 55^s$	Jupiter 26° 12⅓′		
$5^h\ 11^m\ 20^s$	Venus 26° 12⅓′		
$5^h\ 22^m$		Venus 13° 20′	Altitude of Jupiter [Alt. ♃]
	Among clouds [Inter nubes]	Jupiter 13° 38⅔′	16° 22′

This at least it was possible to observe of Venus and Jupiter this evening, and that among thick clouds through which the said planets shone out. You will be able, moreover, from the observation [Hæc ſaltem in ♀ & ♃ hac veſpera / obſeruare licuit, eaque inter denſas / nubes per quas Planetæ dicti emica-/bant. Poteris autem ex obſeruatione] on the equator, applying only the change of time on the clock (observed carefully for this business), to examine the distance of the right ascensions from each other; this may be limited at 5′ with ½, by which Venus was more easterly on the equator than Jupiter itself. It was, moreover, higher than the same, as is clear from the comparison of the declinations, by ⅓° or a little less. Hence, by comparing the conjunction and the latitude of each planet on the preceding and following days in the same observations, you will reason it out. [æquatoria adhibita ſolum alteratione / temporis in Horologio ſcrupuloſe ad / hoc negotium obſeruati diſtantiam / aſcenſionum rectarum ab inuicem / ſcrutari, quæ limitata eße poßit 5 mi-/nutis cum ½, qua ♀ orientalior in Æqua-/tore ipſo ♃ extitit. Fuit autem eodem / ſuperior, vt ex declinationum colla-/tione liquet ⅓ G. vel paulo minus. Hinc / de ♂ & latitudine vtriusque planetæ / collatis antecedentium & conſequen-/tium dierum in ijſdem obſeruationi-/bus ratiocinaberis.]

22 December [DIE 22 DECEMBRIS.]

In the evening Venus was observed near the meridian, after it had appeared among rather thin clouds. [Veſperi obſeruabatur ♀ circa Meri-/dianum, poſtquam inter nubes rarius-/culas apparuißet.]

On the clock, hours, minutes [Horol. / H. M.]	Declination of Venus and Jupiter [Declinatio / ♀ & ♃]	Altitude of Venus and Jupiter [Altitudo / ♀ & ♃]	Azimuth of Venus and Jupiter [Azimuth / ♀ & ♃]
3^h 46^m	Venus 12° 56¼′ 12° 55⅔′	Venus 20° 54½′	8° 0′
3^h $54\frac{1}{6}^m$	Venus 12° 55½′ 12° 55¾′	Venus 20° 43′	10° 0′
3^h $59\frac{1}{4}^m$	Venus 12° 55⅔′ 12° 55½′	Jupiter 19° 50⅔′	12° 5′
4^h $2\frac{1}{6}^m$	Jupiter 13° 33⅚′ 13° 34′	Venus 20° 29′	12° 5′
4^h 11^m 10^s	Jupiter 13° 34′	Jupiter 19° 30′	15° 0′
4^h 13^m 55^s	Venus 12° 56′	Venus 20° 8′	

Afterwards the equatorial distances of Jupiter and Venus were observed. [Poſtea diſtantiæ Æquatoriæ / ♃ & ♀ obſeruabantur.]

Hours, minutes, seconds [H. M. S.]	Distance on the equator, west [Diſt. æquat. / occ.]	Declination [Declin.]	Altitude of Venus [Alt. / ♀]	The Vulture, west [Vult. / occ.]
4^h 31^m 10^s	Jupiter 19° 26′	Jupiter 13° 34′		56 4⅓
4^h 32^m	Venus 18° 52½′	Venus 12° 54¼′		56 14½
4^h 37^m 45^s	Jupiter 21° 3⅔′	Jupiter 13° 33½′	19° 0′	57 41
4^h 38^m 25^s	Venus 20° 29′	Venus 12° 55′		

Afterwards the distance of Venus from the fixed stars was taken with the sextant, and first from the Vulture, as follows. [Poſtea capiebatur diſtantia ♀ a fixis / per Sextantem, & primum a Vulture / vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	The Vulture, west [Vult. occ.]
4^h 51^m 5^s	42° 32′			
4^h 53^m 30^s	41° 31½′			
4^h 55^m 10^s	42° 32′	12° 54½′ with both [vtroque]	18° 10′	

Hours, minutes, seconds [H. M. S.]	Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab extrema alæ Pegaſi.]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	The Vulture, west [Vult. occ.]
5^h 2^m 10^s	37° 54⅓′			63 44
5^h 5^m 10^s	37° 55′			64 27
5^h 7^m 10^s	37° 55′	12° 54½′ 12° 54⅔′	17° 28′	64 59

Hours, minutes, seconds [H. M. S.]	Vice versa, from the outermost of the wing of Pegasus [Viceverſa ab extrema alæ Pegaſi.]	Declination of Venus [Decl. ♀]	Altitude of Venus [Alt. ♀]	The Vulture, west [Vult. occ.]

After this we observed each, Jupiter and Venus, in altitude and azimuth together with the declination, for the refraction and parallax of Venus, since it had become lower. [Poſt hac vtrunque ♃ & ♀ in Altitudine / & Azimuth vna cum Declinatione / obſeruabamus pro refractione / & parallaxi ♀ quandoqui-/dem facta decliuior.]

Hours, minutes, seconds [H. M. S.]	Altitude [Altit.]	Azimuth [Azim.]	Declination of Jupiter and Venus [Declin. / ♃ & ♀]	The outermost of the wing of Pegasus, west [Ext. alæ / Peg. occ.]
$6^h\ 11^m\ 40^s$	Jupiter 11° 18′	44° 0′	13° 31½′	15 49
$6^h\ 13^m\ 55^s$	Venus 12° 0′		12° 52′	16 20
$6^h\ 16^m\ 20^s$	Jupiter 10° 51⅔′	45° 0′	13° 31⅓′	16 54
$6^h\ 18^m\ 25^s$	Venus 11° 34½′		12° 51½′	17 29
$6^h\ 25^m\ 0^s$	Jupiter 9° 58¾′	47° 0′	13° 31′	19 4
$6^h\ 27^m\ 0^s$	Venus 10° 42⅔′		12° 50⅔′	19 39
$6^h\ 34^m\ 0^s$	Jupiter 9° 3⅓′	49° 0′	13° 31′	21 21
$6^h\ 36^m\ 0^s$	Venus 9° 48′		12° 50⅓′	21 49
$6^h\ 43^m\ 0^s$	Jupiter 8° 5′	51° 0′	13° 30′	23 40
$6^h\ 45^m\ 0^s$	Venus 8° 50′		12° 50¼′	24 6
$6^h\ 52^m\ 5^s$	Jupiter 7° 6½′	53° 0′	13° 29¼′	25 55
$6^h\ 54^m\ 5^s$	Venus 7° 51½′		12° 49⅚′	26 24

$7^h\ 2½^m$ Declination of the right shoulder of ♒, for correcting the armillae [Declin. dextri humeri ♒ pro / corrigendis Armillis]

2° 13¾′ Altitude 14° 0′ [Altitudo 14 0]

2° 14′

Hours, minutes, seconds [H. M. S.]	Altitude [Altit.]	Az-imuth [Azim.]	Declination of Jupiter and Venus [Declin. / ♃ & ♀]	The outermost of the wing of Pegasus, west [Ext. alæ / Peg. occ.]
$7^h\ 15^m\ 30^s$	Jupiter 4° 29′	58° 0′	13° 25′	31 46
$7^h\ 17^m\ 25^s$	Venus 5° 12′		12° 45′	32 12
$7^h\ 25^m\ 25^s$	Jupiter 3° 20′	60° 0′	13° 20⅔′	34 18
$7^h\ 27^m\ 20^s$	Venus 4° 2′		12° 43′	34 38
$7^h\ 33^m\ 20^s$	Jupiter 2° 25′	62° 0′	13° 22′	36 12
$7^h\ 35^m\ 25^s$	Venus 3° 5½′		12° 43′	36 38
	uncertain [incerta]		uncertain [incerta]	
$7^h\ 43^m\ 50^s$	Jupiter 1° 14′	64° 0′		38 50
$7^h\ 45^m\ 20^s$	Venus 2° 1¼′			

These observations were taken carefully, but this evening the air was thick and less clear, especially around the first observations. [Hæc obſeruationes diligenter ſunt / acceptæ, ſed aër hac veſpera craßus / & minus defecatus extitit circa pri-/mas præcipue obſeruationes.]

23 December [DIE 23 DECEMBRIS.]

In the evening Venus was observed not far from the meridian. [Veſperi obſeruabatur ♀ non procul / a Meridiano.]

Hours, minutes, seconds [H. M. S.]	Declination [Declinatio]	Azimuth of Venus [Azim. ♀]	Altitude [Altitudo]
$4^h\ 12^m\ 45^s$	Venus 12° 29¾′	16° 0′	20° 24′
	12° 30′		
$4^h\ 16^m\ 35^s$		17° 0′	20° 16′
$4^h\ 24^m\ 35^s$	Jupiter 13° 28½′	19° 0′	19° 55½′
	13° 28′		

Afterwards, the equatorial distance of Jupiter and Venus. [Poſtea diſtantia æquatoria ♃ & ♀.]

Hours, minutes, seconds [H. M. S.]	Declination [Declinatio]	Distance on the equator, west [Diſt. æquat. / occid.]	The Vulture, west [Vultur / occid.]
$4^h\ 29^m\ 40^s$	Jupiter 13° 29′	20° 55½′	
$4^h\ 30^m\ 15^s$	Venus 12° 29¾′	19° 40⅓′	
$4^h\ 33^m\ 20^s$	Jupiter	21° 49½′	
$4^h\ 33^m\ 54^s$	Venus	20° 32½′	

Hours, minutes, seconds [H. M. S.]	Declination [Declinatio]	Distance on the equator, west [Dift. æquat. / occid.]	The Vulture, west [Vultur / occid.]
$4^h\ 38^m\ 20^s$	Jupiter 13° 28′	23° 6⅓′	
$4^h\ 39^m\ 5^s$	Venus 12° 29½′	21° 51¼′	
$4^h\ 50^m\ 55^s$	Venus	24° 47′	63 1¼
$4^h\ 54^m\ 5^s$	Venus 12° 28′*	25° 36⅓′	among clouds [inter / nubes]

* With one pinnule, among clouds. [* vno pinn. inter nubes.]

25 December, in the evening [*DIE 25 DECEMBRIS, VESPERI.*]

After the quadrant had been rectified exactly. [*Poſt rectificatum Quadrantem ex-/acte.*]

Hours, minutes, seconds [H. M. S.]	Declination of Venus [Declin. ♀]	Azimuth of Jupiter [Azim. ♃]	Altitude of Venus [Altit. ♀]	*Distance of Venus from Mer., toward the west* [*Dift. ♀ a / Mer. / verſ. occ.*]
$3^h\ 33^m\ 0^s$	11° 39¼′ *11° 40′*	7° 0′	22° 13½′	
$3^h\ 40^m\ 40^s$	*11° 39⅔′* *11° 39⅚′*	*9° 0′*	*22° 4′*	*8° 24′*
$3^h\ 44^m\ 32^s$	*11° 39½′*	*10° 0′*	*22° 0′*	*9° 23′*
$3^h\ 48^m\ 14^s$		*11° 0′*	*21° 53½′*	*10° 21′*
$3^h\ 52^m\ 15^s$	*11° 39½′*	*12° 0′*	*21° 48′*	*11° 20′*
$3^h\ 56^m\ 5^s$	*11° 39¾′* *11° 39⅔′*	*13° 0′*	*21° 41¼′*	*12° 29′*
$4^h\ 0^m\ 0^s$		*14° 0′* *good* [*bona*]	*21° 33⅙′*	*13° 16′*
$4^h\ 3^m\ 45^s$	*11° 38⅔′* *11° 38½′*	*15° 0′*	*21° 25′*	

Hours, minutes, seconds [H. M. S.]	Declination of Venus [Declin. ♀]	Azimuth of Jupiter [Azim. ♃]	Altitude of Venus [Altit. ♀]	Jupiter, west [♃ occid.]
$4^h\ 9^m\ 45^s$	*Jupiter 13° 20½′* *13° 20′*	*19° 0′*	*19° 3⅔′*	*18 24*
$4^h\ 18^m\ 58^s$	*Venus 11° 39½′* *11° 39′*	*19° 0′*	*20° 47⅓′*	
$4^h\ 23^m\ 25^s$	*Jupiter 13° 19⅔′* *13° 20′*	*19° 30′*	*18° 23′*	*21 52*
$4^h\ 26^m\ 40^s$	*Venus*	*22° 30′*	*20° 26′*	
$4^h\ 29^m\ 20^s$	*Jupiter 13° 19⅚′* *13° 20⅙′*	*24° 0′*	*18° 3⅚′*	*23 24*
$4^h\ 33^m\ 15^s$	*Jupiter 13° 20′* *13° 20⅙′*	*25° 0′*	*17° 50¼′*	

Afterwards Venus was observed until it had an altitude closely similar to those in Jupiter. [*Poſtea ♀ obſeruabatur donec ha-/beret conſimilem altitudinem cum / ijs quæ in ♃.*]

Hours, minutes, seconds [*H. M. S.*]	*Declination of Venus* [*Decl.* ♀]	*Azimuth of Venus* [*Azim.* ♀]	*Altitude* [*Altit.*]	*Venus, west* [♀ *occ.*]
$4^h\ 38^m\ 10^s$	11° 38⅙′ 11° 38⅓′	24° 0′	19° 48¾′	22 57

Hours, minutes, seconds [*H. M. S.*]	*Declination of Venus* [*Decl.* ♀]	*Azimuth of Venus* [*Azim.* ♀]	*Altitude* [*Altit.*]	*The Vulture, west* [*Vult.* occ.]
$4^h\ 42^m\ 3^s$	11° 38¾′ 11° 39′	25° 0′	19° 34¼′	63 45
$4^h\ 46^m\ 5^s$	11° 39′	26° 0′	19° 20¾′	64 40
$4^h\ 49^m\ 54^s$		27° 0′	19° 5¾′	65 40
$4^h\ 53^m\ 55^s$		28° 0′	18° 51′	66 45
$4^h\ 58^m\ 10^s$		29° 0′	18° 33⅔′	67 47
$5^h\ 2^m\ 8^s$	with one [vno]	30° 0′	18° 17′	68 52½
$5^h\ 5^m\ 58^s$	11° 38½′	31° 0′	18° 2′	69 51½
$5^h\ 10^m\ 5^s$	11° 38′	32° 0′	17° 43′	70 53
$5^h\ 14^m\ 4^s$	11° 38½′	33° 0′	17° 23½′	71 54
$5^h\ 18^m\ 12^s$	11° 38⅓′	34° 0′	17° 5⅔′	72 56½
$5^h\ 22^m\ 15^s$	11° 37½′			73 57½
$5^h\ 26^m\ 15^s$	11° 37′ 11° 37½′	36° 0′	16° 26½′	74 59

Hours, minutes, seconds [*H. M. S.*]	*Declination of Venus* [*Decl.* ♀]	*Azimuth of Venus* [*Azim.* ♀]	*Altitude* [*Altit.*]	*Aldebaran, east* [*Aldeb. / or.*]
$7^h\ 19^m\ 38^s$	11° 29½′ 11° 30⅙′	62° 0′	4° 34½′	47 1

Afterwards the west and the sky were suddenly covered with clouds, so that no further observations could be had in these. Before that, however, it had been fairly clear and the air calm, yet not very cold, but in a middle state between thawing and freezing, as if it were a spring breeze, somewhat vaporous, yet clear. [*Poſtea ſubito occaſus & cœlum nu-/bibus inducebatur, vt nullæ amplius / in his obſeruationes haberi poterint. / Fuit autem antea ſatis ſerenum & aër / tranquillus, non tamen admodum / frigidus, ſed medio modo ſe habens / inter reſolutionem & congelationem / tanquam verna eßet aura, nonnihil / vaporoſa ſerena tamen.*]

You may, moreover, rely on these observations in investigating the refraction and parallax of Venus, once the comparison with Jupiter has been made in the proper way and the observations themselves have been limited where necessary. For they were sufficiently careful, and before they were taken the revolving quadrant was corrected with accurate care, both in its azimuthal course and in altitude. [*Potes autem his obſeruationibus / fidere in inquirenda refractione & / parallaxi* ♀*, collatione ad* ♃ *debito / modo facta, & limitatis vbi opus fue-/rit ipſis obſeruationibus. Nam fuere / ſatis diligentes, & quadrans volubi-/lis priusquam capiebantur tam in / Azimuthali ductu quam altitudine / accurata diligentia corrigebatur.*]

On this same evening Venus was observed from the Vulture. [Hac eadem Veſpera / obſeruabatur ♀ a Vulture.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination [Declin.]	The Vulture, west [Vult. occ.]
$5^h\ 41^m\ 45^s$	44° 11¾′		78 51
$5^h\ 45^m\ 0^s$	44° 12⅙′	11° 37¼′	79 42
		11° 37⅓′	
$5^h\ 48^m\ 20^s$	44° 12⅙′		80 32

Hours, minutes, seconds [H. M. S.]	Vice versa, from the bright star of the tail of the Whale [Viceverſa a Lucida Caudæ Cete]	Declination [Declin.]	The Vulture, west [Vult. occ.]	
$5^h\ 52^m\ 40^s$	32° 59′	11° 37½′	81 35	
		11° 37⅚′		
$5^h\ 57^m\ 15^s$	32° 58½′		82 47	
$6^h\ 0^m\ 10^s$	32° 58′	11° 36′	83 28	Altitude [Altit.]
		11° 36⅔′		13° 27′

26 December, in the evening [*DIE 26 DECEMBRIS, VESPERI.*]

With the clock verified at noon. [*Horologio in meridie verificato.*]

At $3^h\ 11^m\ 50^s$ the star Venus passed through the meridian, with the Sun still above the horizon, so that, being very faint, it was made out through the instrument with difficulty. Its altitude was nevertheless taken with both quadrants, with as much precision as was possible, as follows: [*H. 3 M. 11 50″ Tranſiuit ♀ ſtella per / meridianum, Sole adhuc ſupra / Horizontem exiſtente, vnde ad-/modum tenella difficulter per / inſtrumentum cernebatur, fuit / tamen vtroque quadrante capta / eius altitudo quanta præciſione / licuit vt ſequitur*]

by the steel quadrant [*per Chalyb.*]	*22° 51¾′*
by the revolving quadrant [*per Volub.*]	*22° 50¾′*

and, in addition, the declination by the larger armillae, with both pinnules: [*et inſuper declinatio per Armil-/las maiusculas vtroque pinna-/cidio*]

with one [*vno*]	*11° 14½′*
with the other [*altero*]	*11° 14⅓′*

Afterwards Venus was observed in azimuths and altitudes as follows. [*Poſtea in Azimuthis & altitudinibus / obſeruabatur ♀ vt ſequitur.*]

Hours, minutes, seconds [*H. M. S.*]	*Az-imuth*	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*Venus, west* [♀ *occid.*]
$3^h\ 35^m\ 55^s$	6° 30′	22° 41′	11° 13½′ 11° 13¾′	
$3^h\ 41^m\ 42^s$	8° 0′	22° 33¾′	11° 13½′ 11° 13⅓′	7 27
$3^h\ 45^m\ 20^s$	9° 0′	22° 29⅚′	11° 13¼′ 11° 13½′	8 24
$3^h\ 49^m\ 20^s$	10° 0′	22° 24′	11° 13⅔′ 11° 13⅓′	9 28
$3^h\ 53^m\ 4^s$	11° 0′	22° 19′	11° 13½′ with one [vno]	10 23
$3^h\ 56^m\ 50^s$	12° 0′	22° 12¾′	11° 13⅔′ with one [vno]	11 10

Afterwards Venus and Jupiter were observed together in equatorial distance. [*Poſtea obſeruabantur ſimul in æqua-/toria diſtantia* ♀ *&* ♃.]

Hours, minutes, seconds [*H. M. S.*]	*West* [*Occid.*]	*Declination* [*Declinatio*]	*Altitude of Jupiter* [*Altit.* ♃]
$4^h\ 28^m\ 55^s$	*Jupiter* 22° 41′	13° 15⅔′	18
$4^h\ 29^m\ 28^s$	*Venus* 19° 33′	11° 13′	
$4^h\ 32^m\ 32^s$	*Jupiter* 23° 37⅓′	13° 15¾′	
$4^h\ 33^m\ 5^s$	*Venus* 20° 29⅔′	11° 13⅙′	
$4^h\ 35^m\ 58^s$	*Jupiter* 24° 31⅚′	13° 16′	
$4^h\ 36^m\ 38^s$	*Venus* 21° 27′	11° 13¼′	
$4^h\ 39^m\ 28^s$	*Jupiter* 25° 24¼′	13° 15⅔′	17⅓
$4^h\ 40^m\ 4^s$	*Venus* 22° 16⅔′	11° 13¼′	20¼

Afterwards Venus was observed at an altitude closely similar to the one at which Jupiter had been taken before, on account of the refraction and parallax. [*Poſtea obſeruabatur* ♀ *in conſimili / qua* ♃ *antea capiebatur Altitudine, / propter refractionem & parallaxin.*]

Hours, minutes, seconds [*H. M. S.*]	*Azimuth of Venus* [*Azimuth /* ♀]	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*The Vulture, west* [*Vultur* / occid.]
$4^h\ 45^m\ 48^s$	25° 0′	20° 0⅙′	11° 12⅔′ 11° 12′	64 27

Hours, minutes, seconds [*H. M. S.*]	*Azimuth of Venus* [*Azimuth /* ♀]	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*The Vulture, west* [*Vultur* / occid.]
$4^h\ 50^m\ 5^s$	26° 0′	19° 46⅓′	11° 12⅔′ 11° 12⅙′	65 30
$4^h\ 53^m\ 44^s$	27° 0′	19° 32⅙′		66 29

Hours, minutes, seconds [*H. M. S.*]	*Azimuth of Venus* [*Azimuth* / ♀]	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*The Vulture, west* [*Vultur* / occid.]
$4^h\ 57^m\ 58^s$	*28° 0′*	*19° 15½′*	*11° 12′* with one [vno]	*67 29*
$5^h\ 1^m\ 40^s$	*29° 0′*	*19° 0′*		*68 25*
$5^h\ 5^m\ 44^s$	*30° 0′*	*18° 43⅙′*	*11° 12⅙′* with one [vno]	*69 30*
$5^h\ 9^m\ 38^s$	*31° 0′*	*18° 27⅓′*	*11° 12⅙′* with one [vno]	*70 29½*
$5^h\ 13^m\ 40^s$	*32° 0′*	*18° 9′*	*11° 11¾′* with one [vno]	*71 35*

Afterwards Venus was observed by its distance from the fixed stars, vice versa, as follows. [*Poſtea obſeruabatur* ♀ *diſtantia a / fixis viceverſa vt ſequitur.*]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Diſt. ♀ / a Vulture]	Declination [Declin.]	Altitude of Venus by the lesser quadrant [Altit. ♀ / min. Q.]	The Vulture, west [Vult. / occ.]
$5^h\ 29^m\ 43^s$	44° 44′			75 39
$5^h\ 31^m\ 40^s$	44° 44⅓′	11° 11′ 11° 11½′	16½°	76 12
$5^h\ 34^m\ 30^s$	44° 44½′			76 58

Hours, minutes, seconds [H. M. S.]	Vice versa, from the tail of the Whale [Viceverſa a Cauda Cete]	Declination [Declin.]	Altitude of Venus by the lesser quadrant [Altit. ♀ / min. Q.]	The Vulture, west [Vult. / occ.]
$5^h\ 39^m\ 40^s$	32° 20′	11° 10⅔′		
		11° 10¾′	15⅔°	78 14
$5^h\ 42^m\ 40^s$	32° 20′			
$5^h\ 44^m\ 14^s$	32° 20⅙′	11° 10½′ with both [vtroque]	15° 26′	79 31

Afterwards Jupiter and Venus were observed as follows, in a low position near the horizon. [*Poſtea obſeruabantur* ♃ *&* ♀ *vt ſe-/quitur in decliui ſitu iuxta Horizon-/tem.*]

Hours, minutes, seconds [*H. M. S.*]	*Azimuth*	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*The outermost of the wing of Pegasus, west* [*Extr.* alæ / *Peg.* occ.]
$6^h\ 35^m\ 44^s$	*Jupiter 54° 0′*	*6° 50′*	*13° 12′*	*27 43*

Hours, minutes, seconds [*H. M. S.*]	*Azimuth*	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*The outermost of the wing of Pegasus, west* [*Extr.* alæ / *Peg.* occ.]
	doubtful [*dubia*]	*doubtful* [*dubia*]	*13° 12¼′*	
6h 42m 14s	*Venus 53° 30′*	*9° 29′*	*11° 7½′*	*29 19*
			11° 8′	
6h 49m 5s	*Jupiter 57° 0′*	*5° 20½′*	*13° 10½′*	*31 6½*
			13° 10½′	
6h 51m 24s	*Jupiter 57° 30′*	*5° 4′*	*13° 10′*	*31 40*
			13° 10⅓′	
6h 53m 30s	*Jupiter 58° 0′*	*4° 48′*	*13° 9⅓′*	*32 16*
			13° 9⅚′	
6h 58m 15s	*Jupiter 59° 0′*	*4° 15′*	*13° 9′*	*33 29*
			13° 8½′	
7h 3m 4s	*60° 0′*	*3° 39⅙′*	*13° 7½′*	*34 44*
			13° 8′	
7h 7m 25s	*61° 0′*	*3° 7½′*	*13° 6⅔′*	*35 50½*
			13° 7′	
7h 11m 43s	*62° 0′*	*2° 34′*	*13° 4¼′*	*37 1*
			13° 5½′	
7h 16m 0s	*63° 0′*	*2° 5′*	*13° 3′ with one* [*vno*]	*38 7*

Then Venus was observed in the same way, in a low position, as follows. [*Deinde* ♀ *pari modo in decliui ſitu / obſeruabatur vt ſequitur.*]

Hours, minutes, seconds [*H. M. S.*]	*Azimuth of Venus* [*Azimuth* ♀]	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*Aldebaran, east* [*Aldeb. / orient.*]
7h 19m 35s	*62° 0′*	*4° 55′*	*11° 2¾′*	
			11° 3⅙′	
7h 24m 8s	*63° 0′*	*4° 21⅓′*	*11° 2′*	*44 55*
	good observation [*bona obſerv.*]		*11° 2½′*	
7h 28m 42s	*64° 0′*	*3° 48⅓′*	*11° 1⅓′*	*43 45*
			11° 2′	
7h 33m 15s	*65° 0′*	*3° 12⅔′*	*11° 0⅙′*	*42 34*
			11° 1′	
7h 37m 58s	*66° 0′*	*2° 38′*	*10° 59⅔′*	*41 13*
7h 42m 34s	*67° 0′*	*2° 5′*	*10° 56¼′*	*40 4*
7h 46m 35s	*68° 0′*	*1° 32½′*	*could not* [*non potuit*] *be had any longer* [*amplius haberi.*]	*39 7½*

It was quite exquisitely clear and calm, with a north wind blowing gently, and the instrument had been corrected beforehand, as it was yesterday too, so that nothing was wanting in the azimuths or the altitudes. [*Fuit ſatis exquiſite ſerenum & tran-/quillum, flante leniter ſeptentrionali / vento, & inſtrumentum erat antea / correctum, vt & heri, ita vt nihil in / Azimuthis vel Altitudinibus deſide-/raretur.*]

But so that its inclination toward the west in the declinations, if there had been any, could be limited in the proper way, the right shoulder of ♒ was taken at $6^h\ 1^m$, *when the Vulture, west, was at 83 49; it had in declination:* [*Vt autem eius, ſi qua fuerat verſus / occaſum inclinatio in Declinationi-/bus, poßet debito modo limitari, ca-/piebatur dexter humerus ♒ H. 6 M. 1, / cum Vultur occid. eßet 83 49, habuit / in declinatione*]

	2° 14′	*Altitude* [*Altit.*]
	2° 14½′	*19° 1½′*
$6^h\ 6\frac{2}{3}^m$ [*H. 6 M. 6⅔*]	*2° 15′*	
	**2° 14⅓′*1*	

From this, test the declinations of Jupiter and Venus in a like position. [*Hinc examina Declinationes ♃ & / ♀ in pari ſitu.*]

27 December [DIE 27 DECEMBRIS.]

In the evening Venus and Jupiter were observed as follows. [Veſperi obſerua-bantur ♀ & ♃ / vt ſequitur.]

At $3^h\ 8^m\ 25^s$ Venus passed through the meridian, having the altitude: [H. 3 M. 8 S. 25 Tranſijt ♀ per Meridi-/anum habens Altitudinem.]

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by the steel quadrant [per Chal.]	23° 18′	declination by [Decl. per]	10° 49⅓′
by the revolving quadrant [per Vol.]	23° 18⅙′	the armillae [Armill.]	10° 50′

Hours, minutes, seconds [H. M. S.]	Azimuth of Venus [Azimuth / ♀]	Altitude [Altit.]	Declination [Declin.]	Venus on the equator, west [♀ in / æquat. / occ.]
$3^h\ 30^m\ 50^s$	6° 0′	23° 7′	10° 48⅔′	5° 32′
			10° 48⅚′	
$3^h\ 34^m\ 55^s$	7° 0′	23° 2⅔′		6° 31′
$3^h\ 38^m\ 55^s$	8° 0′	22° 59′	10° 48⅓′	
			10° 48⅙′	
$3^h\ 46^m\ 22^s$	10° 0′	22° 50½′		9° 20′

Hours, minutes, seconds [H. M. S.]	Azimuth of Venus [Azimuth / ♀]	Altitude [Altit.]	Declination [Declin.]	Venus on the equator, west [♀ in / æquat. / occ.]
$3^h\ 50^m\ 25^s$	11° 0′	22° 43′	10° 48′ 10° 48½′	10° 21′
$3^h\ 58^m\ 5^s$	13° 0′	22° 32½′		12° 18′
$4^h\ 2^m\ 0^s$	14° 0′	22° 24⅓′	10° 47⅓′ 10° 48½′	

Afterwards the equatorial distance of Venus and Jupiter was taken in the manner that follows. [Poſtea ſumebatur æquatoria diſtan-/tia ♀ & ♃ in modum vt ſequitur.]

Hours, minutes, seconds [*H. M. S.*]	*Distance on the equator, west* [*Diſt. æquat. / occid.*]	*Declination* [*Declin.*]	*Altitude* [*Altit.*]	*The Vulture, west* [*Vultur / occid.*]
$4^h\ 37^m\ 24^s$	*Jupiter 25° 36½′*	*13° 10⅔′*	*17° 40′*	*63 10½*
$4^h\ 37^m\ 55^s$	*Venus 21° 56⅓′*	*10° 47½′*		*63 28*
$4^h\ 42^m\ 15^s$	*Jupiter 26° 50¾′*	*13° 10⅓′*		*64 26*
$4^h\ 42^m\ 54^s$	*Venus 23° 9′*	*10° 47⅓′*	*20° 40′*	*64 35½*
$4^h\ 46^m\ 36^s$	*Jupiter 27° 53½′*	*13° 10¼′*	*17° 5′*	*65 28*
$4^h\ 46^m\ 58^s$	*Venus 24° 7⅔′*	*10° 47⅙′*		*65 34*
$4^h\ 51^m\ 52^s$	*Jupiter 29° 12⅓′*	*13° 10⅙′*		*66 48*
$4^h\ 52^m\ 28^s$	*Venus 25° 29¼′*	*10° 47¼′*	*20° 5′*	*67 0* or 66 59⅚ [vel 66 59⅚]

Afterwards Venus was observed at an altitude closely similar to that of Jupiter before. [*Poſtea ♀ obſeruabatur in conſimili / cum ♃ antea altitudine.*]

Hours, minutes, seconds [*H. M. S.*]	*Azimuth of Venus, west* [*Azim. / occid. ♀*]	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*The Vulture, west* [*Vultur / occid.*]
$5^h\ 1^m\ 18^s$	*29° 0′*	*19° 27⅙′*	*10° 47′* *with one* [*vno*]	*69 4½*
$5^h\ 5^m\ 32^s$	*30° 0′*	*19° 11′*	*10° 47′* *with one* [*vno*]	*70 7½*
$5^h\ 9^m\ 34^s$	*31° 0′*	*18° 53′*	*10° 46¾′* *with the other* [*altero*]	*71 7*
$5^h\ 13^m\ 44^s$	*32° 0′*	*18° 36′*	*10° 46¾′*	*72 10*
$5^h\ 17^m\ 50^s$	*33° 0′*	*18° 16′*	*10° 46⅔′*	*73 11½*
$5^h\ 22^m\ 4^s$		*17° 58½′*	*10° 46′*	*74 13*

Afterwards the mouth of Pegasus was observed in declination and altitude and also in azimuth, so that, if any limitation of the armillae was required in Jupiter and Venus, it could be restored from this. [*Poſtea obſeruabatur Os Pegaſi in / Declinatione & Altitudine atque Azi-/mutho, vt Armillarum, ſi qua requi-/rebatur limitatio in ♃ & ♀ hinc reſti-/tui poßet.*]

				The first of the wing of Pegasus, west [*Prima / alæ / Pegaſi / occid.*]
5 30		*29 3*	*8 2⅓*	
40				
			with both [*vtroq.*]	
5 34			*8 3⅔*	
28				
			good [*bona*]	
5 41	*60 0*	*27*	*8 3½*	*30 26*
28		*53½*		
			with both [*vtroque*]	

Afterwards Venus was observed in distance from the Vulture, *and, vice versa, from the tail of the Whale.* [Poſtea obſeruabatur ♀ diſtantia a / Vulture *&* *viceverſa a Cauda Ceti.*]

Hours, minutes, seconds [H. M. S.]	Distance from the Vulture [Diſt. a / Vulture]	Declination [Declin.]	Altitude [Altit.]	The first of the wing of Pegasus, west [Prima alæ. / Peg. occ.]
$5^h\ 49^m\ 5^s$	45° 19½′		15° 40′	32 32
$5^h\ 51^m\ 35^s$	45° 18′			
$5^h\ 53^m\ 40^s$	45° 18⅙′	10° 46′		33 41
		10° 45½′		

[1] Written in the margin: *Which agrees moderately with the true declination.* [Adſcriptum eſt in margine: *Quod mediocriter concordat cum vera declinatione.*]

Hours, minutes, seconds [H. M. S.]	Vice versa, from the tail of the Whale [Viceverſa a Cauda Ceti.]	Declination [Declin.]	Altitude [Altit.]	The first of the wing of Pegasus, west [Prima alæ. / Peg. occ.]
$5^h\ 59^m\ 50^s$	31° 49′+			34 54½
$6^h\ 1^m\ 50^s$	31° 47′	10° 45⅓′	14° 20′	
		10° 45½′		
$6^h\ 5^m\ 50^s$	31° 47⅙′			36 41

Afterwards Jupiter and Venus were observed in the same way as follows. [Poſtea obſeruabantur ♃ & ♀ eodem / modo vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Azimuth	Altitude [Altit.]	Declination [Declin.]	The outermost of the wing of Pegasus, west [Extr. alæ / Peg. occ.]
$6^h\ 27^m\ 15^s$	*Jupiter* *52° 0′*	*7° 58½′*	*13° 9½′*	*25 1*
			twice [*bis*]	
$6^h\ 40^m\ 0^s$	*Venus* *52° 0′*	*10° 41⅔′*	*10° 43½′*	*28 7½*
			10° 44′	

Hours, minutes, seconds [H. M. S.]	Azimuth	Altitude [Altit.]	Declination [Declin.]	The outermost of the wing of Pegasus, west [Extr. alæ / Peg. occ.]
6h 44m 34s	*Venus 53° 0′*	*10° 9⅔′*	*10° 42⅙′*	*29 17*
6h 49m 25s	*Jupiter*	*5° 45½′*	*13° 5¾′*	*30 32½*
6h 52m 30s	*Jupiter 57° 0′*	*5° 22½′*	*13° 5½′*	*31 14*
6h 57m 15s	*Jupiter 58° 0′*	*4° 51½′*	*13° 3¾′*	*32 26*
		good [bona]		
7h 1m 54s	*Jupiter 59° 0′*	*4° 19′*	*13° 3⅓′*	*33 35½*
7h 6m 46s	*Jupiter 60° 0′*	*3° 46′*	*13° 3′*	*34 46*
7h 11m 30s	*Jupiter 61° 0′*	*3° 12⅓′*	*13° 2½′*	*35 57½*
		good [bona]		
7h 16m 24s	*Jupiter 62° 0′*	*2° 41′*	*13° 1′*	*37 11*
7h 21m 5s	*Jupiter 63° 0′ doubtful [dubia]*	*2° 7′*	*12° 59⅔′*	

Afterwards Venus was taken in the same manner, in a low position. [Poſtea ♀ pari ratione in decliui ſitu / capiebatur.]

Hours, minutes, seconds [H. M. S.]	*Azimuth [Azim.]*	*Altitude [Altit.]*	*Declination [Declin.]*	*Aldebaran, east [Aldeb. / orient.]*
7h 30m 50s	*63° 0′*	*4° 51½′*	*10° 39½′*	*44 24½*
7h 35m 40s	*64° 0′*	*4° 15⅔′*	*10° 38′*	*43 11*
7h 40m 18s	*65° 0′*	*3° 41½′*	*10° 37¼′*	*41 58*
7h 45m 10s	*66° 0′*	*3° 5½′*	*10° 36′*	*40 48½*
7h 49m 50s	*67° 0′*	*2° 32′*	*10° 34⅔′*	*39 37*
7h 54m 45s	*68° 0′*	*1° 59′*	*10° 32′*	*38 25½*
7h 59m 32s	*69° 0′*	*1° 24½′*		*37 15*

It could not be observed any longer. [Non poterat amplius obſeruari.]

Afterwards the first of the wing of Pegasus was taken in a closely similar position toward the pole. [Poſtea capiebatur prima alæ Pe-/gaſi in conſimili verſus polum ſitu.]

8 7 18	*78 0*	*23 42½*		*35 16*
8 11 54		*23 6⅙*	*13 2½*	
8 21 5	*81 0*	*21 49½*	*13 3¾*	*31 49½*
8 25 40	*82 0*	*21 12*	*13 3½*	*30 38*

28 December, in the evening [DIE 28 DECEMBRIS, VESPERI.]

At 3^h 6^m 40^s Venus passed through the meridian, having the altitude: [H. 3 M. 6 40″ Tranſiuit ♀ / per Merid. habens Altitudinem]

by the steel quadrant [per Chalyb.]	23° 41¼′
by the revolving quadrant [per Volub.]	23° 41⅓′
declination in the armillae [Declin. in Armillis]	10° 22⅓′
largest [max.]	10° 22′

Hours, minutes, seconds [H. M. S.]	Declination of Venus [Declin. ♀]	Azimuth [Azim.]	Altitude [Altit.]	Venus, west, on the equator [♀ occid. / in æquat.]
3^h 48^m 25^s	10° 23′	11° 0′	23° 11⅙′	
	10° 23½′			
3^h 52^m 20^s		12° 0′	23° 4⅓′	11° 10′
3^h 56^m 10^s	10° 23′	13° 0′	22° 58′	
	10° 23′			
4^h 0^m 0^s		14° 0′	22° 50½′	13½°
4^h 3^m 50^s	10° 21′	15° 0′	22° 42⅙′	
	10° 22′			
4^h 30^m 50^s	10° 22¼′	22° 0′	21° 33′	
	10° 22′			
4^h 35^m 0^s		23° 0′	21° 19⅔′	
4^h 39^m 4^s		24° 0′	21° 6′	22° 40′
4^h 42^m 55^s	10° 20′	25° 0′	20° 53′	
	10° 21½′			
4^h 50^m 50^s		27° 0′	20° 24½′	25° 37′

Hours, minutes, seconds [H. M. S.]	Declination of Venus [Declin. ♀]	Azimuth [Azim.]	Altitude [Altit.]	The Vulture, west [Vultur / occ.]
4^h 59^m 12^s	10° 21′	29° 0′	19° 53′	
5^h 3^m 10^s	10° 20′	30° 0′	19° 37′	70 57
5^h 7^m 15^s		31° 0′	19° 21½′	
5^h 11^m 20^s	10° 21′	32° 0′	19° 2′	72 47
	good [bona]			

Soon the bright star of the Whale passed the meridian at an altitude of 13° 57½′, declination 20° 10⅙′; of the same, by the armillae, 20° 10′. [*Mox lucida Cete tranſiuit Merid. in / Alt. 13 57½, Declin. 20 10⅙ / eiuſdem per Armillas 20 10*]

Afterwards Venus was observed first from the bright star of the Vulture, as if at a like altitude, for which reason no refraction could creep in. [Poſtea obſeruabatur ♀ primo a Lu-/cida Vulturis, quaſi in aßimili Altitu-/dine, quare nulla refractio ſe inſinu-/are potuit.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination of Venus [Declin. ♀]	Altitude of Venus [Altit. ♀]	The bright star of the Vulture, west [Vulturis / luc. occ.]
$5^h\ 27^m\ 0^s$	45° 52′		17° 30′	
$5^h\ 30^m\ 15^s$	45° 50¾′	10° 21⅙′ 10° 21½′		77 30
$5^h\ 35^m\ 40^s$	45° 52½′		16° 58′	78 57

Hours, minutes, seconds [H. M. S.]	Vice versa, from the bright star of the tail of the Whale [Viceverſa a Lucida Cauda Cete.]	Declination of Venus [Declin. ♀]	Altitude of Venus [Altit. ♀]	The bright star of the Vulture, west [Vulturis / luc. occ.]
$5^h\ 46^m\ 20^s$	31° 16⅔′	10° 19′ 10° 18′	16° 4′	81 27
$5^h\ 52^m\ 55^s$	31° 17½′		15° 28′	83 2
$6^h\ 0^m\ 5^s$	31° 17′	10° 18′ 10° 17¾′	15° 17′	84 45

Afterwards Venus was observed until *setting.* [*Poſtea* ♀ *obſeruabatur* vsque *in / occaſum.*]

Hours, minutes, seconds [H. M. S.]	Azimuth	Declination [Declin.]	Altitude [Altit.]	The jaw of the Whale, west [Mandib. / Cete / occ.]
$7^h\ 33^m\ 15^s$	64° 0′	10° 8½′ with both [vtroque]	4° 45′	0 23

Hours, minutes, seconds [H. M. S.]	Azimuth	Declination [Declin.]	Altitude [Altit.]	The jaw of the Whale, west [Mandib. / Cete / occ.]
$7^h\ 37^m\ 45^s$	65° 0′	10° 8¼′	4° 13′	1 32
$7^h\ 42^m\ 42^s$	66° 0′		3° 35′	2 43
$7^h\ 47^m\ 25^s$	67° 0′	10° 7′	3° 1′	3 51
$7^h\ 52^m\ 15^s$	68° 0′	10° 6½′	2° 23′ doubtful [dub.]	
$7^h\ 57^m\ 0^s$		10° 5′	1° 50′	6 8½

Afterwards Venus could not be observed any longer this evening. [*Poſtea* ♀ *obſeruari non poterat am-/plius hac veſpera.*]

31 December, in the evening [DIE 31 DECEMBRIS, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Azimuth of Venus, west [Azim. ♀ / occid.]	Altitude of Venus [Altit. / ♀]	Declination [Declin.]	Venus, west, on the equator [♀ occid. / in æquat.]
$3^h\ 33^m\ 50^s$	8° 0′	24° 42⅙′	9° 5⅔′ 9° 6⅓′	7° 19′
$3^h\ 41^m\ 20^s$	10° 0′	24° 33′	9° 5½′ 9° 5⅔′	
$3^h\ 48^m\ 45^s$	12° 0′	24° 20¼′	9° 6′ 9° 5½′	10° 56′
$3^h\ 56^m\ 30^s$	14° 0′	24° 9′	9° 6⅙′ 9° 5⅔′	12° 52′
$4^h\ 4^m\ 10^s$	16° 0′	23° 52′	9° 5⅓′ 9° 6′	

Afterwards Jupiter and Venus were observed in equatorial distance. [Poſtea obſeruabantur ♃ & ♀ in / æquatoria diſtantia.]

Hours, minutes, seconds [H. M. S.]	Distance on the equator [Diſt. æquat.]	Altitude [Altitudo]	Declination [Declinatio]
$4^h\ 29^m\ 44^s$	Jupiter, west, 27° 9⅝′	17° 31½′	
$4^h\ 30^m\ 4^s$	Venus, west, 21° 11′	22° 41′	
$4^h\ 32^m\ 42^s$	Jupiter, west, 27° 54½′		Jupiter 12° 54′
$4^h\ 33^m\ 30^s$	Venus, west, 22° 2⅙′		Venus 9° 4⅙′
$4^h\ 38^m\ 20^s$	Jupiter, west, 29° 19′	17° 0′	
$4^h\ 39^m\ 10^s$	Venus, west, 33° 25½′	22° 9′	

Afterwards the distance of Venus from the Vulture was observed, with which it was placed in equilibrium with respect to the horizon. [Poſtea obſeruabatur diſtantia ♀ aVul-/ture, cum quo ad æquilibrium Hori-/zontis fuit diſpoſita.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination [Declin.]	The Vulture, west [Vultur / occid.]	Altitude of Venus [Altit. / ♀]
$4^h\ 52^m\ 25^s$	47° 26½′		71 19	
$4^h\ 55^m\ 40^s$	47° 25½′	9° 5⅔′ 9° 6′	72 2	
$4^h\ 59^m\ 20^s$	47° 26¼′		72 55	
$5^h\ 3^m\ 50^s$	47° 26⅓′	9° 5½′ 9° 5⅔′		21° 0′

Hours, minutes, seconds [H. M. S.]	Vice versa, from the tail of the Whale [Viceverſa a Cauda Cete.]	Declination [Declin.]	The Vulture, west [Vultur / occid.]	Altitude of Venus [Altit. / ♀]
$5^h\ 11^m\ 40^s$	29° 44⅓′		75 51½	
$5^h\ 14^m\ 5^s$	29° 43′	9° 5′ with one [vno]		20° 10′
$5^h\ 16^m\ 50^s$	29° 43⅝′		77 9	

This star in the Whale was observed with difficulty this evening because of vapours. Venus, however, was a little higher than it during the observing. [Hæc ſtella in Cete ob vapores diffi-/culter obſeruabatur hac veſpera. Fuit / autem ♀ hac paulo eleuatior inter ob-/ſeruandum.]

Then it was observed from the bright star of ♈. [Deinde obſeruabatur a Lucida ♈.]

Hours, minutes, seconds [H. M. S.]	Distance from the bright star of ♈ [Diſt. a / luc. ♈]	Altitude [Altit.]	Declination [Declin.]	The Vulture, west [Vultur / occid.]
$5^h\ 20^m\ 50^s$	56° 54⅓′+	19° 36′		
$5^h\ 24^m\ 40^s$	56° 53′	19° 5′	9° 4′	79 12
			9° 4⅓′	
$5^h\ 28^m\ 10^s$	56° 53′	18° 50′		
$5^h\ 32^m\ 10^s$	56° 53′		9° 3′	81 6
			9° 3½′	

Observations for Fixed Stars That Are Missing from the Catalogue of Fixed Stars [OBSERUATIONES PRO STELLIS FIXIS QUÆ DESIDE-/RANTUR IN FIXARUM CATALOGO.]

14 February, in the evening [DIE 14 FEBRUARIJ, VESPERI.]

[Margin: of the 4th magnitude, larger [4æ mag. / maior.]] Between the bend of Cassiopeia and the left knee of Cepheus [Inter flexuram Caßiopejæ & ſiniſtrum genu Cephei]	18° 0′
	better [melior]
	18° 0½′
Between the right shoulder of Cepheus and the same [Inter dextrum humerum Cephei & eandem]	18° 36¾′
in the left knee [in ſiniſtro genu]	18° 37¼′
Between the right shoulder of Cepheus and the small one [Inter dextrum humerum Cephei & paruam]	15° 49′
in the thigh above the left knee [in fœmore ſupra genu ſiniſtrum]	15° 49¾′
[Margin: magnitude 6 [6 mag.]] Between the same and the bend of Cassiopeia [Inter eandem & flexuram Caßiopeiæ]	17° 29′
	17° 30′
[Margin: magnitude 6 [mag. 6]] Between the bend of Cassiopeia and the right knee of Cepheus [Inter flexuram Caßiopeiæ & dextrum genu Cephei]	
twice repeated [bis rep.]	27° 48′
Between the same and the right shoulder of Cepheus [Inter eandem & dextrum humerum Cephei]	16° 9′
	16° 9½′

28 February, in the evening [DIE 28 FEBRUARIJ, VESPERI.]

[Margin: magnitude 4, larger [4 mag. maj.]] Between the pole star and 10 in the tiara of Cepheus [Inter ſtellam Polarem & 10 in tyara Cephei]	31° 29′ twice [bis]
[Margin: magnitude 4 [4 mag.]] Between the same and 11 in the tiara of Cepheus [Inter eandem & 11 in tyara Cephei]	32° 38⅓′
	32° 37½′

Vice versa [Viceverſa.]	
Between the tenth of Cepheus (observed in the former way) [Inter decimam Cephei (priore modo obſeruatam)]	
and the bend of Cassiopeia [& flexuram Caßiopejæ]	20° 51⅓′ twice [bis]
Between 11 (observed in the latter way) [Inter 11 (poſteriore modo obſeruatam)]	
and the bend of Cassiopeia [& flexuram Caßiopejæ]	20° 57′ twice [bis]

9 March, in the evening [DIE 9 MARTIJ, VESPERI.]

[Margin: magnitude 5 [magnit. 5]] Between 22 in the left foot of Boötes and the tail of ♌ [Inter 22 in pede ſiniſtro Bootis & caudam ♌]	28° 57′ twice [bis]
[Margin: magnitude 5 [5 mag.]] Between cor ♌ and 21 in the left foot of Boötes [Inter cor ♌ & 21 in ſiniſtro pede Bootis]	53° 3⅔′ twice [bis]
Between cor ♌ and 20 in the left foot of Boötes [Inter cor ♌ & 20 in ſiniſtro pede Bootis]	54° 45′
	54° 44⅔′

Observations of the year 1595 [OBSERUATIONES ANNI 1595.]

Observations of the Sun [OBSERUATIONES SOLIS.]

1 January [DIE 1 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	12° 17¼′
by the revolving quadrant [per Volub.]	12° 17′
by the mural quadrant [per Mural.]	12° 17⅙′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	21° 50⅔′
	21° 50½′

The sky was quite clear. [Fuit ſatis bene ſerenum.]

2 January [DIE 2 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	12° 26½′
by the revolving quadrant [per Volub.]	12° 26⅔′
by the mural quadrant [per Mural.]	12° 26¼′
Declination by the larger armillae [Declin. per Armillas maiores]	21° 38⅔′
	21° 39′

The sky was quite clear, but the air windy and unsteady. [Erat ſatis bene ſerenum, ſed aër fla-/tulentus & intranquillus.]

24 January [DIE 24 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	17° 32½′
by the revolving quadrant [per Volub.]	17° 32⅔′
Declination by the armillae [Declin. per Armillas]	16° 34¾′
	16° 35′

The sky was moderately clear. [Erat mediocriter ſerenum.]

25 January [DIE 25 JANUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	17° 50⅔′
by the revolving quadrant [per Volub.]	17° 50′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	16° 15⅔′
	16° 15½′

It was very clear. [Fuit bene ſerenum.]

6 February [DIE 6 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	21° 42⅔′
by the revolving quadrant [per Volub.]	21° 42⅓′
Declination by the larger armillae [Declin. per Armillas maiores]	12° 23½′
	12° 24′

From the 4th hour in the afternoon of the previous day the clock was running $3\frac{2}{3}^{m}$ faster than it should. It was very clear. [Horologium ab hora 4^{ta} pomeridi-/ana heſternæ diej $3\frac{2}{3}$ M. citius iuſto / ibat. Fuit bene ſerenum.]

8 February [DIE 8 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	22° 25⅙′
by the revolving quadrant [per Volub.]	22° 24½′
Declination by the armillae [Declin. per Armillas]	11° 41′
larger [maiores]	11° 40½′

The sky was quite clear. [Erat ſatis bene ſerenum.]

From noon of the preceding day the clock was running slower than it should, by 9^{m}; but how to correct the clock from these will be uncertain, because the weight was immersed in water. [Horologium tardius iuſto ibat a Me-/ridie antecedentis diej 9 M. ſed de cor-/rigendo horologio ex his incertum / erit, quod pondus in aquam immer-/ſum fuit.]

13 February [DIE 13 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	24° 12⅚′
by the revolving quadrant [per Volub.]	24° 11′
Declination by the armillae [Declin. per Armillas]	9° 51⅔′
	9° 52¼′

The clock was corrected, because it was running more than it should, by 8^{m}. It was moderately clear. [Corrigebatur Horologium, quod plus / iuſto 8 Minutis mouebatur. Fuit medi-/ocriter ſerenum.]

14 February [DIE 14 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	24° 32½′
by the revolving quadrant [per Volub.]	24° 33′
Declination by the armillae [Declin. per Armillas]	9° 31′
	9° 30′

The clock was corrected, because it had moved 2^{m} more than it should from $12\frac{1}{2}^{h}$ on the preceding evening; this can be taken into account in correcting

the times. How the clock was corrected at that time, however, see above.[1] [Corrigebatur horologium quod 2 M. / plus iuſto motum fuit ab Hora 12½ veſ-/pertina antecedente, quod animad-/verti poteſt in temporibus corrigen-/dis, quomodo autem tunc correctum / eſt horologium vide ſuperius[1].]

15 February [DIE 15 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	24° 57′
by the revolving quadrant [per Volub.]	24° 55⅚′
Declination by the armillae [Declin. per Armillas]	9° 8½′
	9° 9′

From yesterday's noon the clock was running 9^m slower than it should, but its weight had already been immersed in water. [Horologium tardius iuſto ibat 9 Min. / ab heſterno Meridie, ſed pondus eius / iam in aquam immerſum fuit.]

It was not clear enough. [Non fuit ſatis ſerenum.]

[1] See below, among the observations of the Moon, on 13 February. [Vide infra inter obſeruationes lunæ d. 13 Feb.]

16 February [DIE 16 FEBRUARIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	25° 19⅔′
by the revolving quadrant [per Volub.]	25° 19½′
Declination by the armillae [Declin. per Armillas]	8° 45¼′
	8° 45′

During the observing it was moderately clear. [Fuit inter obſeruandum mediocri-/ter ſerenum.]

From noon of the preceding day the clock was running 5^m slower than it should. [Horologium a Meridie anteceden-/tis diej 5 Min. tardius iuſto ibat.]

19 February [DIE 19 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	26° 25½′
by the revolving quadrant [per Volub.]	26° 25⅔′
Declination by the armillae [Declin. per Armillas]	7° 38′
	7° 38⅙′

It was moderately clear. [Fuit mediocriter ſerenum.]

22 February [DIE 22 FEBRUARIJ.]

We observed the following in the Sun. [Hæc quæ ſequuntur in ☉^{le} obſerua-/bamus.]

Hours, minutes, by the usual clock [H. M. / vſitato / horol.]	Altitude of the Sun [Altit. / ☉]	Azimuth from the meridian towards the east [Azim. a mer. / ad ort.]	Declination [Decl.]	Distance of the Sun on the equator [Diſt. / æquat.☉]
7^h 12^m	4° 22′	71½°		
7^h $14⅔^m$	4° 43′	71° 0′		
7^h $26⅔^m$	6° 14¼′	68½°	6° 29½′	68° 34′
			6° 30′	
7^h $31⅓^m$	6° 48½′	67½°	6° 27½′	67° 26′
			6° 27⅔′	
7^h 33^m 45^s	7° 7⅔′	67° 0′		
8^h 1^m 30^s	10° 32′	61° 10′		60° 0′

At this last observation we set the index of both clocks exactly to the point of the eighth hour, adding something to the weight of the larger, because it had been running 10^m slower than it should from $9½^h$ in the evening. [In hac vltima obſeruatione poſui-/mus indicem vtriusque horologij ex-/acte in punctum horæ octauæ adijci-/endo nonnihil ponderi maioris quod / illud ab H. 9½ veſpertina M. 10 tardius / iuſto ibat.]

The same day, at noon [*Die eodem in meridie*]

Altitude of the Sun by the steel instrument [*Altit. ☉ per Chalyb.*]	*27° 33⅖′*
by the revolving quadrant [*per Volub.*]	*27° 33½′*
Declination by the armillae [Declin. per Armillas]	6° 28¾′
	6° 29⅙′

It was moderately well clear. [Fuit mediocriter bene ſerenum.]

24 February [DIE 24 FEBRUARIJ.]

Meridian altitude of the Sun [Altit. ☉ Merid.]	
by the steel instrument [per Chalyb.]	28° 21′
by the revolving quadrant [per Volub.]	28° 21¼′
Declination by the armillae [Declin. per Armillas]	5° 41′
	5° 41⅔′

It was clear enough. [Fuit ſatis ſerenum.]

16 March[1] [DIE 16 MARTIJ[1].]

Meridian altitude of the Sun [*Altit. ⊙ Merid.*]	
by the revolving quadrant [*per Volub.*]	*36° 12′*
by the mural quadrant [*per Mural.*]	*36° 11⅚′*
by the steel instrument [*per Chalyb.*]	*36° 12′*
Declination of the Sun in the armillae [*Declin. ⊙ in Armillis*]	*2° 10½′*
	2° 10′

N.B. The armillae were corrected precisely; an error of 5′, more or less, was found in them, showing the northern declination near the equator greater than it should be. [N. B. Corrigebantur Armillæ ad / amußim, in quibus error plus minus / 5 M. deprehenſus eſt, Declinationem / boream circa æquatorem iuſto maio-/rem exhibentes.]

At noon the clock was running slower than it should by 18^m, which are to be counted from the third hour in the morning, as we noted above. [*Horologium in Meridie iuſto tar-/dius mouebatur Minutis 18, quæ nu-/meranda ſunt ab Hora tertia matu-/tina, vti ſupra annotauimus.*]

17 March[1] [*DIE 17 MARTIJ[1].*]

At 5^h 41^m the upper limb of the Sun began to rise [*H. 5 41′ incepit ſuper. limbus ⊙ oriri*]

5^h 42⅚^m the middle [*5 42⅚ medius*]

5^h 45¼^m the whole [*5 45¼ totus*]

Meridian altitude of the Sun [*Altit. ⊙ merid.*]	
by the steel instrument [*per Chalyb.*]	*36° 36′*
by the revolving quadrant [*per Volub.*]	*36° 36⅓′*
Declination [*Declinatio*]	*2° 31½′*
	2° 31′
Declination by the largest armillae, again [*Declin. per Armillas maxim. denuo*]	
rectified, with one pinnule [*rectificatas, vno pinnac.*]	*2° 30′*
with the other pinnule [*altero pinnacidio*]	*2° 30½′*

18 March [DIE 18 MARTIJ.]

Meridian altitude of the Sun [Altit. ⊙ in merid.]	
by the steel instrument [per Chalyb.]	36° 58⅚′
by the revolving quadrant [per Volub.]	36° 59′
by the mural quadrant [per Mural.]	36° 59$\frac{1}{12}$′
Declination by the armillae [Declin. per Armillas]	2° 52⅚′

larger [maiores]	2° 52¾′

The sky was exceptionally clear and calm. [Erat apprime ſerenum & tranquil-/lum.]

The clock had advanced 5½^{m} faster than it should. [Horologium 5½ M. celerius iuſto pro-/motum eſt.]

[1] You will find observations of the Sun made at 6^{h} A.M. below, among the observations of Venus. [Obſervationes Solis hora 6 A. M. factas infra inter obſervationes Veneris invenies.]

For the true place of the Sun about the equinox, from the preceding obser-vation. [Pro vero loco ☉$^{l.ſ}$ circa æquinoctium ex præcedente obſeruatione.]

Meridian altitude observed [Altit. merid. obſeruata]	
and limited [& limitata]	36° 59′ 0″
Parallax of the Sun, added [Parallaxis ☉ add.]	2 23
Refraction, subtracted [Refractio ſubtrah.]	25
True meridian altitude of the Sun [Vera alt. mer. ☉]	37° 0′ 58″
Elevation of the equinoctial [Eleuatio æquinoctialis]	34° 5′ 30″
True declination of the Sun [Vera decl. ☉$^{l.ſ}$]	2° 55′ 28″
Resp. longitude of the Sun [Reſp. Long. ☉$^{l.ſ}$]	♈ 7° 20′ 45″
Our ephemeris, of the Sun [Ephemeris noſtra ☉$^{l.ſ}$]	♈ 7° 20′ 34″

20 March [DIE 20 MARTIJ.]

At 5^{h} 2½^{m} the middle of the Sun was seen to rise. [*H.5 M.2½ ☉ medius oriri viſus eſt.*]

5^{h} 4^{m} the whole Sun had risen [*5 4 Totus ☉ ortus*]

Meridian altitude of the Sun [Altit. ☉ merid.]	
by the steel instrument [per Chalyb.]	37° 45⅓′
by the revolving quadrant [per Volub.]	37° 46′
by the mural quadrant [per Mural.]	37° 46′
Declination by the largest armillae [Declin. per Armillas max.]	3° 39⅚′
	3° 39⅔′

It was moderately clear. [Fuit mediocriter ſerenum.]

From noon of the preceding day the clock was running 28^{m} slower than it should. [Horologium 28 M. tardius iuſto ibat a Meridie antecedentis diej.]

23 March [DIE 23 MARTIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	38° 54¾′
by the revolving quadrant [per Volub.]	38° 54⅝′
by the mural quadrant [per Mural.]	38° 55⅙′
Declination by the larger armillae [Declin. per Armill. maiores]	4° 38¾′
	4° 38¼′
The declination repeated soon after [Repetita mox Declin.]	4° 38½′
	4° 38⅓′

It was quite clear. [Fuit ſatis bene ſerenum.]

24 March [DIE 24 MARTIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	39° 18′
by the revolving quadrant [per Volub.]	39° 19′
by the mural quadrant [per Mural.]	39° 18½′
Declination by the larger armillae [Declin. per Armill. maiores]	5° 11½′
	5° 11′

It was not clear enough. [Non fuit ſatis ſerenum.]

25 March [DIE 25 MARTIJ.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	39° 40½′
by the revolving quadrant [per Volub.]	39° 40¼′
by the mural quadrant [per Mural.]	39° 41⅓′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	5° 34′
	5° 33½′

It was moderately clear. [Fuit mediocriter ſerenum.]

28 March [DIE 28 MARTIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	40° 47¾′
by the revolving quadrant [per Volub.]	40° 48′
by the mural quadrant [per Mural.]	40° 49½′
Declination of the Sun by the armillae [Declin. ⊙ per Armill.]	6° 42′

	6° 41⅔′

It was very clear. [Fuit bene ſerenum.]

29 March [DIE 29 MARTIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	41° 10⅔′
by the revolving quadrant [per Volub.]	41° 10⅚′
by the mural quadrant [per Mural.]	41° 11½′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	7° 4⅓′
	7° 4⅔′

It was not very clear. [Non fuit bene ſerenum.]

30 March [DIE 30 MARTIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	41° 34′
by the revolving quadrant [per Volub.]	41° 33½′
by the mural quadrant [per Mural.]	41° 34⅙′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	7° 27⅓′
	7° 27½′

It was moderately clear, but the air was unsteady, with the east wind blowing. [Fuit mediocriter ſerenum, ſed aër intranquillus, flante ſubſolano.]

1 April [DIE 1 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	42° 17¾′
by the revolving quadrant [per Volub.]	42° 18⅙′
by the mural quadrant [per Mural.]	42° 18⅚′
Declination by the largest armillae [Declin. per Armill. max.]	8° 11′
	8° 11½′

It was not clear enough, and moreover the air was very unsteady. [Non fuit ſatis ſerenum & inſuper aër admodum intranquillus.]

17 April [DIE 17 APRILIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	47° 48½′
by the revolving quadrant [per Volub.]	47° 48⅚′
by the mural quadrant [per Mural.]	47° 50⅙′
Declination by the armillae [Declin. per Armill.]	16° 41⅓′
larger [maiores]	16° 41⅔′

The sky was moderately well clear. [Erat mediocriter bene ſerenum.]

Afterwards the underground quadrants were corrected. Among them the steel one showed, by the rule, an error that was quite obvious, which had come upon it after the thaw following the frost. [Poſtea correcti ſunt Quadrantes ſub-/terranei, inter quos Chalybeus erro-/rem ſatis manifeſtum amußi exhibuit, / qui illi acceßerat poſt frigoris regela-/tionem.]

For the place of the Sun from the limited meridian altitude [Pro loco ⊙ ex limitata altitudine meridiana]

Meridian altitude by the steel instrument and [Alt. Mer. per Chal. &]	
the revolving quadrant, limited [Vol. lim.]	47° 48⅔′
Parallax of the altitude of the Sun, added [Parallaxis altit. $\odot^{l_i^s}$ add.]	2 0
True altitude of the Sun [Vera altit. $\odot^{l_i^s}$]	47° 50′ 40″
Our elevation of the equator [Eleuatio æquatoris noſtra]	34° 5′ 30″
True declination of the Sun [Vera decl. $\odot^{l_i^s}$]	13° 45′ 10″
Resp. longitude [Reſp. Longitudo]	6° 33⅓′
From our ephemeris [Ex noſtra Ephemeride]	6 36 54
The mural quadrant gives the place of the Sun [Muralis dat locum ⊙]	6 37 52

18 April [DIE 18 APRILIS.]

About noon. [Circa meridiem.]

When the Sun was in azimuth 3° 7′ [P. 3 M. 7] from the meridian towards the west. [Cum ⊙ eßet in Azimuth a Meridie ad occaſum P. 3 M. 7.]

Altitude of the Sun [Altit. ⊙]	
on the steel instrument [in Chalyb.]	48° 7′ 0″
on the revolving quadrant [in Volub.]	48° 7′ 0″
Declination by the armillae [Declin. per Armill.]	14° 1¼′
	14° 1¾′

The sky was quite clear. [Erat ſatis bene ſerenum.]

23 May [DIE 23 MAIJ.]

Meridian altitude [Altit. Merid.]	
by the steel instrument [per Chalyb.]	56° 15½′
by the revolving quadrant [per Volub.]	56° 14⅚′
Declination by the largest armillae [Declin. per Armill. max.]	22° 8½′
	22° 9′

It was clear enough. [Fuit ſatis ſerenum.]

25 May [DIE 25 MAIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	56° 30⅓′
by the revolving quadrant [per Volub.]	56° 30⅔′
Declination by the armillae [Declin. per Armillas]	22° 23¾′
	22° 24⅓′

It was very clear. [Fuit bene ſerenum.]

12 July [DIE 12 JULIJ.]

Meridian altitude of the Sun [Alt. ⊙ merid.]	
by the steel instrument [per Chalyb.]	54° 31⅙′
by the revolving quadrant [per Volub.]	54° 31⅗′
by the mural quadrant [per Mural.]	54° 32′
Declination by the armillae [Declin. per Armillas]	20° 26′
larger [maiores]	20° 25½′

The sky was moderately clear. [Erat mediocriter ſerenum.]

22 July [*DIE 22 JULIJ.*]

Meridian altitude of the Sun [*Altitud. ⊙ Merid.*]	
by the revolving quadrant [*per Volub.*]	*52° 17′ 45″*
by the steel instrument, better [*per Chalyb., melior*]	*52° 17′ 20″*
Declination, with one [*Declin., vno*]	*18° 9′*
with the other [*altero*]	*18° 9⅓′*

23 July [DIE 23 JULIJ.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the revolving quadrant [per Volub.]	52° 2′ 50″
by the steel instrument [per Chalyb.]	52° 1′ 45″
Declination, with one [Declin. vno]	17° 54′
with the other [altero]	17° 54½′

Rely rather on the steel instrument. For the revolving quadrant had acquired some defect, which we corrected at once. [*Adhibe fidem potius Chalybeo. Nam Volubilis aliquid vitij contrax-/erat, quod ſtatim correximus.*]

2 August [DIE 2 AUGUSTI.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	49° 16′
by the revolving quadrant [per Volub.]	49° 14⅔′
Declination by the armillae [Declin. per Armillas]	15° 9′ twice [bis]
largest [maximas]	15° 9½′

Not very clear. [Non bene ſerenum.]

11 August [DIE 11 AUGUSTI.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	46° 25⅙′
by the revolving quadrant [per Volub.]	46° 24½′
Declination by the armillae [Declin. per Armillas]	12° 16⅚′
largest [maximas]	12° 17′

It was moderately clear. [Fuit mediocriter ſerenum.]

26 August [DIE 26 AUGUSTI.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	41° 5½′
by the revolving quadrant [per Volub.]	41° 5⅙′
Declination by the armillae [Declin. per Armillas]	6° 59½′
largest [maximas]	6° 59¼′

Among clouds. [Inter nubes.]

30 August [DIE 30 AUGUSTI.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	39° 36′
by the revolving quadrant [per Volub.]	39° 35′
Declination by the armillae [Declin. per Armillas]	5° 28¼′
largest [maximas]	5° 28½′

Quite clear. [Satis bene ſerenum.]

5 September [DIE 5 SEPTEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	37° 17⅔′
by the revolving quadrant [per Volub.]	37° 17⅙′
Declination by the largest armillae [Declin. per Armill. max.]	3° 9⅚′
	3° 10′

Very clear. [Bene ſerenum.]

9 September [*DIE 9 SEPTEMBRIS.*]

Meridian altitude of the Sun [*Alt. ⊙ Merid.*]	
by the steel instrument [*per Chalyb.*]	*35° 44½′*
by the revolving quadrant [*per Volub.*]	*35° 44¼′*
Declination [*Declin.*]	*1° 36′*
	1° 36⅓′

14 September [*DIE 14 SEPTEMBRIS.*]

At noon the Sun was observed in this way. The declination was taken as follows, by the largest armilla. [*In meridie ⊙ obſeruabatur hoc modo. Declinatio accipiebatur vt ſequitur per Armillam maximam.*]

Hours, minutes [*H M*]		
11^h 32⅙^m	*Declination with one pinnule* [*Declinatio vno pinn.*]	*0° 18½′* [*0 18½* M.]
	with the other [*altero*]	*0° 19′*
11^h 34^m	*The same repeated, with one* [*Eadem repetita vno*]	*0° 19′*
	with the other [*altero*]	*0° 19⅓′*
11^h 47^m	*The same repeated, with one* [*Eadem repetita vno*]	*0° 20⅓′*

Hours, minutes [*H M*]		
	with the other [*altero*]	0° 20⅓′
11h 49m	*Repeated* [*Repetita*]	0° 20¼′
		0° 20½′
11h 53½m	*Repeated* [*Repetita*]	0° 21′
		0° 21′
11h 55½m	*Repeated* [*Repetita*]	0° 20⅚′
		0° 21′
11h 57½m	*Repeated* [*Repetita*]	0° 21′
		0° 21⅙′
12h 0m	*Meridian altitude of the Sun* [*Altit. ⊙ Merid.*]	
	by the steel quadrant [*per Q. Chalyb.*]	33° 47′ 50″
	revolving [*Volub.*]	33° 48′
	mural [*Mural.*]	33° 49′
	Apparent declination from the altitude [*Declin. viſa ex alt.*]	0° 17½′
	from the armillae [*ex armill.*]	0° 21′
	difference, excess [*diff. exceßus*]	3½
12h 6m	*p. m. The declination of the Sun repeated* [*p. m. Repetita Decl. ⊙*]	0° 21¼′
		0° 21 1/12′
12h 7½m	*The same repeated* [*Repetita eadem*]	0° 21½′
		0° 21¼′
12h 10m	*The same repeated,* [*Repetita eadem,*]	
	with both [*vtroque*]	0° 21½′
12h 12m	*The same repeated* [*Repetita eadem*]	0° 21½′
		0° 21⅗′

15 September [*DIE 15 SEPTEMBRIS.*]

A little before noon the declination of the Sun was taken in this way. [*Paulo ante Meridiem capiebatur Declin. ⊙ hoc modo.*]

Hours, minutes [*H M*]		
11h 37m	*Declination of the Sun, with one* [*Declin. ⊙ vno*]	0° 44½′
		0° 44⅔′
11h 47m	*The same repeated* [*Eadem repetita*]	0° 44⅖′
		0° 44′
11h 50m	*The same repeated, good* [*Eadem repetita, bona*]	0° 44¼′
		0° 44⅙′
11h 56m		0 44½
		0 44
	Meridian altitude of the Sun [*Altit. ⊙ Merid.*]	
	by the steel instrument [*per Chalyb.*]	33° 23⅗′
	by the revolving quadrant [*per Volub.*]	33° 23⅓′
	by the mural quadrant [*per Mural.*]	33° 25′
12h 1m	*Declination of the Sun, with one* [*Declin. ⊙ vno*]	0° 45′
	with the other [*altero*]	0° 45′ *nearly* [*fere*]
12h 3m	*Repeated* [*Repetita*]	0° 45′
		0° 44⅚′

Hours, minutes [*H M*]		
12h 5½m	*Repeated, with both* [*Repetita vtroque*]	*0° 45′*

16 September [*DIE 16 SEPTEMBRIS*]

At noon. [*in Meridie.*]

Hours, minutes [*H M*]		
11h 47m	*Meridian declination of the Sun* [*Declin. ⊙ Merid.*]	
	with one pinnule [*vno pinn.*]	*1° 9′ better* [*me-/lior*]
	with the other [*altero*]	*1° 8′*
11h 51m	*The declination of the Sun repeated* [*Repetita Declin. ⊙*]	*1° 9⅙′*
		1° 8′
11h 53m	*Repeated* [*Repetita*]	*1° 9⅙′*
		1° 8′
11h 56m	*Repeated* [*Repetita*]	*1° 9⅓′*
		1° 8⅙′

Put the mean of these. For they say that on the line which shows the minutes one part falls somewhat short, while the other somewhat exceeds, however imperceptible this may have been. [*Pone harum medium. Nam dicunt, quod in linea, quæ minuta monſtrat, vna pars deficiat nonnihil, altera vero nonnihil abundet, quam inſen-/ſibile hoc fuerit.*]

Hours, minutes [*H M*]		
12h 0m [*12ᴴ 0ᴹ*]	*Meridian altitude of the Sun* [*Alt. ⊙ Merid.*]	
	by the steel instrument [*per Chalyb.*]	*33° 1 1/12′*
	by the revolving quadrant [*per Volub.*]	*33° 1′ 0″*
	by the mural quadrant [*per Mural.*]	*33° 1′ 30″*
12h 8m 10s	The declination of the Sun repeated, with one [Repetita Decl. ⊙ vno]	1° 9½′
	with the other [altero]	1° 8⅓′
12h 11m 10s	Repeated [Repetita]	1° 9½′
		1° 8½′
12h 13m 50s	Repeated [Repetita]	1° 9⅚′
		1° 8½′
12h 18m 30s	Repeated [Repetita]	1° 9⅔′
		1° 8½′

20 September [DIE 20 SEPTEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	31° 22¼′
by the revolving quadrant [per Volub.]	31° 22⅔′

Declination of the Sun [Declin. ⊙]	2° 42½′
	2° 43′

Among clouds. [Inter nubes.]

21 September [*DIE 21 SEPTEMBRIS.*]

Hours, minutes [*H M*]		
11h 54⅔m	*Declination of the Sun, with one* [*Declin. ⊙ vno*]	*3° 3½′*
	with the other [*altero*]	*3° 4′*

Hours, minutes [*H M*]		
11h 56⅔m	*The same repeated* [*Repetita eadem*]	*3° 4⅔′*
		better [*melior*]
		3° 5′
11h 58m	*Repeated* [*Repetita*]	*3° 5¼′*
		3° 5½′
12h 0m	*At noon the Sun had the altitude* [*⊙ in Merid. habuit Alt.*]	
	by the steel instrument [*per Chalyb.*]	*31° 3⅓′*
	by the revolving quadrant [*per Volub.*]	*31° 3⅗′*
	There was then, at noon itself, [*Fuit tunc in ipſo Meridie*]	*3° 5½′*
	the declination of the Sun [*Declin. ⊙*]	*3° 6′*
12h 4½m	The declination of the Sun repeated, [Repetita Declin. ⊙,]	
	with both [vtroque]	3° 6′
12h 10½m	Repeated [Repetita]	3° 6′
		3° 6¼′

23 September [*DIE 23 SEPTEMBRIS.*]

Observation of the eclipse of the Sun. [*Obſeruatio Eclipſis ⊙.*]

At the start, when this eclipse was beginning, the Sun did not appear because of the thickness of the clouds. When these later thinned, it showed through to some extent, so that a little before the middle of the whole obscuration it shone out through the thinned clouds. [*Ab initio cum hæc eclipſis inciperet, Sol non apparuit ob nubium denſi-/tatem, quibus poſtea rarefactis aliquatenus transparuit, adeo vt paulo ante / medium totius deliquij per nubes attenuatas emicuerit.*]

The clock was therefore set right by the equatorial distance of the Sun from the meridian towards the west, 14° 15′ [P. 14 M. 15], the index being then placed at minute 57 past 12h [12H]; the rest was observed afterwards, as the following drawings show. [*Horologio itaque rectificato ad diſtantiam ⊙ æquatoriam a meridie ver-/ſus occaſum P. 14 M. 15, poſito tunc indice in Minuto 57 vltra 12H, reliqua / poſtmodum obſeruabantur, prout ſubſequentes delineationes oſtendunt.*]

It is gathered, moreover, that the middle of the greatest eclipsing was about 1^h 3^m [horam 1 M. 3], as far as could be noticed by looking. [*Colligitur vero fuiße medium maximæ Eclipſationis circa horam 1 M. 3, / quantum per intuitum animadvertere licuit.*]

The final end, however, was at 1^h 49^m [H. 1 M. 49], or at most 1^h 50^m [1 M. 50]. For then the Sun appeared fully round, so that nothing seemed to be missing on any side. [*Finis autem vltimus fuit H. 1 M. 49 vel ad ſummum 1 M. 50. Nam tunc ⊙ / plane rotundus apparuit, ita vt nihil deeße videretur ab vlla parte.*]

The phases and quantities, however, can be gathered from the following pictures, shaped with all the accuracy that was possible in imitation of those that appeared in the sky. [*Phaſes vero & quantitates colligi poterint ex ſequentibus picturis ea qua / licuit accuratione ad imitationem earum quæ cœlitus apparebant confor-/matis.*]

Diagram. Four drawings of the Sun's disc, set in two columns divided by a vertical rule, each disc an outline circle with a hatched (cross-hatched) segment at its upper rim, bounded below by a curved line; a time label stands beside each disc, toward the rule. The hatched segment is drawn at the upper left in all four, differing in extent and position from disc to disc.

- Left column, upper disc (label to its right): 12^h 59^m [H. 12 M. 59]
- Left column, lower disc (label to its right): 1^h $2½^m$ [H. 1 M. 2½]
- Right column, upper disc (label to its left): 1^h 5^m [H. 1 M. 5]
- Right column, lower disc (label to its left): 1^h 9^m [H. 1 M. 9]

Diagram. Eight drawings of the Sun's disc, set in two columns divided by a vertical rule, four in each column. In the left column the discs stand at the left with their labels to the right, toward the rule; in the right column the discs stand at the right with their labels to the left. Each of the first seven discs is an outline circle with a hatched (cross-hatched) segment at its upper left rim, bounded below by a curved line; the segments in the right column are smaller than those in the left, the third of them a narrow sliver. The lowest disc of the right column carries no hatching and no label: a vertical line is drawn through it as a diameter, with eleven tick marks numbered 1 to 11 from top to bottom.

- Left column, first disc (label to its right): 1^h $12⅙^m$; the Sun was then west 18.22½ [H.1M.12⅙ fuit tunc / ⊙ occid. 18.22½]
- Left column, second disc (label to its right): 1^h $16⅓^m$; the Sun, west, 19° 17′ [H. 1 M. 16⅓ / ⊙ occident. 19°17′]
- Left column, third disc (label to its right): 1^h $21⅓^m$; the Sun, west, 20° 32′ [H. 1 M. 21⅓ / ⊙ occident. 20°32′]
- Left column, fourth disc (label to its right): 1^h 26^m; the Sun, west, 21° 38′ [H. 1 M. 26 / ⊙ occident. 21°38′]
- Right column, first disc (label to its left): 1^h $29⅚^m$; the Sun, west, 22° 36′ [H. 1 M. 29⅚ / ⊙ occident. 22°36′]
- Right column, second disc (label to its left): 1^h $33⅙^m$; the Sun, west, 23° 44′ [H. 1 M. 33⅙ / ⊙ occident. 23°44′]

- Right column, third disc (label to its left): 1^h $39\frac{5}{6}^m$; the Sun, west, 25° 2′ [H. 1 M. 39⅚ / ⊙ occident. 25° 2′]
- Right column, fourth disc (no label): numerals along the vertical diameter, top to bottom: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

1^h $49\frac{1}{3}^m$: the Sun *appeared wholly round to us, as far as it was possible to see through the clouds.* [H. 1 M. 49⅓ ⊙ *totus rotundus nobis quantum per nubes videre licuit ap-/paruit.*]

1^h $49\frac{2}{3}^m$: the whole Sun fully recovered its roundness. [H. 1 M. 49⅔ plane totus Sol recuperauit rotunditatem ſuam.]

1^h $58\frac{1}{3}^m$: the Sun, westerly, 29 35. [H. 1 M. 58⅓ ⊙ occiduus 29 35.]

We watched again, and the Sun was seen fully round, so that no doubt remains that its eclipsing had already passed entirely before, namely at the time noted above. Each of the two calculations, which put nearly the middle of the eclipse at about this time, therefore errs perceptibly. [Denuo attendimus & viſus eſt Sol plane rotundus, vt nullum ſuperſit dubi-/um, iam antea præ-terijße omnino eius eclipſationem, tempore videlicet ante / ſignato, quare vterque calculus ſenſibiliter aberrat, qui circa hoc tempus / medium fere eclipſis conſtituit.]

To correct the clock, the Sun was observed in the west: 2^h 20^m, 35 0. [Pro corrigendo Horologio obſeruabatur ⊙ occidentalis / H. 2 M. 20 35 0.]

Drawing of the same eclipse of the Sun, observed at Viborg. [Delineatio eiusdem $\odot^{lis}$ Eclipſeos Viburgi Cimbrorum obſeruatæ.]

12^h exactly by the compass; that was 12^h 8^m by the correction of the same compass, which was afterwards sent over here. The Moon had fallen on the upper limb of the Sun to an amount of nearly 3 minutes, or 2½. [H. 12 exacte iuxta Compaßum, id fuit H. 12 M. 8 iuxta / correctionem eiusdem Compaßi, poſtea huc trans-/mißi ☾ in ſuperiorem $\odot^{lis}$ limbum inciderat ad quanti-/tatem 3 fere Minutorum ſeu 2½.]

12½^h, that is, 12^h 37^m by the corrected compass: a little more than a fifth part of the solar body was covered by the Moon, as you see. [H.12½ hoc eſt iuxta Compaßum correctum H.12 M.37 paulo / plus quinta parte de corpore $\odot^{lari}$ vt vides a ☾ obtege-/batur.]

12^h 40^m observed, that is, 12^h 46^m by the corrected compass: the Sun was lacking somewhat more than a fourth part of its body. [H. 12 M. 40 Obſer. hoc eſt per Compaßum correctum / H. 12 M. 46 ⊙ nonnihil vltra quartam ſui corporis par-/tem defecit.]

12^h 45^m observed, that is, 12^h 51^m by the corrected compass: about a third part of the solar body was being eclipsed, though barely. [H. 12 M. 45 Obſeruat. id eſt iuxta Compaßum correctum / H. 12 M. 51, eclipſabatur quaſi tertia pars corporis / Solaris, vix tamen.]

N. B. Between this and the observation immediately above came the greatest obscuration of the Sun in this eclipse, which could scarcely exceed 4 digits, at least as far as it was possible to discern with the eyes in that place. [N. B. Fuit

inter hanc & ſuperiorem proximam animadverſionem maximum / ⊙lis in hac eclipſi deliquium, quod 4 digitos excedere vix potuit, quantum eo / in loco oculis ſaltem diſcernere licuit.]

1⅙h on the compass, according to the observation; but by the corrected compass 1¼h. The Moon, coming out again from the solar body, had darkened almost a sixth part (or between a sixth and a seventh). [H.1⅙ in Compaßo iuxta obſeruat. Verum iuxta Compaßum / correctum H. 1¼. Sextam propemodum partem ☾ rur-/ſus egrediendo de corpore ⊙lari obſcurarat (vel inter / ſextam & ſeptimam).]

Diagram. Five drawings of the Sun's disc, set one above another at the right of the text block, each beside one of the five timed paragraphs. Each is an outline circle with a dark, densely hatched segment at its rim, bounded by a curved line. Below the centre of each disc a short stroke is drawn, with a numeral written under it; in the second to fifth discs a dot is drawn at the centre (none is seen in the first).

- First disc (beside the paragraph "H. 12 exacte …"): small segment at the top of the rim; numeral: I
- Second disc (beside "H.12½ …"): segment at the upper left; numeral: II
- Third disc (beside "H. 12 M. 40 …"): larger segment at the upper left; numeral: III
- Fourth disc (beside "H. 12 M. 45 …"): segment at the upper left, cross-hatched; numeral: IV
- Fifth disc (beside "H.1⅙ …"): smaller segment at the upper left, cross-hatched; numeral: V

1⅓h observed, that is, 1h 25m on the corrected compass: a very small portion of the Sun remained darkened, about the size of one minute. [H. 1⅓ Obſer., id eſt in Compaßo correcto H. 1 M. 25, parua / admodum portio reſtabat obſcurata de ⊙le ad inſtar / vnius quaſi Minuti.]

Diagram. A single drawing of the Sun's disc at the upper right of the text block, beside the paragraph above: an outline circle with a short, thick dark stroke on its rim at the left, toward the upper left. No hatching, no centre mark, no numeral and no label are drawn.

1h 25m observed, that is, 1h 30m by the corrected compass: no trace at all of the obscuration was seen in the Sun any longer (this eclipse had rather ended a little before, so that you may put its end at 1h 28m by the corrected compass at Viborg)[1]. [H. 1 M. 25 obſeru., hoc eſt H. 1 M. 30 iuxta compaßum correctum, nullum / omnino obſcurationis in ⊙le veſtigium amplius eſt viſum (finierat potius / hæc Eclipſis paulo antea, vt eius finem ponas H. 1 M. 28 iuxta Compaßum / correctum Viburgi)[1].]

Further, we carefully corrected here, by the Sun and our meridian, the compass I used there, at about the same hours at which the observation was made there; and we found that it showed less, according to 12h 8m, and afterwards, decreasing, down to 5m of time. [Porro Compaßum, quo ibidem vſus ſum,

diligenter hic ad ☉ & Merid. no-/ſtrum correximus circa easdem horas, quibus ibidem obſeruatum eſt & iuxta / H. 12 M. 8, poſtea minuendo vſque ad 5 Minuta temporis illum minus exhi-/buiße deprehendimus.]

At Strasbourg, in the year of the Lord 1595, on 23 September [ARGENTORATI ANNO DOMINI 1595 DIE 23 SEPTEMBRIS]

the eclipse in the Sun was observed[2]. On the same day, the meridian altitude of the Sun by the quadrant: $38\frac{1}{12}°$. The elevation of the pole at Strasbourg, as far as could be done given the smallness of the quadrant, was observed from both solstices, but chiefly from the summer one: about 48½°. [obſeruabatur Eclipſis in ☉[le][2]. Eodem die Alt. ☉ Meridiana per Quadrantem / 38 1/12 Grad. Eleuatio Poli Argentinenſis quantum propter exilitatem Quadrantis / fieri potuit, ex vtroque Solſtitio obſeruabatur, maxime autem æſtiuali, circi-/ter 48½ grad.]

Diagram. Eight drawings of the Sun's disc, set in two columns divided by a vertical rule, four in each column. In the left column the discs stand at the left with their labels to the right, toward the rule; in the right column the labels stand at the left, toward the rule, and the discs at the right. Each disc is an outline circle with a hatched segment at its rim, at the top or upper left, and a small drawn circle with a central dot at its centre. In the left column the hatched segment grows from the first disc to the fourth; in the right column it shrinks from the first to the fourth, the last a thin sliver.

- Left column, first disc (label to its right): the Sun, west, 0° 30′ [☉ occid. 0°30′]
- Left column, second disc (label to its right): the Sun, west, 2° 0′ [☉ occid. 2°0′]
- Left column, third disc (label to its right): the Sun, west, 3½; altitude of the Sun 37⅔ [☉ occid. 3½ / Alt. ☉ 37⅔]
- Left column, fourth disc (label to its right): the Sun, west, 6½ [☉ occid. 6½]
- Right column, first disc (label to its left): the Sun, west, 9° 0′; altitude of the Sun 37 [☉ occid. 9° 0′ / Alt. ☉ 37]
- Right column, second disc (label to its left): the Sun, west, 10⅓° [☉ occid. 10⅓°]
- Right column, third disc (label to its left): the Sun, west, 12° 0′ [☉ occid. 12° 0′]
- Right column, fourth disc (label to its left): the Sun, west, 14° 0′. And at the first hour itself the Sun, free from the shadow, shone out in its roundness on every side. [☉ occid. 14° 0′ / Atque ipſa hora pri-/ma ☉ liber ab vmbra / ſua rotunditate vn-/diquaque refulſit.]

[1] Added afterwards. [Poſtea adſcripta.] [2] By Christiernus Ioannis Ripensis, formerly a pupil of Tycho. Cf. the observations of the eclipse of the Moon on 1592 June 14 and of the eclipse of the Sun on 1593 May 20 (above, pp. 197 and 268). [A Chriſtierno Ioannis Ripenſe, olim diſcipulo Tychonis. Cf.

obſeruationes eclipſis lunæ d. 14 Junii 1592 et / eclipſis ſolis d. 20 Maii 1593 (ſupra pp. 197 et 268).]

Examination of the preceding observed eclipse of the Sun[1]. [Examinatio obſeruatæ Eclipſis ☉ / præcedentis[1].]

Put the middle of this obscuration at 1^h 5^m. [Pone medium deliquij huius H.1 M. 5.]

Resp. our true place of the Sun [Reſp. noſter verus locus ☉]	9° 34′ 40″ ♌

Which is also the apparent place of the Moon in the ecliptic. For the reduction to the Moon's own orbit, subtracted 3½′. [Qui etiam eſt viſus locus ☾ in Ecliptica. / Pro reductione ad propriam orbitam / ☾ ſubt. 3½′.]

Therefore the observed place of the Moon in its own circle [Ergo obſeruatus locus / ☾ in proprio circulo]	9° 31⅙′ ♌
Longitude of the Moon from our Tables [Long. ☾ ex Tabulis noſtris]	9° 18¾′ ♌
The difference, which is the parallax of longitude [Differentia, quæ eſt Parall. / Long.]	12′ 25″
True latitude of the Moon [Vera Latitudo ☾]	1° 13′ 20″ north [B.]

For the parallax of the luminaries [Pro Parallaxi Luminarium]

Altitude of the Moon [Altitudo ☾]	30⅓
Equated anomaly [Anomalia coæquata]	174 6
Resp. parallax of altitude of the Moon [Reſp. Parallaxis Altit. ☾]	57′ 0″
Parallax of the Sun [Parallaxis ☉]	2 30
Parallax of the Moon from the Sun [Parallaxis ☾ a ☉]	54 30
Resp. parallax of longitude [Reſp. Parallaxis Longit.]	12 30
of latitude [Latit.]	53 0
Therefore the apparent northern latitude [Ergo viſa Latitudo Borea]	20 20
Semidiameter of the Sun [Semidiameter ☉]	15 30
Corrected semidiameter of the Moon [Semidiameter ☾ correcta]	14 20
Aggregate of the semidiameters [Aggregat. ſemidiam.]	29 50
Therefore the greatest defect of the Sun [Ergo defectus ☉ maximus]	9 30
Resp. eclipse digits [Reſp. Digiti Eclip.]	3° 35′

The observation has barely 4 digits. [Obſeruatio habet vix 4 digitos.]

The last day of September [DIE VLTIMO SEPTEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	27° 34¾′
by the revolving quadrant [per Volub.]	27° 34¾′
Declination by the largest armillae [Declin. per Armillas max.]	6° 32⅓′
	6° 32⅙′

It was quite clear. [Fuit bene ſerenum.]

3 October [DIE 3 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	26° 26⅓′
by the revolving quadrant [per Volub.]	26° 26⅔′
Declination by the armillae [Declin. per Armillas]	7° 40½′
	by both [vtroque]

It was not clear enough. [Non ſatis erat ſerenum.]

4 October [DIE 4 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	26° 4⅙′
by the revolving quadrant [per Volub.]	26° 3¾′
Declination by the largest armillae [Declin. per Armill. max.]	8° 3¼′
	8° 3⅔′

Among the clouds. [Inter nubes.]

13 October [DIE 13 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	22° 47½′
by the revolving quadrant [per Volub.]	22° 48′

16 October [DIE 16 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	21° 44′

by the revolving quadrant, better [per Volub., melior]	21° 45′
Declination by the largest armillae [Declin. per Armill. max.]	12° 19¾′
	12° 19¼′
The mean of these [Medium harum]	12 19½
Altitude of the equator [Altit. æquat.]	34° 5½′
Altitude of the Sun [Altit. ⊙]	21° 45′
Declination from the altitude [Declin. ex altit.]	12° 20½′

A difference of 1′, to be corrected in both instruments. [Differentia 1′, corrigenda in vtroque / organo.]

At noon the clock was running $25\frac{1}{3}^{m}$ faster than it should, from which the preceding times² are corrected. [In meridie horologium mouebatur / iuſto celerius 25⅓ m., vnde tempora / antecedentia² correcta.]

20 October [DIE 20 OCTOBRIS]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	20° 23⅔′
by the revolving quadrant [per Volub.]	20° 23⅚′
Declination [Declinatio]	13° 41⅚′
	13° 42′

It was clear enough. [Fuit ſatis ſerenum.]

21 October [DIE 21 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	20° 4′
by the revolving quadrant [per Volub.]	20° 3⅚′
Declination by the armillae [Declin. per Armill.]	14° 1′
	14° 1½′

It was clear enough. [Satis erat ſerenum.]

24 October [DIE 24 OCTOBRIS]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	19° 5¾′
by the revolving quadrant [per Volub.]	19° 6′ nearly [fere]
Declination by the armillae [Declin. per Armillas]	14° 59′

	14° 59⅓′

It was not clear enough. [Non fuit ſatis ſerenum.]

[1] From codex V. [E codice V.] [2] That is, of the observations of the Moon. [Id eſt, obſervationum lunæ.]

27 October [DIE 27 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	18° 11⅔′
by the revolving quadrant [per Volub.]	18° 10⅚′
Declination by the armillae [Declin. per Armillas]	15° 54′
	15° 54⅚′

It was moderately clear, but stormy. [Fuit mediocriter ſerenum, ſed tem-/peſtuoſum.]

29 October [DIE 29 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	17° 31⅙′
by the revolving quadrant [per Volub.]	17° 35′
Declination of the Sun [Declin. ⊙]	16° 30½′
	16° 31′

30 October [DIE 30 OCTOBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	17° 18¼′
by the revolving quadrant [per Volub.]	17° 20′
	doubtful [dubia]
Declination of the Sun [Declin. ⊙]	16° 48⅓′
	16° 48′

It was not clear enough. [Non fuit ſat ſerenum.]

3 November [DIE 3 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	16° 11′ 25″
by the revolving quadrant [per Volub.]	16° 11½′
Declination M. by the armillae [Declin. M. per Armillas]	17° 55′
	17° 54⅚′

It was quite clear and calm. [Erat bene ſerenum & tranquillum.]

8 November [DIE 8 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	14° 55′
by the revolving quadrant [per Volub.]	14° 54⅚′
Declination by the armillae [Declin. per Armillas]	19° 11′
	19° 10⅚′

It was clear enough. [Erat ſatis ſerenum.]

10 November [DIE 10 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	14° 26¾′
by the revolving quadrant [per Volub.]	14° 27¼′
Declination of the Sun [Declin. ⊙]	19° 38′
	19° 38½′

It was clear enough. [Fuit ſatis ſerenum.]

13 November [DIE 13 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	13° 47¾′
by the revolving quadrant [per Volub.]	13° 47⅙′
Declination by the armillae [Declin. per Armillas]	20° 18½′
	20° 18⅚′

It was clear enough and calm. [Fuit ſatis ſerenum & tranquillum.]

16 November [DIE 16 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	13° 12⅙′
by the revolving quadrant [per Volub.]	13° 12⅙′
Declination of the Sun [Declin. ⊙]	20° 53¼′
	20° 53⅔′

The clock was also corrected, which within three fifths of one hour was running 4^{m} slower than it should. [Corrigebatur etiam horologium, / quod intra tres vnius horæ quintas / tardius iuſto mouebatur 4 minutis.]

21 November [DIE 21 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	12° 20′ 5″
by the revolving quadrant [per Volub.]	12° 20′ 15″

It was exceedingly clear. [Fuit apprime ſerenum.]

22 November [DIE 22 NOUEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	12° 11⅓′
by the revolving quadrant [per Volub.]	12° 11⅔′
Declination [Declin.]	21° 55½′
	21° 55¼′

It was quite clear. [Fuit bene ſerenum.]

26 November [DIE 26 NOUEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	11° 38⅔′
by the revolving quadrant [per Volub.]	11° 39′
Declination by the armillae [Declin. per Armillas]	22° 27¾′
largest [maximas]	22° 27½′

It was quite clear. [Fuit bene ſerenum.]

4 December [DIE 4 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	10° 54¾′
by the revolving quadrant [per Volub.]	10° 54⅝′
Declination in the armillae [Declin. in Armillis]	23° 11′
	23° 11¼′

It was quite clear. [Fuit bene ſerenum.]
For 4 December. [Ad diem 4 Decembris.]

The Sun 22° 4′ ♐, declination [⊙ 22 4 ♐, Declin.]	*23° 17⅙′*
True altitude [Altit. vera]	*10° 48⅔′*
Parallax [Parallaxis]	*3*
Apparent altitude [Altit. viſa]	*10° 45⅓′*
Refraction [Refractio]	*9½*
	10 54⅝
	it agrees. [concordat.]

5 December [DIE 5 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	10° 51⅝′
by the revolving quadrant [per Volub.]	10° 52′
Declination by the largest armillae [Declin. per Armillas max.]	23° 15′
	23° 15⅙′

Our place of the Sun in [Locus ⊙ noſter in]	*23° 5′ 0″ ♐*
Our declination [Declinatio noſtra]	*23° 20′ 36″*
Altitude of the equator [Altit. æquatoris]	*34° 5′ 30″*
True altitude of the Sun [Alt. ⊙ vera]	*10° 44′ 54″*
The parallax takes away [Parallaxis aufert]	*3 3*
	10 41 51
Altitude observed by the revolving quadrant [Alt. obleruata per Volub.]	*10° 51′ 50″*
The refraction itself [Ipſa refractio]	*10 0*
Our tables have [Tabulæ noſtræ habent]	*9 30*

Here the tables seem to fall short by half a minute, but on the following day to exceed by ¼. [Hic tabulæ videntur dimidio mi-/nuto deficere, at ſequenti die ¼ abun-/dare.]

6 DECEMBER [DIE 6 DECEMBRIS]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	10° 48⅓′
by the revolving quadrant [per Volub.]	10° 48′
by the mural quadrant [per Mural.]	10° 48⅙′
Declination by the armillae [Declin. per Armillas]	23° 17⅓′
	23° 18′

It was moderately clear. [Fuit mediocriter ſerenum.]

Our place of the Sun [Locus ⊙ noſter]	*24° 6′ ♐*
Declination [Declinatio]	*23° 23′ 34″*
Altitude of the equator [Altıt. æquat.]	*34° 5′ 30″*
True altitude of the Sun [Altit. ⊙ vera]	*10° 41′ 56″*
Parallax [Parallaxis]	*3 3*
Altitude without parallax [Alt. absque par.]	*10° 38′ 53″*
Altitude observed by the steel instrument [Alt. obſeruata per Chalyb.]	*10° 48′ 20″*
Difference [Differentia]	*9 27*
Our table has [Tabula noſtra habet]	*9⅔*

Thus the observed altitude, and the refraction derived from it, agree as closely as possible with that which is taken from our canon. [Concordant itaque quam proxime / altitudo obſeruata & hinc deducta / refractio cum ea quæ ex canone no-/ſtro depromitur.]

18 DECEMBER [DIE 18 DECEMBRIS.]

Meridian altitude of the Sun [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	10° 49¼′
by the revolving quadrant [per Volub.]	10° 48′
Declination of the Sun [Declin. ⊙]	23° 7¼′
	23° 7⅓′

N.B. When the quadrants had been examined exactly, an error of about one minute was found in the steel one, giving the altitudes greater than they should be. [N. B. Facto examine Quadrantum / ad amußim deprehenſus eſt error in / Chalybeo vnius Minuti circiter præ-/bendo Altitudines plus iuſtis.]

In the evening. For the twilight. [Veſperi. Pro crepuſculo.]

When the first of the wing of Pegasus was western, 26¼°, nothing at all of the evening twilight was seen any longer about the western horizon. So from this the

measurement of the twilight around the winter solstice can be investigated. On the clock it was about $6^h\ 3^m$. [Quando prima alæ Pegaſi fuit oc-/cidentalis P. 26¼, nihil plane amplius / de crepuſculo veſpertino circa Hori-/zontem occiduum videbatur. Quare / hinc crepuſculi menſuratio circa Sol-/ſtitium Hybernum poteſt indagari. / Erat in horologio H. 6 M. 3 circiter.]

24 December [DIE 24 DECEMBRIS.]

Meridian altitude of the Sun [Alt. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	11° 15′
by the revolving quadrant [per Volub.]	11° 15⅙′
Declination of the Sun by the armillae [Declin. ⊙ per Armillas]	23° 9⅔′
	23° 9⅓′[1]

It was quite clear. [Fuit bene ſerenum.]

Observations of the Moon [OBSERUATIONES LUNÆ.]

5 January [DIE 5 JANUARIJ.]

The distance of the Moon from the Sun was observed. [Obſeruabatur ☾ diſtantia a ⊙.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon from the Sun [Diſt. occ. limb. ☾ a ⊙]	Declination [Decl.]	Altitude of the Sun [Altit. ⊙]	The Sun, west, on the equator [⊙ in æquat. occ.]
$1^h\ 50^m\ 30^s$ $1^h\ 46⅓^m$ corrected [1 46⅓ corr.]	54° 47′			
$1^h\ 52^m\ 10^s$	54° 48′	7° 45′ lower [inf.] 8° 23′	10° 20′	
$1^h\ 57^m\ 20^s$ $1^h\ 53⅙^m$ corrected [1 53⅙ corr.]	54° 50′			28° 17½′

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon from the Sun [Diſt. occ. limb. ☾ a ⊙]	Declination [Decl.]	Altitude of the Sun [Altit. ⊙]	The Sun, west, on the equator [⊙ in æquat. occ.]
$1^h\ 59^m\ 0^s$	54° 51½′	7° 46½′ lower [inf.] 8° 22½′	9° 50′	28° 40′

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon from the Sun [Diſt. occ. limb. ☾ a ☉]	Declination [Decl.]	Altitude of the Sun [Altit. ☉]	The Sun, west, on the equator [☉ in æquat. occ.]
$2^h\ 2^m\ 30^s$	54° 52⅓′	lower horn of the Moon [Inf. cornu ☾] altitude 24° [Altit. 24 g.]		29° 35′

The Moon was near 90° at 1⅙^h after noon. [Fuit ☾ iuxta 90 Gr. H. 1⅙ P. M.]

For the place of the Moon from the nearest observations. [Pro loco ☾ / ex proximis obſeruationibus.]

At 1¾^h the distance of the centre of the Moon from the Sun is put [H. 1¾ ponitur diſtantia / centri ☾ a ☉]	55° 2′
True right ascension of the Sun [Vera Aſc. recta ☉^{lis}]	297° 2½′

[1] It should be 22° 59′. [Debet eße 22°59′.]

True declination of the Sun [Vera Declin. ☉^{lis}]	21° 11½′ south [M.]
Altitude of the Sun [Alt. ☉]: refraction subtracted [refractio ſubt.]	9 45
10⅖ resp. [10⅖ reſp.]: parallax added [parallaxis add.]	3 4
Therefore the apparent declination of the Sun [Ergo viſa declinatio ☉] is to be put [ponatur]	21° 5′ 0″ south [M.]
and the apparent right ascension of the Sun [et Aſc. recta viſa ☉]	297° 3′ 0″
Declination of the centre of the Moon [Decl. ☾ centri]	8° 4′ south [M.]
Angular difference of ascension [Ang. diff. Aſc.]	55° 32⅔′
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	352° 35⅔′
Resp. longitude [Reſp. Longitudo]	20° 0½′ ♓
latitude [Latitudo]	4° 27′ south [M.]
Add for the parallax in longitude [Addepro parallaxiinlong.]	3 0

17 January [DIE 17 JANUARIJ.]

The Moon was observed near 90°. [Obſeruabatur ☾ iuxta 90 grad.]

The Moon about the 90th degree at 2½^h. [☾ circa 90^{mum} g. H. 2½.]

Hours, minutes, seconds [H. M. S.]	Distance of the Moon from the lower head of ♊ [Diſt. ☾ ab inf. cap. ♊]	Declination of the Moon, lower/upper [Decl. ☾ inf./ſup.]	Spica, east [Spica or.]
$3^h\ 7^m\ 0^s$	35° 3′		19 4

Hours, minutes, seconds [H. M. S.]	Distance of the Moon from the lower head of ♊ [Diſt. ☾ ab inf. cap. ♊]	Declination of the Moon, lower/upper [Decl. ☾ inf./ſup.]	Spica, east [Spica or.]
$3^h\ 7^m\ 30^s$ corrected [3 7 30 corr.]			
$3^h\ 9^m\ 40^s$	35° 5′	17° 41′	18 30
$3^h\ 10^m\ 0^s$ corrected [3 10 0 corr.]		18° 18½′	

Hours, minutes, seconds [H. M. S.]	Eastern limb of the Moon from the tail of ☋ [☾ or. limb. a cauda ☋]	Declination of the Moon, lower/upper [Decl. ☾ inf./ſup.]	Spica, east [Spica or.]
$3^h\ 15^m\ 35^s$	24° 23½′		
$3^h\ 18^m\ 55^s$	24° 19⅚′		
$3^h\ 17^m\ 40^s$ corrected [3 17 40 corr.]			
$3^h\ 19^m\ 45^s$	24° 19′	17° 38½′	16 20
$3^h\ 18½^m$ corrected [3 18½ corr.]		18° 15⅔′	uncertain [incertum]

These were observed among clouds, when the Moon had been carried beyond 90° about ⅔ of one hour; for it was there at $2½^h$. [Hæc obſeruabantur inter nubes / cum ☾ tranſuecta eßet vltra 90 g. cir-/ca ⅔ vnius horæ, ibi enim eßet H. 2½.]

N.B. At $3¼^h$ the eastern limb of the Moon was in a straight line with Saturn and the bright star of the neck of ☋, as nearly as possible, as far as sight goes. [N.B. H. 3¼ fuit orientalis limbus ☾ / in recta linea cum ♄ et lucida ceruicis / ☋ quoad viſum quam proxime.]

For the place of the Moon [Pro loco ☾]

At $3^h\ 10^m$ the distance of the Moon from the lower [H. 3 M. 10 Diſt. ☾ ab infer.]	
head of ♊ [cap. ♊]	34° 49′
Declination of the centre of the Moon [Decl. ☾ centri]	18° 0′
Right ascension of the lower head [Aſc. R. infer. cap.]	110° 6¼′
Its declination [Declin. eius]	28° 57′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	36° 13′ 0″
Therefore the right ascension of the Moon [Ergo Aſc. Recta ☾]	146° 19¼′
At $3^h\ 18^m$ the distance of the centre of the Moon from the [H. 3 M. 18 Diſt. centri ☾ a]	
tail of ☋ [cauda ☋]	24° 36′
Declination of the centre of the Moon [Decl. centri ☾]	17° 58′ north [B.]
Right ascension of the tail of ☋ [Aſc. R. caudæ ☋]	172° 4¼′
Its declination [Declin. eius]	16° 51′ north [B.]

Angular difference of ascension [Ang. diff. aſc.]	25° 46½′
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	146° 17′ 45″
At 3^h 14^m the right ascension of the Moon, limited [H. 3 M. 14 Aſc. R. ☾^{æ} limit.]	146° 18½′
Declination [Declin.]	17° 59′ north [B.]
Resp. apparent: longitude of the Moon [Reſp. viſa / Long. ☾]	22° 31′ 0″ ♌
latitude [Lat.]	4° 10′ 0″ north [B.]

5 February [DIE 5 FEBRUARIJ.]

Among rather sparse, transparent clouds. [Inter rariuſculas nubes tranſpa-/rentes.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon and Aldebaran [Diſt. occ. limb. ☾ & Aldeb.]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]	Altitude of the Moon, lower [Alt. ☾ inf.]	Western limb of the Moon, west [Occ. limb. ☾ occ.]
6^h 21^m 40^s	*28° 48½′*	*13° 27½′*		
		13° 2′		
6^h 25^m 45^s	*28° 47⅓′*		*40° 13′*	*32 52*

These observations of the Moon were indeed made among sparse clouds, but they are nevertheless middling; the times can be verified from the preceding and earlier equatorial observations from the meridian of the bright foot of Orion and of the Greater Dog. [Fuerunt quidem hæ obſeruationes / ☾ inter raras nubes factæ, ſed lunt / tamen mediocres, poterint tempora / verificari ex antecedentibus & / ſupe-/rioribus obſeruationibus æquatorijs / a Meridiano Lucidi pedis Orionis & / Canis Maioris.]

6 February [DIE 6 FEBRUARIJ.]

The Moon in the ninetieth degree at $3¾^h$. [☾ in nonageſimo gradu H. 3¾.]

Hours, minutes, seconds [H. M. S.]	Azimuth of the Moon, east [Azim. ☾ or.]	Altitude of the Moon [Alt. ☾]	Declination of the Moon [Decl. ☾]
4^h 51^m 40^s	6° 0′	51° 55′	17° 58′
		51° 23½′	17° 32½′
5^h 8^m 10^s	the eastern limb of the Moon crossed [tranſijt orientalis limbus ☾]		
through the meridian, having altitude [per merid. habens altit.]			
by the steel instrument [per Chalyb.]		52° 6⅓′	51° 36⅔′
by the revolving quadrant [per Volub.]		52° 50′	51° 38½′
Venus, west, on the equator [♀ in æquat. occid.]			57° 19′

Then the distance of the eastern limb of the Moon from Venus was taken by the sextant. [Deinde capiebatur diſtantia orien-/talis limbi ☾ a ♀ per Sextantem.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the lower limb [Altit. inf. limbi]	Venus, west [♀ occid.]
5h 14m 20s				*58 50*
5h 16m 30s	*58° 12′*	*18° 3½′*		*59 22*
5h 9m corrected [5 9 corr.]		*17° 34¾′*		
5h 20m 20s	*58° 13½′*	*18° 4′*		*60 16*
		17° 37′		
5h 22m 30s	*58° 15′*			*60 49*
5h 25m 40s	*58° 15¾′*			*61 35*
5h 28m 20s	*58° 17½′*		*51° 32′*	*62 15*
5h 31m 55s	*58° 18½′*	*18° 3½′*		*63 7*
		17° 37′		

The Moon had passed the 90th degree a little, but not much … Meridiem. The declination of Venus about these times was, by the armillae with both pinnules, 2° 33½′ north [B.], and the altitude 17°. [Luna erat 90 gradum aliquantulum / prætergreßa, ſed non multum … Me-/ridiem. Declinatio ♀ circa hæc tem-/pora fuit per Armillas vtroque pin-/nacidio 2 33½ B. & Altitudo 17 G.]

Afterwards the Moon, being beyond the 90th degree, was taken in distance, first from the bright star of ♈, in this way. [Poſtea capiebatur ☾ extra 90 Gra-/dum exiſtentis in diſtantia primum a / Lucida ♈ hoc modo.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon and the bright star of ♈ [Diſt. occ. limbi ☾ & Luc. ♈]	Declination, upper/lower [Declin. ſup./inf.]	Altitude [Altit.]	The foot of Orion, west [Pes Orionis occ.]
7h 8m 50s		*18° 21½′*		*0 36*
		17° 54′		
7h 12m 45s	*18° 34′*	*18° 23′*	*45° 55′*	
7h 15m 30s	*18° 35′*	*17° 56⅙′*		*2 15*
7h 19m 5s	*18° 36′*	*18° 24′*	*45° 22′*	*3 8*
7h 21m 30s	*18° 37′*	*17° 56½′*		*3 41*
7h 24m 40s	*18° 37½′*		*44° 51′*	*4 30*
7h 14m 0s corrected [7 14 0 corr.]				
7h 27m 0s	*18° 39′*	*18° 24½′*		*5 7*
7h 16½m		*17° 57½′*		

The declination of the bright star of ♈ was observed for limiting the declination of the Moon when it came to such a position, namely in the following observation from Aldebaran: [Obſeruabatur declinatio Lucidæ ♈ / pro Declinatione ☾ limitanda, quan-/do ad talem ſitum veniret, videlicet / in ſequenti obſeruatione ab Aldebora]

with one [vno]	*21° 32′*
with the other [altero]	*21° 32½′*

Afterwards, vice versa, the distance of the western limb of the Moon and Aldebaran was taken by the same sextant. [Poſtea ſumebatur viceverſa per / eundem Sextantem diſtantia occid. / limbi ☾ & Aldeboræ.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination [Declin.]	Altitude of the lower limb of the Moon [Alt. inf. limbi ☾]	The bright foot of Orion, west [Luc. pes Orion. occ.]
7h 34m 45s	*17° 0′*	*18° 27½′*		*7 2*
7h 24¼m corrected [7 24¼ corr.]		*17° 59′*		
7h 38m 40s	*16° 58′*	*18° 28′*	*43° 30′*	*7 58*
7h 41m 10s	*16° 56′*	*18° 0′*		*8 32*
7h 44m 5s	*16° 55′*		*42° 55′*	*9 19*
7h 46m 30s	*16° 54¾′*	*18° 28′*		*9 52*
		18° 0½′		
7h 48m 50s	*16° 53⅓′*	*18° 30½′*	*42° 30′*	*10 26*
7h 50m 55s	*16° 53′*	*18° 1½′*		*10 57*
7h 53m 15s	*16° 52′*	*18° 31′*	*42° 0′*	*11 32*
7h 56m 0s		*18° 2⅓′*		*12 24*
7h 58m 30s	*16° 50′*	*18° 32′*	*41° 30′*	*12 58*
		18° 1⅔′		

Afterwards the declination of Aldebaran was taken for examining the armillae in the position in which the Moon had earlier been taken from the bright star of ♈*.* [Poſtea capiebatur Declinatio Al-/deboræ pro examinandis Armillis / in eo ſitu, quo prius ☾ capiebatur a / Lucida ♈.]

Aldebaran, declination [Aldeb. Declin.]	15° 38½′	subtract 1m0 [ſubtrahe 1m0.]
	15° 38¼′	
	15° 38⅔′	
	15° 38⅓′	
True declination of the bright star of ♈ [Vera Decl. Luc. ♈]	21° 31⅙′	
of the eye of ♉ [Oculi ♉]	15° 37′ 35″	

7 February, in the evening [DIE 7 FEBRUARIJ, VESPERI.]

The Moon was observed beyond 90°. [Obſeruabatur ☾ extra 90 Grad.]

The Moon near the ninetieth degree at 5h 0. [☾ iuxta nonageſ. grad. H. 5 0.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon from the bright star of ♈ [Dift. occ. limb. ☾ a lucida ♈]	Declination, upper/lower [Declin. fup./inf.]	Altitude of the lower limb [Altit. inf. limb.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
$8^h\ 11^m\ 0^s$	30° 13½′			
$8^h\ 13^m\ 35^s$	30° 15′	22° 35′		19 52
	among clouds [inter nubes]	22° 10′		
$8^h\ 17^m\ 40^s$	30° 17′	good [bona]	47° 15′	20 50
$8^h\ 20^m\ 10^s$	30° 18′	22° 39½′		21 23
		22° 9½′		
$8^h\ 24^m\ 30^s$	30° 19⅔′		46° 37′	22 34
$8^h\ 22^m$ corrected [8 22 corr.]				

Hours, minutes, seconds [H. M. S.]	Vice versa, from the lower head of ♊ [Viceverſa ab inferiori capite ♊]	Declination, upper/lower [Declin. fup./inf.]	Altitude of the lower limb [Altit. inf. limb.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
$8^h\ 30^m\ 40^s$	46° 14¼′	22° 38′		24 6
$8^h\ 28^m\ 0^s$ corrected [8 28 0 corr.]		22° 14′		
$8^h\ 34^m\ 10^s$	46° 13⅔′		45° 25′	24 56
$8^h\ 37^m\ 30^s$	46° 11′	22° 39′		25 42
		22° 14½′		
$8^h\ 44^m\ 50^s$	46° 9′		44° 15′	
$8^h\ 47^m\ 30^s$	46° 6½′	22° 40′		28 10
		22° 14¾′		

It was moderately clear while these were being observed in the Moon, except in the two earlier observations, which have been limited from the following ones. [Erat mediocriter ſerenum dum hæc / obſeruabantur in ☾, præterquam in / duabus prioribus obſeruationibus, / quæ ex ſequentibus limitatæ ſunt.]

Afterwards the declination of Aldebaran was taken [Poſtea capiebatur Declin. Aldeb.]	
for correcting the armillae [pro Armillis corrigendis]	15° 38¼′
	15° 38½′

Investigation of the motion of the Moon for 6 February [Inquiſitio motus ☾ ad diem / 6 FEBRUARIJ]

The Moon in the 90th degree at $3^h\ 45^m$. [☾ in 90 gradu H. 3 M. 45.]

At 5^h 9^m the distance of the Moon from Venus [H. 5 M. 9 Diſt. ☾ a ♀]	58° 27′
Apparent right ascension of Venus [Aſc. recta ♀ viſa]	347° 31′ 30″
Declination of Venus [Declin. ♀]	2° 32′ north [B.]
Declination of the Moon [Declin. ☾]	17° 47′ north [B.]
Angular difference of ascension [Angulus diff. aſcenſ.]	57° 36′ 0″
Therefore the right ascension of the Moon [Ergo Aſcenſio R. ☾]	45° 7′ 30″
Resp. apparent longitude of the Moon [Reſp. ☾ viſa Longitudo]	17° 47¼′ ♉
latitude [Latitudo]	0° 36⅚′ north [B.]

Account was taken both of the change of the parallaxes and refractions of Venus, and likewise of its motion from the time at which it is afterwards found observed. [Habita eſt ratio tum alterationis Pa-/rallaxium & Refractionum ♀, item mo-/tus eius ab eo tempore quo poſtea ob-/ſeruata reperitur.]

Then from the bright star of ♈ and Aldebaran. [Deinde a lucida ♈ & Aldebora.]

At 7^h $16½^m$ the distance of the Moon from the bright star of ♈ [H. 7 M. 16½ Diſt. ☾ᵉ a luc. ♈]	…[1]
Declination of the Moon [Declin. ☾]	18° 10′ 0″
Declination of the bright star of ♈ [Declin. luc. ♈]	21° 31′
Right ascension of the bright star of ♈ [Aſc. recta luc. ♈]	26° 8¼′
Angular difference of ascension [Ang. diff. aſcenſ.]	19° 47⅓′
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	45° 55′ 35″
At 7^h $24¼^m$ the distance of the centre of the Moon from Aldebaran [H. 7 M. 24¼ Diſt. centri ☾ ab Aldeb.]	…[1]
Declination of the centre of the Moon [Declin. centri ☾]	18° 11½′
Declination of Aldebaran [Declin. Aldeb.]	15° 37½′
Angular difference of ascension [Ang. diff. aſcenſ.]	17° 18′ 27″
Right ascension of Aldebaran [Aſc. recta Aldeb.]	63° 11′ 30″
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	45° 53′ 3″
At $7⅓^h$ put the apparent right ascension of the Moon [H. 7⅓ pone Aſc. R. viſam ☾]	45° 54½′
and the declination [et Declinationem]	18° 11′ north [B.]
Resp. apparent longitude of the Moon [Reſp. ☾ viſa Longitudo]	18° 37′ 0″ ♉
latitude [Latitudo]	0° 47⅓′ north [B.]

Investigation of the apparent motion of the Moon for 7 February from the observations. [Inveſtigatio motus ☾ᵉ viſi ad diem / 7 Februarij ex obſeruation-ibus.]

The Moon in 90° at 5^h complete. [☾ in 90 Gr. H. 5 completa.]

At 8^h 22^m the distance of the centre of the Moon from the bright star of ♈, [H. 8 M. 22 Diſt. centri ☾ a lucida ♈,]	
adding 15′ [addendo 15′]	30° 35′
Declination of the centre of the Moon [Declin. centri ☾]	22° 23½′
Angular difference of ascension [Ang. diff. aſc.]	33° 1′ 40″
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	59° 9′ 55″
At 8^h 28^m the distance of the centre of the Moon from the lower [H. 8 M. 28 Diſt. centri ☾ ab inf.]	
head of ♊ [cap. ♊]	45° 59′ 0″
Declination of the centre of the Moon [Declin. centri ☾]	22° 24½′
Declination of the lower head of ♊ [Declin. inf. cap. ♊]	28° 56½′
Right ascension of the lower head of ♊ [Aſc. recta inf. cap. ♊]	110° 6½′
Angular difference of ascension [Ang. diff. aſc.]	50° 53′ 0″
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	59° 13′ 30″
At 8^h 25^m the right ascension of the Moon, limited [H. 8 M. 25 Aſc. R. ☾ limitata]	59° 11′ 45″
Declination of the Moon, north [Declin. ☾ B.]	22° 24′ 0″
Resp. longitude [Reſp. Longitudo]	1° 42⅝′ ♊
latitude [Latitudo]	2° 51⅔′ north [B.]

8 February, in the evening [DIE 8 FEBRUARIJ, VESPERI.]

The Moon was observed near the 90th degree, in the manner that follows. [Obſeruabatur ☾ iuxta 90 Gradum / in hunc qui ſequitur modum.]

The Moon in the ninetieth degree at $6¼^h$. [☾ in nonag. gr. H. 6¼.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb from the lower head of ♊ [Diſt. occ. limb. ab inf. cap. ♊]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]	Altitude of the lower limb [Altit. inf. limbi]	The bright foot of Orion, east [Luc. pes Orion. or.]
6^h 8^m 35^s		*25° 30½′*		*10 27½*
		25° 1′		
6^h 12^m 0^s	*34° 12⅝′*			*9 37*

Hours, minutes, seconds [H. M. S.]	Distance of the western limb from the lower head of ♊ [Diſt. occ. limb. ab inf. cap. ♊]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]	Altitude of the lower limb [Altit. inf. limbi]	The bright foot of Orion, east [Luc. pes Orion. or.]
6^h 14^m 50^s	*34° 11½′*	*25° 31½′*		*8 54*
		25° 2½′		
6^h 17^m 10^s	*34° 9½′*			*8 22*
6^h 18^m 50^s	*34° 8¾′*		*58° 50′*	*7 57*
6^h 24^m 10^s	*34° 7½′*	*25° 34′*		*6 39*
		25° 4′		
6^h 26^m 50^s	*34° 5¾′*			*5 55*

Hours, minutes, seconds [H. M. S.]	Distance of the western limb from the lower head of ♊ [Diſt. occ. limb. ab inf. cap. ♊]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]	Altitude of the lower limb [Altit. inf. limbi]	The bright foot of Orion, east [Luc. pes Orion. or.]
6h 24m 0s corrected [6 24 0 corr.]				

Hours, minutes, seconds [H. M. S.]	*Afterwards vice versa, from the bright star of* ♈ [Poſtea viceverſa a lucida ♈]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]	Altitude of the lower limb [Altit. inf. limbi]	The bright foot of Orion, east [Luc. pes Orion. or.]
6h 30m 50s	*41° 55⅓′*			*4 58*
6h 28m 0s corrected [6 28 0 corr.]				
6h 33m 15s	*41° 56⅓′*			*4 22*
6h 30m 12s corrected [6 30 12 corr.]				
6h 35m 45s	*41° 58′*			
6h 36m 40s	*41° 59′*			*3 27*
6h 39m 15s	*42° 0¼′*			*2 53*
6h 44m 5s	the *western limb* of the Moon crossed [Tranſijt occid. limbus ☾]			

through the meridian, having altitude [per Merid. habens Altitud.]
of the upper horn [ſuperioris cornu]
by the steel instrument [per Chalyb.] 59° 39⅓′
of the lower [inferioris] 59° 6′
of the upper by the revolving quadrant [ſuperioris per Volub.] 59° 35⅓′
of the lower [inferioris] 59° 10⅙′
Declination, upper [Declinatio ſuper.] 25° 33′
lower [infer.] 25° 3¼′
The bright foot of Orion, east [Lucidus pes Orion. orient.] 1 41

N.B. The declination comes out from the [N.B. Prouenit declinatio ex Altitudine]
meridian altitude by each [Meridiana per vtrumque]
quadrant [Quadrantem] 25° 17⅙′
but by the armillae [per Armillas vero] 25° 18⅙′
a difference of 1 minute. [differentia 1 minuti.]

For the place of the Moon from the observations. [Pro loco ☾ ex obſeruationibus.]

At 6^h 24^m the distance of the Moon from the bright, or [H. 6 M. 24 Diſt. ☾ a lucido ſeu]	
the lower head of ♊ [infer. cap. ♊]	33° 51′
Declination of the Moon [Decl. ☾]	25° 15½′
Angular difference of ascension [Ang. diff. aſc.]	37° 56′ 50″
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	72° 9′ 40″
At 6^h 30^m the distance of the centre of the Moon [H. 6 M. 30 Diſt. centri ☾]	
from the bright star of ♈ [a luc. ♈]	42° 12′ 0″
Declination of the Moon [Decl. ☾]	25° 16′
Angular difference of ascension [Ang. diff. aſc.]	46° 1′ 0″
Therefore the right ascension of the Moon [Ergo Aſc. r. ☾]	72° 9′ 15″
At 6^h 27^m put the right ascension of the Moon [H. 6 M. 27 Pone Aſc. R. ☾]	72° 9½′
and the declination of the Moon [et declin. ☾]	25° 15¾′
Resp. longitude [Reſp. Longitudo]	13° 53½′ ♊
latitude [Latitudo]	2° 44¼′ north [B.]
Arc of inclination added [Arcus inclinationis add.]	7′
Therefore the true longitude of the Moon [Ergo vera Longitudo ☾]	14° 0½′ ♊

[1] Missing in the codex. [Deeſt in codice.]

II February, in the evening [DIE II FEBRUARIJ, VESPERI.]

At 9^h 38^m 40^s the western limb of the Moon crossed [H. 9 38′ 40″ Tranſijt occid. limbus ☾]	
the meridian, having the altitude [per meridianum habens Altitu-]	
of the upper horn [dinem ſuperioris cornu]	
by the steel instrument [per Chalyb.]	59° 32½′
of the lower [inferioris]	58° 59⅔′
of the upper by the revolving quadrant [ſuperioris per Volub.]	59° 31′
of the lower [inferioris]	59° 3⅚′

Among *rather sparse* clouds. [Inter nubes rariuſculas.]

About an hour before, the clock was corrected by Aldebaran. [Circa horam ante corrigebatur ho-/rologium ad Aldeb.]

N.B. It was not possible to observe more in the Moon this evening, because of clouds that soon thickened. But it is a moderately good observation for limiting the greatest latitude of the Moon. For it is near the limits of the greatest northern latitude, in ♋, at nearly the 28th degree, while the northern limit is in 5° ♌, so that the distance from the node[1] is about 7° — which cannot alter the latitude from the greatest except by 2⅔′. Let the place of the Moon, corrected according to our discovery, therefore be applied; let account be taken of the parallax and of the apparent place; and let the true latitude be sought. When it has been compared with the one which it had in the preceding years, when the Moon was again near the southern limits of greatest latitude, the greatest departure of the Moon from the ecliptic can be derived from this

by weighing the particulars against one another. [N.B. Plura in luna hac veſpera ob-/ſeruare non licuit propter nubes mox / indenſatas. Eſt autem mediocriter / bona obſervatio pro latitudine ☾ ma-/xima limitanda. Nam ſit iuxta limi-/tes maximæ latitudinis boreæ in ♋ / fere iuxta 28 Gradum, cum limes / boreus ſit in 5 ♌, vt ſit diſtantia a / nodo[1] circiter 7 partium, quæ latitu-/dinem alterare poteſt a maxima non / niſi 2⅔′. Adhibeatur itaque locus ☾ / correctus iuxta noſtram inuentio-/nem, & habeatur ratio parallaxeos / locique viſi, & inquiratur latitudo / vera, qua collata cum ea, quam / præcedentibus annis obtinuit, cum / rurſus Luna eßet iuxta limites lati-/tudinis maximæ auſtrinos, poterit / ſingula inuicem trutinando erui hinc / ☾ maxima ab Ecliptica euagatio.]

But use the declination of the centre of the Moon when its western limb was crossing the meridian, 25° 11′, coming half a minute nearer to the observations made by the steel instrument, which were without doubt the truer — although, as to the declination of the centre of the Moon, the excess of that one is not more than one minute. But compare also other observations of the Moon made in a very similar position, as to the latitude. [Vtere vero Declinatione centri ☾, / cum limbus eius occidentalis Meri-/dianum tranſiret, 25 11, accedendo / per dimidium minutum propius ad / obſeruationes per Chalybeum fac-/tas, quæ proculdubio erant verio-/res, licet quo ad centri ☾ declinatio-/nem non ſit exceßus illius niſi vnius / minuti. Sed confer etiam alias ☾ ob-/ſeruationes conſimili ſitu habitas, / quo ad latitudinem.]

12 February, in the evening [DIE 12 FEBRUARIJ, VESPERI.]

It was observed in this way by the sextant, in distance from the fixed stars. But the western limb of the Moon was taken. [Obſeruabatur hoc modo per Sextantem in diſtantia a fixis. / Capiebatur vero occidentalis limbus ☾.]

Hours, minutes, seconds [H. M. S.]	Distance from the bright foot of ♊ [Diſt. a luc. pede ♊]	Azimuth of the western limb [Azim. occ. limbi]	Altitude of the upper limb [Altit. ſup. limbi]	Declination, upper [Declinatio ſup.]	lower [inf.]	The bright foot of Orion, west[2] [Luc. pes Orionis occ.[2]]
$7^h\ 25^m\ 30^s$	39° 7′	65° 57′	41° 3′	22° 8½′	21° 35′	13 0½
$7^h\ 30^m\ 0^s$	39° 9½′	64° 52′	41° 35′			14 4
$7^h\ 33^m\ 20^s$	39° 12′	63° 58′	42° 1′	22° 8½′	21° 35½′	14 56
$7^h\ 37^m\ 25^s$	39° 15′	62° 57′	42° 29′			15 55

Hours, minutes, seconds [H. M. S.]	Afterwards from the lower head of ♊ [Poſtea ab inferiori capite ♊.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude of the upper limb [Altit. ſup. limbi]	Declination, upper [Declinatio ſup.]	lower [inf.]	The bright foot of Orion, west [Luc. pes Orionis occ.]
$7^h\ 43^m\ 30^s$	23° 26⅓′	61° 25′	43° 11′	22° 6½′	21° 32⅔′	17 27½
$7^h\ 49^m\ 10^s$	23° 30½′	60° 0′	43° 51½′			18 48

Then the same limb of the Moon was observed from cor ♌. [Deinde obſeruabatur a corde ♌ idem limbus ☾.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Azimuth of the western limb [Azim. occ. limbi]	Altitude of the upper limb [Altit. ſuper. limbi]	Declination, upper [Declinatio ſuper.]	lower [infer.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
7h 54m 0s	*13° 40½′*	*58° 41′*	*44° 24′*	*22° 5½′*	*21° 32′*	*20 3*
7h 56m 50s	*13° 38¾′*					*20 46*
7h 59m 40s	*13° 38′*	*57° 12′*	*45° 0′*	*22° 4⅓′*	*21° 31′*	*21 25*
8h 4m 30s	*13° 37′*	*55° 52′*	*45° 33⅔′*			*22 37*
8h 9m 5s	*13° 34′*	*54° 40′*	*46° 3′*	*22° 2½′*	*21° 28′*	*23 46*
8h 13m 0s	*13° 31′*	*53° 34′*	*46° 27′*			*24 42*
8h 17m 35s	*13° 29′*	*52° 19′*	*46° 55′*	*22° 1¼′*	*21° 27½*	*25 50*
8h 21m 40s	*13° 27′*	*51° 5′*	*47° 20½′*			*26 52*
8h 24m 20s	*13° 26′*	*50° 16′*	*47° 35′*	*22° 0′*	*21° 27′*	*27 32*
8h 28m 20s	*13° 24¼′*	*49° 13′*	*47° 58′*	*22° 0½′*	*21° 24′*	*28 28*

[1] So in the codex, but it should be *from the limit*. [Sic in codice, ſed debet eße a limite.] [2] The name of this star is missing in the codex. [Nomen hujus ſtellæ deeſt in codice.]

The Moon therefore advanced towards the star in 26[1] minutes of time by 16 minutes of arc, which agrees well enough. But the distance between the Moon and Regulus was seen only with difficulty, because they were almost in the vertical. [Promota eſt igitur ☾ verſus ſtellam in 26[1] minutis temporis per 16 minuta Graduum, quod ſatis quadrat. Difficulter autem videbatur diſtantia ☾ & Reguli, quia erant quaſi in verticali.]

At 8h 33m the declination of cor ♌ was [H. 8 M. 33 Fuit Declinatio Cordis ♌]		*13° 57′*	
		13 57¼	*in the same position in which the Moon was,* [in eodem ſitu, quo ☾ erat,]
for verifying the declinations by the armillae. [pro verificandis declinationibus per Armillas.]			

At 8h 38m again the declination of the Moon [H. 8 M. 38 Rurſus Declin. ☾]	*of the lower* [inferioris]	*21° 23′*	Altitude of the Moon, *of the upper horn* [Altit. ☾ ſuper. cornu]
	of the upper [ſuperioris]	*21° 58¼′*	*49 0*
At 8h 43m the declination of the Moon repeated [H. 8 M. 43 Repetita Declin. ☾]	*of the upper horn* [ſuper. cornu]	*21° 58′*	*49 34*
	of the lower [inferioris]	*21° 23′*	

Afterwards the Moon was observed approaching the meridian, in this manner. [Poſtea obſeruabatur ☾ Meridiano appropinquans in hunc modum.]

Hours, minutes, seconds [H. M. S.]	Distance of the western limb of the Moon from the lower head of ♊ [Diſt. occ. limbi ☾ ab infer. cap. ♊]	Declination, upper [Declinatio ſup.]	lower [inf.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper [Altitudo ſup.]	lower [inf.]	Cor ♌, east [Cor ♌ orient.]
9h 58m 30s	*24° 37½′*	*21° 45′*	*21° 6′ doubtful* [dub.]				
10h 4m 0s	*24° 38′*			*16° 44′*	*54° 52′*	*54° 25′*	*20 45*
10h 8m 50s	*24° 39⅙′*	*21° 42½′*	*21° 8′*	*14° 31′*	*55° 3′*	*54° 32′*	*19 34*
10h 14m 10s	*24° 42′*			*12° 55′*	*55° 11′*	*54° 42′*	*18 15*
10h 18m 40s	*24° 43⅙′*	*21° 40′*	*21° 7½′*	*10° 54′*	*55° 20′*	*54° 51′*	*17 5*
10h 23m 30s	*24° 44′*			*9° 10′*	*55° 25′*	*54° 54′*	*15 58*

Afterwards, vice versa, the same limb of the Moon was taken from the tail of ♌, because it was more conveniently placed than cor. [Poſtea viceverſa idem limbus ☾ accipiebatur a Cauda ♌, quia rectius quam Cor diſponebatur.]

Hours, minutes, seconds [H. M. S.]		Declination, upper [Declinatio ſup.]	lower [inf.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper [Altitudo ſup.]	lower [inf.]	Cor ♌, east [Cor ♌ orient.]
10h 28m 10s	*34° 7′*	*21° 39′*	*21° 6′*	*7° 20′*	*55° 33′*	*54° 59′*	*14 46*
10h 31m 0s	*34° 5¼′*				*55° 34′*	*55° 2′*	*14 1*
10h 34m 40s	*34° 3⅔′*	*21° 37′*	*21° 4½′*	*4° 50′*	*55° 36′*	*55° 5′*	
10h 38m 20s	*34° 1′*			*3° 26′*	*55° 37′*	*55° 7′*	

Afterwards, with the Moon approaching the meridian. [Poſtea, ☾ appropinquante ad Meridianum.]

Hours, minutes, seconds [H. M. S.]		Declination, upper [Declinatio ſup.]	lower [inf.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper [Altitudo ſup.]	lower [inf.]	Cor ♌, east [Cor ♌ orient.]
10h 42m 10s		*21° 36′*	*21° 2½′*	*2° 0′*	*55° 38′*	*55° 8′*	*11 15*
					55° 39½′	*55° 4′*	
10h 46m 50s	*the western limb of the Moon crossed through the meridian* [Tranſiuit occid. limbus ☾ per Merid.]						*10 16*
	having altitude by the steel instrument [habens altit. per Chalyb.]				*55° 40′*	*55° 5½′*	
	by the revolving quadrant [per Volub.]				*55° 39′*	*55° 7′*	
10h 51m 50s		*21° 34⅚′*	*21° 2⅓′*	*2° 0′ west* [occ.]			*8 53*
		21° 33½′	*21° 1½′*				

Hours, minutes, seconds [H. M. S.]		Declination, upper [Declinatio ſup.]	lower [inf.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper [Altitudo ſup.]	lower [inf.]	Cor ♌, east [Cor ♌ orient.]
	by the steel instrument [per Chalyb.]				*55° 38½′*	*55° 4½′*	
	by the revolving quadrant [per Volub.]				*55° 39′*	*55° 7′*	

Soon afterwards there was observed, for an examination [Obſeruabatur mox pro examine]	*13° 57′*	Repeated [Repetita]		*13° 57′*
of the armillae, the declination of cor ♌ [Armillarum Declin. cordis ♌]	*13° 57′*			*13 57¼*

Afterwards the clock was corrected again, since it was seen to have run up to now 4 minutes faster than it should; the index was set back by these. But it had at least been verified against the Sun before sunset, in a hasty way; so the earlier times need to be corrected through the equatorial distances of the fixed stars from the meridian, observed at the same time. [Poſtea denuo rectificabatur horologium, quod viſum eſt hucusque 4 Minutis iuſto celerius moueri, quibus index retrahebatur. Erat autem ſaltem ad Solem ante occaſum cito modo verificatum, quare priora tempora corrigenda veniunt per diſtantias æquatorias fixarum a Meridiano ſimul obſeruatas.]

Afterwards the Moon was observed moving towards the 90th degree of the ecliptic from the horizon, as follows. The Moon in the 90th degree at 11^h 56^m. [Poſtea obſeruabatur ☾ tendens ad 90 Eclipticæ ab Horizonte Gradum vt ſequitur. ☾ in 90 gradu H. 11 M. 56.]

[1] It should be 34. [Debet eße 34.]

Hours, minutes, seconds [H. M. S.]	Distance of the Moon from the lower head of ♊ [Diſt. ☾ ab inf. cap. ♊]	Declination, upper [Declinatio ſuper.]	lower [infer.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper [Altitudo ſuper.]	lower [infer.]	Cor ♌, west [Cor ♌ occ.]
11^h 32^m 10^s	*25° 22⅚′*	*21° 25′*	*20° 51⅓′*	*18° 55′*	*54° 26′*		*2 1*
11^h 37^m 30^s		*21° 24½′*	*20° 51¼′*	*20° 0′*	*54° 10′*	*53° 37′*	*3 18*
11^h 41^m 40^s	*25° 25½′*	*21° 23½′*	*20° 50′*	*22° 35′*	*53° 59′*	*53° 26′*	*4 21*
11^h 45^m 40^s	*25° 29′*	*21° 22½′*	*20° 49½′*	*23° 55′*	*53° 37′*		*5 18*
11^h 50^m 30^s	*25° 30′*	*21° 22′*	*20° 48′*	*25° 50′*	*53° 25′*	*52° 54′*	*6 30*
11^h 49^m 0^s corrected [11 49 0 corr.]							
11^h 55^m 15^s	*25° 33½′*	*21° 21′*	*20° 46′*				

Hours, minutes, seconds [H. M. S.]	Distance of the Moon from the lower head of ♊ [Diſt. ☾ ab inf. cap. ♊]	Declination, upper [Declinatio ſuper.]	lower [infer.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper [Altitudo ſuper.]	lower [infer.]	Cor ♌, west [Cor ♌ occ.]
11^h $54\frac{3}{4}^m$ corrected [11 54¾ corr.]							

Afterwards, vice versa, the same western limb of the Moon was taken from the tail of ♌. [Poſtea viceverſa a Cauda ♌ accipiebatur idem occidentalis limbus ☾.]

Hours, minutes, seconds [H. M. S.]		Declination, upper [Declinatio ſuper.]	lower [infer.]	Azimuth of the western limb [Azim. occ. limbi]	Altitude, upper [Altitudo ſuper.]	lower [infer.]	Spica, east [Spica ♍ or.]
12^h 0^m 5^s 11^h 58^m 35^s corrected [11 58 35 corr.]	*33° 25′*	*21° 20′*	*20° 45½′*				*40 25*
12^h 4^m 20^s	*33° 23′*	*21° 19¾′*	*20° 45′*	*30° 45′*	*52° 33′*	*52° 1′*	*39 23*
12^h 8^m 10^s	*33° 22′*	*21° 18⅔′*	*20° 43½′*				*38 22*
12^h 11^m 5^s	*33° 21½′*	*21° 18⅓′*	*20° 42½′*	*32° 45′*	*51° 58′*	*51° 29′*	*37 38*
12^h 14^m 40^s	*33° 20⅓′*	*21° 17′*	*20° 43′*	*34° 0′*	*51° 44′*	*51° 14′*	*36 45*
12^h 18^m 50^s	*33° 19¼′*	*21° 15⅔′*	*20° 42¼′*	*35° 30′*	*51° 29′*	*50° 57′*	*35 42*
12^h 23^m 45^s	*33° 15½′*	*21° 14′*	*20° 41½′*	*37° 0′*	*51° 4′*	*50° 29′*	*34 32*
12^h 28^m 20^s	*33° 13½′*	*21° 13½′*	*20° 39½′*	*38° 25′*	*50° 41′*	*50° 12′*	*33 22*
12^h 32^m 30^s		*21° 14⅔′*	*20° 39′*		*50° 14′*	*49° 43′*	
12^h 36^m 40^s		*21° 13½′*	*20° 38′ better* [meliores]			*49° 0′*	
		21° 13′	*20° 37½′*				

Afterwards, to verify the declination of the Moon taken by the armillae, in case some deviation had occurred, the declination of cor ♌ *was taken in almost the same position in which the Moon had been taken before.* [Poſtea pro verificanda Declinatione ☾ per Armillas accepta, ſi quid deuiationis factæ incidiſſet, capiebatur Declinatio Cordis ♌ in eodem quaſi ſitu quo ☾ prius capiebatur.]

At $12\frac{5}{6}^h$ [H. 12⅚]	*13 56⅔ three times* [ter]	*The same was done with Saturn, which could not meanwhile appreciably* [Idem fiebat in ♄, qui non poterat interea ſenſibiliter]
	13 57	*change its declination.* Subtract 1½′ from the declination of the Moon everywhere. [mutare declinationem. Subtrahe a Declin. ☾ vbique 1½′.]

Then again, to examine the time, [Deinde rurſus pro tempore examinando]	*1h 3m 10s* [H. 1 3′ 10″]	Spica	*24° 48′*
Spica ♍ *was taken in equatorial* [accipiebatur Spica ♍ in æquatoria]	*1 5 0*	♍	*24° 15′*
distance [diſtantia]	*1 6 0*	east [orient.]	*23° 58′*
	1 6 55		*23 42*
	1 7 30		*23 34*

13 February, in the evening [DIE 13 FEBRUARIJ, VESPERI.]

The distance of the western limb of the Moon from Saturn was observed. [Obſeruabatur occidentalis limbi ☾ diſtantia a ♄.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Altitude of the Moon [Altit. ☾]	Azimuth	Declination, upper [Declinatio ſup.]	lower [inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
$6^h\ 3^m\ 30^s$	5° 42⅔′				16 55	
$6^h\ 9^m\ 0^s$	5° 46′	18° 51′	92° 40′	17° 19⅓′	16° 42′	15 32

Hours, minutes, seconds [H. M. S.]	Then from the Lesser Dog, the western limb of the Moon [Deinde a Cane minore, occid. limbus ☾.]	Altitude of the Moon [Altit. ☾]	Azimuth	Declination, upper [Declinatio ſup.]	lower [inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
$6^h\ 15^m\ 5^s$	40° 14½′	19° 36′	91° 30′			14 6
$6^h\ 18^m\ 15^s$	40° 15½′	19° 58′	91° 0′	17° 14⅔′	16° 41⅓′	18
$6^h\ 21^m\ 50^s$	40° 16½′	20° 29′	90° 15′			12 23
$6^h\ 24^m\ 45^s$	40° 18¾′	20° 50′	89° 45′	17° 13½′	16° 39′	11 36

Hours, minutes, seconds [H. M. S.]	Distance of the Moon from the lower head of ♊ [Diſtantia ☾ ab inf. cap. ♊.]	Altitude of the Moon [Altit. ☾]	Azimuth	Declination, upper [Declinatio ſup.]	lower [inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
$6^h\ 55^m\ 45^s$	38° 6′	24° 52′	83° 20′	17° 8′	16° 32′	4 10
$7^h\ 1^m\ 10^s$	38° 9½′	25° 30′	82° 17′			2 46
$7^h\ 4^m\ 25^s$	38° 10′	25° 54′	81° 40′	17° 6′	16° 30½′	1

7⅓ Cor ♌ was observed in declination 13° 57⅔′, 13° 58′. But Regulus was distant from the Moon not much more than 4° against the order of the signs, so that here you will be able to verify the declinations of the Moon with fair certainty. [7⅓ obſeruata eſt Cor ♌ in declinatione 13 57⅔, 13 58. Diſtabat autem Regulus a ☾ non multum amplius 4 gradibus in antecedentia, vt hic Declinationes ☾ ſatis certo verificare poteris.]

The true declination of cor ♌ at the beginning of this year, 13° 55¼′. [Vera declinatio Cordis ♌ hoc anno ad initium 13 55¼.]

Then the Moon was observed in a position, or altitude, similar to that of yesterday evening before its transit through the meridian and the 90th degree, for learning its daily motion, in equatorial distance from the right shoulder of Orion, though among clouds. [Deinde obſeruabatur ☾ in conſimili ſitu ſeu Altitudine quo heſterna veſpera ante tranſitum per Meridianum & 90 Gr. pro motu eius diurno cognoſcendo, in æquatoria diſtantia a dextro humero Orionis, inter nubes tamen.]

Hours, minutes, seconds [H. M. S.]	Western limb of the Moon, east [Occ. limbi ☾ orient.]	Altitude of the upper limb [Alt. ſup. limbi]	Azimuth of the western limb [Azim. occ. limbi]	Declination, upper [Declinatio ſup.]	lower [inf.]	The shoulder of Orion, west [Hum. Orion. occ.]
$9^h\ 1^m\ 5^s$	40 47	40° 0′	54° 0′	16° 42′	16° 8′	26 35½
$9^h\ 6^m\ 0^s$	39 32	40° 30′	53° 10′			28 1 uncertain because of clouds [incerta propter nubes]

Then the distance of the western limb from the Lesser Dog was observed. [Deinde obſeruabatur diſtantia occid. limbi a Cane minore.]

Hours, minutes, seconds [H. M. S.]	Altitude of the upper limb [Alt. ſup. limbi]	Azimuth of the western limb [Azim. occ. limbi]	Declination, upper [Declinatio ſup.]	lower [inf.]	The shoulder of Orion, west [Hum. Orion. occ.]
$9^h\ 41^m\ 45^s$	41° 47′ 44° 0′	43° 18′	16° 21′	15° 56½′¹	

Hours, minutes, seconds [H. M. S.]	Afterwards from the lower head of ♊ [Poſtea ab inferiori capite ♊.]	Altitude of the upper limb [Alt. ſup. limbi]	Azimuth of the western limb [Azim. occ. limbi]	Declination, upper [Declinatio ſup.]	lower [inf.]	The shoulder of Orion, west [Hum. Orion. occ.]
$9^h\ 47^m\ 35^s$	39° 37′	44° 29′	41° 37′			
$9^h\ 50^m\ 30^s$	39° 37½′*	44° 42′	40° 38′	16° 20′	15° 56⅔′*	uncertain because of clouds [* incerta propter nubes]

Afterwards the distance of the Moon from Saturn was taken, *because other stars did not appear, with respect to the western limb of the Moon.* [Poſtea ſumebatur diſtantia ☾ a ♄, *quia aliæ ſtellæ non apparebant, quoad occid. limbum* ☾.]

Hours, minutes, seconds [H. M. S.]		Altitude of the upper limb [Alt. ſup. limbi]	Azimuth of the western limb [Azim. occ. limbi]	Declination, upper [Declinatio ſup.]	lower [inf.]	
$11^h\ 3^m\ 15^s$	8° 10′	49° 14′	17° 0′	16° 13′	15° 31′′	The Lesser Dog, west [Can. min. occ.]
$11^h\ 7^m\ 10^s$	8° 13′	49° 22′	15° 32′	16° 12⅔′	15° 39½′	31 41
$11^h\ 12^m\ 30^s$	8° 15′					32 58
$11^h\ 50^m\ 50^s$	The western limb of the Moon crossed through the meridian, having altitude [Tranſijt occid. limbus ☾ per Merid. habens Altit.]					
	by the steel instrument [per Chalyb.]	50° 5′	upper limb [ſup. limbi]	16° 4¼′	15° 26′	42 32½
		49° 31⅔′	lower [infer.]			
	by the revolving quadrant [per Volub.]	50° 3′	upper [ſuper.]			
		49° 32′	lower [infer.]			

Immediately afterwards the distance of the western limb of the Moon from the lower head of ♊ was taken. [Statim poſtea capiebatur Diſt. occid. limbi ☾ ab inferiori capite ♊]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination [Declinatio]		The Lesser Dog, west [Can. min. occ.]
$11^h\ 59^m\ 40^s$	40° 42′			44 46
$12^h\ 1^m\ 10^s$	40° 42⅔′	16° 2½′	15° 24′	45 5
$12^h\ 3^m\ 40^s$	40° 43¼′			45 40

Hours, minutes, seconds [H. M. S.]	Vice versa, from Arcturus [Viceverſa ab Arcturo]	Declination [Declinatio]	The Lesser Dog, west [Can. min. occ.]
$12^h\ 5^m\ 0^s$	54° 18′	16° 0½′	15° 22½′ 46 1
$12^h\ 7^m\ 30^s$	54° 17′		46 40
$12^h\ 10^m\ 5^s$	54° 15⅚′	15° 59½′	15° 22¾′ 47 17

The clock was corrected at $12½^h$, because since the preceding noon it had been running 11^m faster than it should; so we took two small pieces of lead off its weight. [Corrigebatur Horologium H. 12½, quod a Meridie antecedente M. 11 citius iuſto ibat: quare ponderi eius duo parua plumbi fruſta detraximus.]

There follow observations of the Moon made near the 90th degree of the ecliptic (which, by the computation, it would cross at 1½^{h} after midnight), since the fixed stars on either side were better seen, the sky having become clearer than earlier this evening. [Sequuntur obſeruationes ☾ habitæ iuxta 90 Gr. Eclipticæ (quem tranſiret iuxta ſupputationem H. 1½ P. M. N.) cum ſtellæ fixæ vtrinque melius conſpicerentur, cælo vtpote ſereniori quam prius hac veſpera facto.]

Hours, minutes, seconds [H. M. S.]	Distance from the lower head of ♊ [Diſt. ab inf. cap. ♊]	Declination [Declinatio]		Altitude, upper [Altit. ſuper.]	Azimuth	The Lesser Dog, west [Canis min. occid.]
1^{h} 4^{m} 30^{s}	41° 21½′			46° 43′	29° 20′	63 40½
1^{h} 7^{m} 0^{s}	41° 23¼′	15° 43½′	15° 1′*	46° 42′	30° 13′	64 25 * better [* melior]
1^{h} 11^{m} 10^{s}	41° 24⅔′			46° 24′	31° 33′	65 20
1^{h} 13^{m} 50^{s}	41° 26′	15° 39½′	15° 1′	46° 11′	32° 45′	66 0
1^{h} 18^{m} 15^{s}	41° 28½′			45° 52′	33° 45′	67 7
1^{h} 20^{m} 25^{s}	41° 31⅓′	15° 35½′	15° 1⅙′	45° 41⅓′	34° 27′	67 42
1^{h} 23^{m} 30^{s}	41° 33½′			45° 25′	35° 38′	68 28
1^{h} 26^{m} 15^{s}	41° 34½′			45° 13′	36° 15′	69 10
1^{h} 28^{m} 10^{s}	41° 35′			45° 2′	37° 5′	
1^{h} 30^{m} 15^{s}	41° 36′	15° 34′	14° 58⅔′	44° 52′	37° 42′	70 10
1^{h} 31^{m} 20^{s} corrected [1 31 20 corr.]						
1^{h} 33^{m} 45^{s}	41° 37¼′			44° 31′	38° 34′	

[1] It should be 46′. [Debet eße 46′.] [2] It should be 41. [Debet eße 41.]

Hours, minutes, seconds [H. M. S.]	Vice versa, from Arcturus [Viceverſa ab Arcturo.]	Declination [Declinatio]		Altitude, upper [Altit. ſuper.]	Azimuth	The Lesser Dog, west [Canis min. occid.]
1^{h} 36^{m} 10^{s}	53° 41¼′			44° 20′	39° 23′	71 37
1^{h} 36⅚^{m} corrected [1 36⅚ corr.]						
1^{h} 38^{m} 25^{s}	53° 40¼′	15° 31½′	14° 54⅚′	44° 8′	40° 7′	72 10
1^{h} 41^{m} 10^{s}	53° 39½′			43° 52′	40° 57′	72 53
1^{h} 44^{m} 0^{s}	53° 38′	15° 30′	14° 54½′			73 37
1^{h} 47^{m} 10^{s}	53° 37½′					74 21
1^{h} 48^{m} 40^{s}	53° 37⅓′					74 44
1^{h} 51^{m} 0^{s}	53° 34½′	15° 28′	14° 53′			75 27
1^{h} 54^{m} 5^{s}	53° 34′					76 5
1^{h} 56^{m} 35^{s}	53° 33′	15° 26⅔′	14° 51′			76 45
1^{h} 59^{m} 20^{s}	53° 30⅓′			42° 0′		77 25

Afterwards the declination of cor ♌ was taken [Poſtea ſumebatur Declinatio Cordis ♌]	with one pinnule [vno pinn.]	13° 57¼′
for correcting the armillae. [pro corrigendis Armillis]	with the other [altero]	13° 57′

Two minutes must therefore be taken off in the declination of the Moon. [Debent igitur adimi duo minuta in Declin. ☾.]

While these observations were being made on the Moon about the ninetieth degree, it was fairly clear and the fixed stars were conspicuous. The observations, moreover, were taken with all the care that was possible, so that, if in some places they are limited by reason of the daily motion of the Moon, it will be fairly safe to rely on them for examining the hypothesis of the Moon about the perigee of the first epicycle of Copernicus, from which the Moon was not far distant, as it was not far from opposition with the Sun either. [Dum hæc in ☾ circa nonageſimum gradum obſeruabantur fuit ſatis ſerenum & ſtellæ fixæ conſpicuæ. Sunt autem obſeruationes diligentia qua fieri potuit acceptæ, adeo vt ſi in quibusdam locis limitentur ratione motus diurni ☾, illis ſatis tuto fidere licebit pro hypotheſi ☾ae circa Perigæum 1 Epicycli Copernici examinanda, a quo ☾ non longe abfuit ſicut neque ab ☍ cum ☉.]

N. B. The distances were taken with the greatest precision with respect to the western limb of the Moon, so that a correct semidiameter, such as you will be able to work out from the remaining observations, is to be applied. [N. B. Diſtantiæ ſumma præciſione reſpectu occidentalis limbi ☾ acceptæ ſunt, ita vt ſemidiameter iuſta & qualem ex reliquis obſeruationibus ratiocinari poteris, applicetur.]

14 February, in the evening [DIE 14 FEBRUARIJ, VESPERI.]

The Moon was observed *at almost the same altitude as at first yesterday evening.* [Obſeruabatur ☾ *in eadem ferme altitudine qua heri veſperi primo.*]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from the Lesser Dog [Diſt. or. limbi ☾ a Cane min.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the upper limb [Altit. ſup. limbi]	The Lesser Dog, east [Canis min. orient.]
$8^h\ 28^m\ 55^s$	55° 26⅚′		24° 48′	5 20
$8^h\ 34^m\ 10^s$	55° 25′	10° 27′ 9° 53′		
$8^h\ 37^m\ 40^s$	55° 26½′	10° 24½′ 9° 51½′		

Hours, minutes, seconds [H. M. S.]	Afterwards the distance of the Moon from cor ♌, at the limb as before [Poſtea ☾ diſtantia a Corde ♌ in limbo vt prius.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the upper limb [Altit. ſup. limbi]	The Lesser Dog, east [Canis min. orient.]
$8^h\ 41^m\ 55^s$	18° 45′			
$8^h\ 44^m\ 30^s$	18° 47′	10° 22½′	26° 40′	1 27
		9° 50½′		
$8^h\ 48^m\ 5^s$	18° 48′			0 30
$8^h\ 51^m\ 0^s$	18° 50′	10° 22′	27° 20′	west [occid.]
		9° 48′		0 11
$8^h\ 55^m\ 20^s$	18° 52′			1 12
$8^h\ 57^m\ 25^s$	18° 54′	10° 21¼′		1 42
		9° 46½′		
$9^h\ 5^m\ 0^s$	18° 55′			
$9^h\ 7^m\ 5^s$	18° 56′	10° 17½′	29° 15′	4 6
		9° 43¼′		
$9^h\ 14^m\ 0^s$	18° 59′			5 54

Hours, minutes, seconds [H. M. S.]	Afterwards the distance of the Moon from cor ♌, at the limb as before [Poſtea ☾ diſtantia a Corde ♌ in limbo vt prius.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the upper limb [Altit. ſup. limbi]	The Lesser Dog, east [Canis min. orient.]
$9^h\ 16^m\ 0^s$	19° 0′	10° 16′		6 21
		9° 42′		
$9^h\ 18½^m$	19° 2½′		30° 40′	7 4
$9^h\ 21¼^m$	19° 4½′	10° 13½′	31° 3′	7 45
		9° 40′		

On account of the armillae [Propter Armillas]	*13° 56⅚′*	
the declination of cor ♌ [Declin. Cordis ♌]	*13° 57⅓′*	*Put 13° 57′* [Pone 13 57]

	Distance of the eastern limb of ♌ from cor ♌ [Diſt. or. limbi ♌ a Corde ♌]	Declination of the Moon [Decl. ☾]	Altitude, upper [Alt. ſup.]	The Lesser Dog, west [Canis min. occ.]
11 22 55	20° 12¾′			38 16
11 25 10	20° 13½′	9° 42′	40° 33′	38 48
		9° 6½′		
11 29 35	20° 15′			39 55
11 31 55	20° 17′	9° 40′	41° 50′	40 33
		9° 4½′		

	Distance of the eastern limb of ☋ from cor ☋ [Diſt. or. limbi ☋ a Corde ☋]	Declination of the Moon [Decl. ☾]	Altitude, upper [Alt. ſup.]	The Lesser Dog, west [Canis min. occ.]
11 35 50	20° 19′			41 31

	Vice versa, the same limb of the Moon from Arcturus [Viceverſa idem limbus ☾ ab Arcturo.]	Declination of the Moon [Decl. ☾]	Altitude, upper [Alt. ſup.]	The Lesser Dog, west [Canis min. occ.]
11 38 50	42° 26′	9° 35½′	42° 10′	42 17
		9° 3½′		
11 42 20	42° 25′			43 6
11 44 0	42° 24′	9° 33½′	42° 25′	43 28
		9° 2′		
11 47 40	42° 23′		42° 35′	44 30

Afterwards, as it was approaching the meridian, the distance of the eastern limb of the Moon from cor ☋ was observed. [Poſtea, cum appropinquaret ad Meridianum, obſeruabatur diſtantia orient. limbi ☾ a Corde ☋.]

		Declination of the Moon [Decl. ☾]	Altitude, upper [Alt. ſup.]	The Lesser Dog, west [Canis min. occ.]
12 25 10	20° 43½′			53 50
12 26 50	20° 45′	9° 22½′		54 20
		8° 50′		
12 30 40	20° 46¼′			55 13
12 32 55	20° 47′			55 50
12 40 50	The eastern limb of the Moon crossed [Tranſijt orient. limbus ☾] through the meridian, having altitude [per Merid. habens Altitudinem]			
	by the steel instrument [per Chalyb.]	upper [ſuper.]	43° 22¼′	57 53
		lower [infer.]	42° 49⅙′	
	by the revolving quadrant [per Volub.]	upper [ſuper.]	43° 21′	
		lower [infer.]	42° 49½′	
	Declination [Declin.]	9° 17½′		
		8° 47½′		

Afterwards the same limb of the Moon was observed from Arcturus. [Poſtea obſeruabatur idem limbus ☾ ab Arcturo.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination [Declin.]	The Lesser Dog, west [Can. min. occ.]
$12^h\ 46^m\ 30^s$	42° 5′		59 15
$12^h\ 48^m\ 15^s$	42° 7′	9° 17⅓′	59 38
		8° 42′	
$12^h\ 49^m\ 50^s$	42° 5⅔′		60 5[1]
$12^h\ 51^m\ 30^s$	42° 5′	9° 16′	60 35
		8° 41′	
$12^h\ 53^m\ 40^s$	42° 5′		61 3
$12^h\ 55^m\ 35^s$	42° 4⅓′		61 28
$1^h\ 0^m\ 10^s$	cor ♌ crossed the meridian, having [Tranſijt Cor ♌ Merid. habens]		
	Altitude by the steel instrument [Altit. per Chalyb.]	50° 55½′	
	by the revolving quadrant [per Volub.]	50° 55′	
	Declination of the same [Declin. eiusdem]	16° 52½′	
		16° 53′	

Observed with difficulty because of the Moon. [Difficulter obſeruabatur propter ☾.]

Afterwards the Moon was observed tending towards the 90th degree of the ecliptic, near which it was at $2^h\ 56^m$. [Poſtea obſeruabatur ☾ tendens ad 90 Gr. Eclipticæ, iuxta quem fuit H. 2 M. 56.]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from cor ♌ [Diſt. or. limb. ☾ a Corde ♌]	Declination of the Moon [Decl. ☾]	Altitude of the upper limb [Altit. ſuper. limbi]	Spica, east [Spica ♍ orient.]
$2^h\ 32^m\ 50^s$	21° 47½′			0 30
$2^h\ 35^m\ 0^s$	21° 49⅔′	8° 43′	37° 58′	west [occid.]
		8° 13½′		0 0½
$2^h\ 38^m\ 40^s$	21° 52′		37° 39′	0 59½
$2^h\ 40^m\ 45^s$	21° 52⅓′	8° 43½′	37° 26′	1 26
		8° 10′		
$2^h\ 44^m\ 20^s$	21° 54′		37° 10′	2 20
$2^h\ 46^m\ 15^s$	21° 55⅓′	8° 42⅓′	36° 55′	2 48
		8° 7½′		

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from cor ♌ [Diſt. or. limb. ☾ a Corde ♌]	Declination of the Moon [Decl. ☾]	Altitude of the upper limb [Altit. ſuper. limbi]	Spica, east [Spica ♍ orient.]
$2^h\ 49^m\ 30^s$	21° 57′		36° 40′	3 36
$2^h\ 51^m\ 10^s$	21° 57½′	8° 40⅔′	36° 30′	4 2
$2^h\ 48½^m$ corrected [2 48½ corr.]		8° 5′		

Hours, minutes, seconds [H. M. S.]	Vice versa, from Spica [Viceverſa a Spica ♍.]	Declination of the Moon [Decl. ☾]	Altitude of the upper limb [Altit. ſuper. limbi]	Spica, east [Spica ♍ orient.]
$2^h\ 56^m\ 15^s$	32° 26½′		36° 0′	5 18
$2^h\ 53^m\ 40^s$ corrected [2 53 40 corr.]				
$2^h\ 57^m\ 40^s$	32° 26⅓′	8° 39½′	35° 55′	5 45
		8° 4⅚′		
$3^h\ 0^m\ 50^s$	32° 25′		35° 35′	6 27
$3^h\ 2^m\ 40^s$	32° 24′	8° 38′	35° 20′	6 52
		8° 2⅓′		
$3^h\ 5^m\ 45^s$	32° 22⅓′		35° 10′	7 37
$3^h\ 7^m\ 20^s$	32° 21⅚′	8° 37′	34° 55′	8 3
		8° 1′		
$3^h\ 10^m\ 0^s$	32° 21⅓′		34° 40′	8 43
$3^h\ 11^m\ 25^s$	32° 20′	8° 35′	34° 35′	9 3
		8° 0′		

16 February, in the morning [DIE 16 FEBRUARIJ, MANE.]

The Moon was observed near the 90th degree of the ecliptic, near which it was at $4^h\ 2^m$, and the distance of the eastern limb of the Moon from cor ♌ was taken with the sextant. [Obſeruabatur ☾ prope 90 Gr. Eclipticæ, iuxta quem fuit H. 4 M. 2, ſumebaturque diſtantia orientalis limbi ☾ a Corde ♌ per Sextantem.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination, upper/lower [Declin. ſup./inf.]	Altitude, upper [Altit. ſuper.]	Spica, west [Spica ♍ occ.]
$3^h\ 44^m\ 0^s$	37° 40′	1° 21½′		17 30
		0° 49¼′		
$3^h\ 47^m\ 50^s$	37° 41⅓′			18 26
$3^h\ 50^m\ 30^s$	37° 42½′	1° 20′		19 7
		0° 48½′		
$3^h\ 55^m\ 20^s$	37° 46′		28° 37′	20 18
$3^h\ 58^m\ 0^s$	37° 46¾′	1° 19′		21 0
		0° 46′		
$4^h\ 1^m\ 30^s$	37° 48½′			21 53

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination, upper/lower [Declin. ſup./inf.]	Altitude, upper [Altit. ſuper.]	Spica, west [Spica ♍ occ.]
$4^h\ 3^m\ 15^s$	37° 49½′	1° 17′	28° 5′	22 21
		0° 43′		
$4^h\ 6^m\ 50^s$	37° 51′[2]			23 17
$4^h\ 8^m\ 40^s$	37° 52′			23 37
$4^h\ 10^m\ 50^s$	37° 53′*	1° 14′	27° 15′	24 16
$4^h\ 5^m\ 20^s$ corrected [4 5 20 corr.]		0° 44′	* nearly [* fere]	

Vice versa, the distance of the eastern limb of the Moon from Spica was taken. [Viceverſa capiebatur diſtantia orient. limbi ☾ a Spica ♍.]

Hours, minutes, seconds [H. M. S.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude, upper [Altit. ſuper.]	Spica, west [Spica ♍ occ.]
$4^h\ 16^m\ 0^s$	16° 31½′		25 29
$4^h\ 10¼^m$ corrected [4 10¼ corr.]			
$4^h\ 17^m\ 55^s$	16° 31′ 1° 11′	26° 42′	25 57
	0° 39′		
$4^h\ 21^m\ 45^s$	16° 28¼′		26 53

[1] The codex has 59 65. [Codex habet 59 65.] [2] Perhaps 52. [Forſitan 52.]

Hours, minutes, seconds [H. M. S.]		Declination, upper/lower [Declin. ſup./inf.]	Altitude, upper [Altit. ſuper.]	Spica, west [Spica ♍ occ.]
$4^h\ 23^m\ 45^s$	16° 26½′	1° 10′	26° 8′	27 21
		0° 37½′		
$4^h\ 28^m\ 40^s$	16° 23′			28 36
$4^h\ 30^m\ 40^s$	16° 22½′	1° 6½′		29 6
		0° 34½′		
$4^h\ 33^m\ 20^s$	16° 21⅚′			29 45
$4^h\ 35^m\ 20^s$	16° 20′	1° 5½′	24° 55′	The left knee of Ophiuchus, east [Sin. genu Ophiuchi or.]
		0° 33′		17 30
$4^h\ 44^m\ 40^s$	Then, for testing the [Deinde pro examinandis]			
	armillae, the declination [Armillis ſumebatur De-]			13° 11′ north [B.]
	of Vindemiatrix was taken [clinatio Vindemiatoris]			13° 10⅙′
	with difficulty because of the Moon. [difficulter propter ☾.]			

Hours, minutes, seconds [H. M. S.]		Declination, upper/lower [Declin. ſup./inf.]	Altitude, upper [Altit. ſuper.]	Spica, west [Spica ♍ occ.]
$4^h\ 52^m\ 0^s$	Declination of Spica [Declinatio Spicæ ♍]			8° 59⅚′
				with both pinnules [vtroque pinn.]

18 February, in the morning [DIE 18 FEBRUARIJ, MANE.]

The Moon was observed near the 90th degree, which it reached at $5\frac{2}{3}^h$ after midnight. [Obſeruabatur ☾ iuxta 90 Gr., ad quem venit H. 5⅔ P. M. N.]

N. B. These observations were made at about the midpoint between opposition and the last square. [N. B. Factæ ſunt hæ obſeruationes medio loco fere inter ☍ & □ vltimam.]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from Spica [Diſt. or. limbi ☾ a Spica ♍]	Declination, upper/lower [Declin. ſup./inf.]	Altitude, upper [Altit. ſup.]	The Vulture, east [Vultur orient.]
$5^h\ 36^m\ 40^s$	14° 16′	12° 47½′	15° 45′	48 31
$5^h\ 33\frac{1}{2}^m$ corrected [5 33½ corr.]		13° 16½′		
$5^h\ 40^m\ 50^s$		12° 48½′		47 25
		13° 12′ doubtful [dubia.]		

N. B. Spica was observed about three times, but the distance that has been set down seemed to us the best. [N. B. Spica ter circiter obſeruata eſt, ſed quæ poſita eſt diſtantia optima nobis videbatur.]

Hours, minutes, seconds [H. M. S.]	Vice versa, from the head of Ophiuchus [Viceverſa a Capite Ophiuchi]	Declination, upper/lower [Declin. ſup./inf.]	Altitude, upper [Altit. ſup.]	The Vulture, east [Vultur orient.]
$5^h\ 46^m\ 35^s$	55° 1′		by the lesser quadrant [Per min. Quad.]	46 5
$5^h\ 43\frac{1}{4}^m$ corrected [5 43¼ corr.]				
$5^h\ 47^m\ 50^s$	55° 0′	12° 50⅓′	14° 50′	45 46
		13° 19⅔′		
$5^h\ 52^m\ 10^s$	55° 0′			
$5^h\ 53^m\ 0^s$	54° 59′	12° 50½′		44 25
		13° 21′		

This morning the sky towards the western quarter was very cloudy, so that it was not possible to observe the Moon on that side except in the distance from Spica, which is nevertheless uncertain, because this star was almost hidden by clouds and small clouds. The distances taken on the other side, however, are middling, the star in the head of Ophiuchus, of course, being clearly visible. [Fuit hoc mane cœlum ad plagam occiduam admodum nebuloſum, adeo vt non daretur ab illa parte ☾ obſeruare niſi in diſtantia a Spica, quæ tamen incerta eſt, quod nebulis & nubeculis ſtella hæc fere occulta erat. Quæ autem ab altera parte acceptæ ſunt diſtantiæ mediocres ſunt, ſtella nimirum in Capite Ophiuchi bene apparente.]

At the following noon the clock was running 3^m slower than it should. [Horologium in meridie ſequenti 3 minutis tardius iuſto ibat.]

Computations of the lunar motions from the observations made on the preceding days, when the Moon was near the ninetieth degree. [Supputationes motuum ☾^{rium} ex obſeruationibus diebus ſuperioribus habitis, cum ☾ eßet iuxta nonageſimum gradum.]

12 February [DIE 12 FEBRUARIJ.]

11^h 53¾^m, distance of the Moon [H. 11 M. 53¾ Diſt. ☾]	
from the lower head of ♊ [ab infer. cap. ♊]	25° 49′ 0″
Declination of the centre of the Moon [Declin. centri ☾]	21° 2′ 30″
Declination of the lower head of ♊ [Declin. inf. cap. ♊]	28° 56½′
Angular difference of ascension [Ang. diff. aſcenſ.]	27° 12′ 50″
Therefore right ascension of the Moon [Ergo Aſcenſ. R. ☾]	137° 19′ 20″
On the same day, 11^h 58^m [Eodem die H. 11 M. 58]	
Distance of the Moon from the tail of ☋ [Diſt. ☾ a cauda ☋]	33° 9′
Declination of the Moon [Declin. ☾]	21° 1½′
Declination of the tail of ☋ [Declin. caudæ ☋]	16° 51′ 0″
Angular difference of ascension [Ang. diff. aſcenſ.]	34° 50′ 0″
Therefore right ascension from the tail of ☋ [Ergo Aſc. R. a cauda ☋]	137° 14′ 50″
11^h 56^m, right ascension of the Moon, limited [H. 11 M. 56 Aſc. R. ☾ limitata]	137° 17′ 0″
Declination of the Moon, north [Declin. ☾ B.]	21° 2′
Resp. longitude [Reſp. Longitudo]	13° 27¼′ ☋
Latitude, north [Latitudo B.]	4° 22′ 50″
Arc of inclination 2′ subtracted [Arcus inclinationis M. 2 ſubt.]	

13 February [DIE 13 FEBRUARIJ.]

1^h 31^m after midnight, distance of the centre of the Moon [H. 1 M. 31 poſt M. N. Diſt. centri ☾]	
from the lower head of ♊ [ab infer. cap. ♊]	41° 54½′
Declination of the centre of the Moon [Declin. centri ☾]	15° 14½′

Angular difference of ascension [Ang. diff. aſcenſ.]	43° 3′ 0″
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	153° 9′ 30″
On the same day, 1^h 37^m [Eodem die H. 1 M. 37]	
Distance of the Moon from Arcturus [Diſt. ☾ ab Arcturo]	53° 24′
Declination of the Moon [Declin. ☾]	15° 12½′
Declination of Arcturus [Declin. Arcturi]	21° 20¼′
Angular difference of ascension [Ang. diff. aſcenſ.]	56° 8′ 30″
Right ascension of Arcturus [Aſc. R. Arcturi]	209° 19′ 15″
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	153° 10′ 45″
1^h 34^m, right ascension of the Moon, limited [H. 1 M. 34 Aſc. R. ☾ limitata]	153° 10¾′
Declination of the Moon, north [Declin. ☾ B.]	15° 13′ 0″
Longitude [Longitudo]	29° 39¾′ ♌
Latitude [Latitudo]	3° 50⅙′ north [B.]
Arc of inclination 5½′ subtracted [Arcus inclinationis 5½′ ſubt.]	

15 February [DIE 15 FEBRUARIJ.]

2^h $48½^m$ in the morning [H. 2 M. 48½ mane.]	
Distance of the centre of the Moon from cor ♌ [Diſt. centri ☾ a corde ♌]	21° 40′
Declination of the Moon [Declin. ☾]	8° 21′
Declination of cor ♌ [Decl. cordis ♌]	13° 55¼′
Angular difference of ascension [Ang. diff. aſc.]	21° 21⅓′
Right ascension of cor ♌ [Aſc. R. cordis ♌]	146° 40′ 50″
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	168° 2′ 10″

2^h $53⅔^m$, distance of the centre of the Moon [H. 2 M. 53⅔ Diſt. centri ☾]	
from Spica [a Spica ♍]	32° 44′
Declination of the Moon [Declin. ☾]	8° 20′ north [B.]
Declination of Spica [Decl. Spicæ]	8° 59½′ south [M.]
Angular difference of ascension [Ang. diff. aſc.]	27° 53′ 0″
Right ascension of Spica [Aſc. R. Spicæ]	195° 59′ 20″
Therefore right ascension of the Moon [Ergo ☾ Aſc. R.]	168° 6′ 20″
2^h 51^m, right ascension of the Moon, limited [H. 2 M. 51 Aſc. R. ☾ limitata]	168° 4¼′
Declination of the Moon [Declin. ☾]	8° 20½′
Resp. longitude [Reſp. Longitudo]	15° 46½′ ♍
Latitude [Latitudo]	2° 56¾′ north [B.]
Arc of inclination 7⅙′ subtracted [Arcus inclinationis M. 7⅙ ſubt.]	

16 February, in the morning [DIE 16 FEBRUARIJ, MANE.]

4^h $5\frac{1}{3}^m$, distance of the Moon from cor ♌ [H. 4 M. 5⅓ Diſt. ☾ a corde ♌]	37° 37′ 0″
Declination of the Moon [Declin. ☾]	0° 59′ 0″ north [B.]
Angular difference of ascension [Ang. Diff. Aſcenſ.]	35° 42′ 50″
Therefore right ascension of the Moon [Ergo Aſ. R. ☾]	182° 23′ 40″
4^h $10\frac{1}{4}^m$, distance of the centre of the Moon [H. 4 M. 10¼ Diſt. centri ☾]	
from Spica [a Spica]	16° 47½′
Declination of Spica [Declin. Spicæ]	8° 59⅓′ south [M.]
Declination of the Moon [Declin. ☾]	0° 57′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	13° 35′ 20″
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	182° 24′ 0″
Therefore, 4^h 8^m [Ergo H. 4 M. 8]	
right ascension of the Moon, limited [Aſc. R. ☾ limit.]	182° 23⅚′
Declination, north [Declin. B.]	0° 58′ north [B.]
Resp. longitude [Reſp. Longitudo]	1° 48⅔′ ♎
Latitude [Latitudo]	1° 50⅗′ north [B.]
Arc of inclination subtracted [Arcus inclinationis ſubt.]	6′ 45″

18 February, in the morning [DIE 18 FEBRUARIJ, MANE.]

5^h $33\frac{1}{2}^m$, distance of the centre of the Moon [H. 5 M. 33½ Diſt. centri ☾]	
from Spica [a Spica]	14° 1′ doubtful [dubia]
Declination of the centre of the Moon [Decl. centri ☾]	13° 1′ south [M.]
Angular difference of ascension [Ang. diff. aſcenſ.]	13° 40′ 46″
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	209° 40′ 6″
5^h $43\frac{1}{4}^m$, distance from the head [H. 5 43¼ Diſt. a cap.]	
of Ophiuchus [Ophiuchi]	55° 16′
Declination of the centre of the Moon [Decl. centri ☾]	13° 3′ south [M.]
Declination of the head of Ophiuchus [Decl. cap. Ophiuchi]	12° 57′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	49° 12′ 0″
Right ascension of the head of Ophiuchus [Aſc. R. cap. Oph.]	259° 0′ 45″
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	209° 48¾′ better [melior]
5^h 40^m, when the Moon was near the ninetieth [H. 5 M. 40, cum ☾ eßet iuxta nonageſ.]	
degree of the ecliptic, put its [Gr. Eclipticæ, pone eius]	
right ascension [Aſc. R.]	209° 47′
and the declination, south [& Declinationem M.]	13° 3¼′
Resp. longitude [Reſp. Longitudo]	2° 14⅓′ ♏
Latitude, south [Latitudo M.]	0° 48′ 35″
Subtracted [Subtr.]	5 0

Collection of the preceding lunar φαινομένων, and reduced to the Moon's own orbit, with a comparison of the Prutenic calculation and of the Alphonsines. [Collectio φαινομένων ☾rium antecedentium & ad propriam orbitam ☾ae reductorum, cum collatione Calculi Prutenici & Alphonſinorum.]

Days, February [Dies Feb.]	Hours, minutes [H. M.]	Longitude observed [Long. obſ.]	From Mag. [Ex Mag.]	From Cyp. [Ex Cyp.]
12	11^h 56^m in the morning [Mane]	13° 25¼′ ♌	13 46	14 11
14	1^h 34^m	29° 34¼′ ♌	29 36	29 43
15	2^h 51^m	15° 39⅓′ ♍	15 20	15 15
16	4^h 8^m	1° 42′ ♎	1 8	0 51
18	5^h 40^m	2° 13⅓′ ♏	1 36	0 55

22 February, in the morning [DIE 22 FEBRUARIJ, MANE.]

N. B. A good observation of the Moon for parallax and refraction. [N. B. Bona obſeruatio ☾ pro Parallaxi & Refractione.]

6^h $50\frac{5}{6}^m$, the eastern limb of the Moon crossed [H. 6 M. 50⅚ Tranſijt orient. limbus ☾]	
through the meridian, and the upper [per Meridianum, habuitque ſupe-]	
horn had altitude by the steel instrument [rius cornu altit. per Chalyb.]	5° 58½′
Declination by the armillae, upper [Declin. per Armillas, ſup.]	28° 8½′
lower [inf.]	28° 33′

At that time, about the south, the air was rather thick near the horizon, so that the Moon could scarcely be observed; and when the Sun had risen a little, the Moon at once ceased to be seen. [Fuit tunc circa Meridiem aër denſior circa Horizontem, vt vix ☾ obſeruari poßet, ☉[le] autem paululum oriente, ☾ ſtatim videri deſijt.]

15 March, in the evening [DIE 15 MARTIJ, VESPERI.]

The full Moon was observed near perigee. [*Obſeruabatur ☾ plena iuxta Perigæum.*]

Hours, minutes [H. M.]	Distance of the eastern limb of the Moon from cor ♌ [Diſt. orient. limb. ☾ a Corde ♌]	Declination, south, upper/lower [Decl. auſt. ſup./inf.]	Altitude of the lower limb [Alt. inf. limbi]	Cor ♌, west [Cor ♌ occid.]
11^h 9^m	*43° 9½′*	*1° 4′*	*30½°*	*25 30*
		1° 36′	*about [quaſi]*	
11^h $30\frac{2}{3}^m$	43° 22′		31° 40′	31 10
11^h $36\frac{1}{3}^m$	43° 24′	1° 12½′	31° 45′	32 40
		1° 46′		
11^h 50^m	43° 30′			36 15
12^h $6\frac{2}{3}^m$	The western limb of the Moon crossed [Tranſiuit occid. limbus ☾]			
	through the meridian, having altitude [per Merid. habens Alt.]			Spica, east [Spica or.]
	by the revolving quadrant [per Volub.]	upper [ſup.]	32° 39¼′	8 40
		lower [inf.]	32° 7⅓′	

Hours, minutes [H. M.]	Distance of the eastern limb of the Moon from cor ♌ [Diſt. orient. limb. ☾ a Corde ♌]	Declination, south, upper/lower [Decl. auſt. ſup./inf.]	Altitude of the lower limb [Alt. inf. limbi]	Cor ♌, west [Cor ♌ occid.]
$12^h\ 8\frac{5}{6}^m$	The eastern limb of the Moon crossed [Tranſiuit or. limbus ☾]			8 7
	Declination of the Moon [Declin. ☾]	upper [ſup.]	1° 26½′	
		lower [inf.]	2° 0′	

Vice versa, the eastern limb of the Moon was observed from Spica after midnight. [Viceverſa obſeruabatur orientalis limbus ☾ a Spica ♍ poſt M. N.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination, south [Declin. M.]	Altitude, lower [Altit. inf.]	Spica, east [Spica or.]
$12^h\ 30\frac{5}{6}^m$	10° 35⅔′			2 9
$12^h\ 40\frac{1}{2}^m$	10° 33′	1° 30½′		west [occid.]
		2° 5¼′		0 10
$12^h\ 52\frac{1}{6}^m$	10° 26⅔′		30° 35′	3 30
$12^h\ 56\frac{2}{3}^m$	10° 24⅙′	1° 39½′		4 38
		2° 12½′		

Then, about the 90th degree, the eastern limb of the Moon was observed from cor ♌. [Deinde circa 90 Gr. obſeruabatur orient. limbus ☾ a Corde ♌.]

Hours, minutes [H. M.]	Declination, south [Declin. M.]	Altitude, lower [Altit. inf.]	Spica, east [Spica or.]
$2^h\ 17\frac{1}{2}^m$	44° 52′		26 11
$2^h\ 20\frac{5}{6}^m$	44° 55½′2° 45½′	24° 50′	27 3
	2° 6½′		
$2^h\ 26\frac{1}{2}^m$	44° 57′		28 35
$2^h\ 29\frac{1}{6}^m$	44° 59¼′2° 47′	24° 7′	29 20
$2^h\ 44\frac{1}{3}^m$ corrected [2 44⅓ corr.]	2° 9′		

The Moon in the 90th degree, $2^h\ 58^m$ after midnight. [☾ in 90 Gr. H. 2 M. 58 P. M. N.]

Hours, minutes [H. M.]	Vice versa, from Spica [Viceverſa a Spica ♍.]	Declination, south [Declin. M.]	Altitude, lower [Altit. inf.]	Spica, east [Spica or.]
$2^h\ 36\frac{1}{6}^m$	9° 30′			
$2^h\ 38\frac{1}{3}^m$	9° 28′	2° 11½′	23° 11′	31 49
		2° 49½′		
$2^h\ 43^m$	9° 24′			33 5
$2^h\ 59\frac{1}{3}^m$ corrected [2 59⅓ corr.]				
$2^h\ 47\frac{1}{6}^m$	9° 21¼′	2° 13⅚′	22° 15′	34 6

Hours, minutes [H. M.]	Vice versa, from Spica [Viceverſa a Spica ♍.]	Declination, south [Declin. M.]	Altitude, lower [Altit. inf.]	Spica, east [Spica or.]
3^h $3\frac{1}{3}^m$ corrected [3 3⅓ corr.]		2° 49′		
2^h $53\frac{1}{3}^m$	9° 18⅔′			35 38

Afterwards the eastern limb of the Moon was observed from the bright star of the neck of ♌. [Poſtea obſeruabatur ☾ limbus orient. a Lucida Ceruicis ♌.]

Hours, minutes [H. M.]		Declination, south [Declin. M.]	Altitude, lower [Altit. inf.]	Spica, east [Spica or.]
2^h $58\frac{5}{6}^m$	45° 59½′			37 11
3^h $15\frac{3}{4}^m$ corrected [3 15¾ corr.]				
3^h $1\frac{1}{2}^m$	46° 1′	2° 19′	20° 40′	37 53
		2° 56½′		

N. B. In these last observations the clock was found to be running ¼ of an hour slower than it should; this error had come about from the 11th hour of the evening. Therefore in the observations above the time will have to be carefully corrected by the fixed stars, for the motion of the Moon. [N. B. In his vltimis obſeruationibus depræhenſum eſt horologium ¼ vnius horæ tardius iuſto moueri, qui error acceßerat ab hora 11 veſpertina. Quapropter tempus in ſuperioribus obſeruationibus ad fixas diligenter corrigendum erit pro motu ☾.]

Finally, to correct the armillae, we observed Spica in declination at nearly the same distance from the meridian as that at which the Moon was near the 90th degree. [Denique pro Armillis corrigendis obſeruabamus in declinatione Spicam ♍ in eadem fere remotione a Meridiano qua ☾ iuxta 90 Gr. eßet.]

	3^h 35^m, declination of Spica [H. 3 M. 35 Decl. Spicæ]	8° 57½′	Spica, west [Spica occ.]
Here was corrected [Corrigebatur hic]		8° 57¾′	42 53
the clock [horologium]	Altitude of Spica [Altit. Spicæ]	10° 55′	

Calculation of the lunar place from the preceding observations. [Calculus loci lunaris ex antecedentibus obſeruationibus.]

2^h 45^m, distance of the centre of the Moon [H. 2 M. 45 Diſt. centri ☾] from Regulus [a Regulo]	44° 43½′
Declination of the centre, merid. [Declin. centri merid.]	2° 30′ 0″
Declination of Regulus [Declin. Reguli]	13° 55′ 0″
Angular difference of ascension [Ang. diff. aſcenſ.]	41° 58′ 13″

Right ascension of Regulus [Aſc. R. Reguli]	146° 39¼′
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	188° 37′ 30″
Resp. longitude [Reſp. Longitudo]	8° 53⅙′ ♌
Latitude [Latitudo]	1° 8⅙′ north [B.]
3^h 0^m, distance of the centre of the Moon from Spica [H. 3 M. 0 Diſt. centri ☾ a Spica]	9° 40½′
Declination of Spica [Decl. Spicæ]	8° 59½′ south [M.]
Declination of the centre of the Moon [Decl. ☾ centri]	2° 34½′ south [M.]
Angular difference of ascension [Ang. diff. aſcenſ.]	7° 16′ 15″
Right ascension of Spica [Aſc. R. Spicæ]	195° 59′ 25″
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	188° 43′ 10″
Resp. longitude [Reſp. Longitudo]	8° 59⅔′ ♌
Latitude [Latitudo]	1° 6¼′ north [B.]
3^h 15^m, distance of the centre of the Moon [H. 3 M. 15 Diſt. centri ☾]	
from the bright star of the neck of ♌ [a luc. ceruicis ♌]	45° 43′
Declination of the centre of the Moon [Declin. centri ☾]	2° 39′
Declination of the bright star of the neck [Declin. luc. ceru.]	21° 51′ 0″
Angular difference of ascension [Ang. diff. aſcenſ.]	39° 30′ 4″
Right ascension of the bright star of the neck [Aſc. R. luc. ceru.]	149° 21′ 5″
Therefore right ascension of the Moon [Ergo Aſc. R. ☾]	188° 51′ 9″
Resp. longitude [Reſp. Longitudo]	9° 10¼′ ♌
Latitude [Latitudo]	1° 5¼′ north [B.]
3^h 0^m, when the Moon had been in the ninetieth [H. 3 M. 0 quando ☾ fuerat in nonage-]	
degree, the true longitude, limited [ſimo gradu, vera Longitudo limi-]	
[tata]	9° 0′ ♌
For the arc of inclination of the latitude [Pro arcu inclinationis Lati-]	
subtracted [tudinis ſubt.]	7′
Therefore the true longitude of the Moon with respect to [Ergo vera Longit. ☾ reſpectu]	
its own orbit [propriæ orbitæ]	8° 53′ ♌
Our æquatoria of time [Æquatoria temporis noſtra]	
subtracted [ſubt.]	0 40
Our Simplex of the Sun [Noſter Simplex $☉^{lis}$]	0^s 2° 56′ 56″
Simplex longitude of the Moon [Simplex Longit. ☾]	3 4 46 18
Anomaly of the Moon [Anomalia $☾^{ae}$]	3 13 50 13

17 March, in the morning [DIE 17 MARTIJ, MANE.]

The Moon was observed about the 90th degree. [Obſeruabatur ☾ circa 90 Gradum.]

N. B. We corrected the clock from Spica, drawing back the index 2^m, by which it had been running faster than it should since yesterday evening, $8⅙^h$. [N.B. Correximus horologium a Spica retrahendo indicem 2 M. quibus citius iuſto mouebatur ab heſterna veſpera H. 8⅙.]

Hours, minutes [H. M.]	Distance from the tail of ♌ [Diſt. a cauda ♌]	Declination, south [Declin. M.]	Altitude of the lower horn [Altit. inf. cornu]	Spica, west [Spica ♍ occ.]
4^h $3\frac{5}{6}^m$	40° 36′			50 11
4^h $9\frac{1}{2}^m$	40° 44½′	9° 40′ 10° 13′	14° 7′	51 35
4^h 16^m	40° 50⅔′			
4^h 18^m	40° 51¼′	9° 43′ 10° 15′	13° 25′	53 40

Hours, minutes [H. M.]	Vice versa, from the left knee of Ophiuchus [Viceverſa a ſiniſtro genu Ophiuchi.]	Declination, south [Declin. M.]	Altitude of the lower horn [Altit. inf. cornu]	Spica, west [Spica ♍ occ.]
4^h $25\frac{1}{3}^m$	39° 52′			
4^h $27\frac{1}{6}^m$	39° 50½′	9° 45′ 10° 19½′	12° 25′	60 2
4^h $30\frac{1}{3}^m$	39° 49½′			

18 March, in the morning [DIE 18 MARTIJ, MANE.]

The Moon was observed near the 90th degree. [Obſeruabatur ☾ iuxta 90 Gradum.]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb of the Moon from Spica [Diſt. or. limbi ☾ a Spica]	Declination [Declin.]	Altitude of the lower horn [Altit. inf. cornu]	Arcturus, west [Arcturus occid.]
4^h 1^m 0^s	21° 40′	16° 0⅔′	13° 30′	36 19
4^h 6^m 30^s	21° 44′			37 44
4^h 8^m 50^s	21° 44′	16° 46′ uncertain because of the beam [incerta propter trabem]	13° 5′	38 14
4^h 14^m 0^s	21° 47¼′			39 34
4^h 16^m 50^s	21° 48′	16° 38′ 16° 4′ upper [ſup.]	12° 30′	40 14

Hours, minutes, seconds [H. M. S.]	Vice versa, from cor ♏ [Viceverſa a Corde ♏.]	Declination [Declin.]	Altitude of the lower horn [Altit. inf. cornu]	Arcturus, west [Arcturus occid.]
4^h 24^m 10^s	24° 10′			42 1
4^h 26^m 30^s	24° 9′	16° 5′ 16° 38½′ lower [inf.]	11° 45′	42 39
4^h 31^m 30^s	*24° 8′* *doubtful* [*dub.*]	*16° 7½′*		*43 55*

Hours, minutes, seconds [H. M. S.]	Vice versa, from cor ♏ [Viceverſa a Corde ♏.]	Declination [Declin.]	Altitude of the lower horn [Altit. inf. cornu]	Arcturus, west [Arcturus occid.]
4h 33m 20s	*24° 6⅓′*	*16° 41′*	*11° 15′*	

N.B. In these observations cor ♏ was almost on the meridian, having gone a little past it, and Spica had earlier been at almost the same altitude as the Moon; but account must be taken of refraction. [*N.B. Cor ♏ in his obſeruationibus erat quaſi in Meridiano, paululum egreßus, & Spica erat antea quaſi in conſimili cum ☾ altitudine, ſed habenda ratio Refractionis.*]

19 March, in the morning [DIE 19 MARTIJ, MANE.]

The Moon was observed near the 90th degree. [Obſeruabatur ☾ iuxta 90 gradum.]

Midway between opposition and the square. [*Media inter ☍ & □.*]

Hours, minutes, seconds [H. M. S.]	Distance of the eastern limb from Spica [Diſt. or. limb. a Spica]	Declination, upper/lower [Decl. ſup./inf.]	Altitude, upper, by the lesser quadrant [Alt. ſup. per minor. Q.]	Equatorial distance, Arcturus, west [Æq. diſt. Arctur. occ.]
4h 3½m	36° 17′	21° 28′	11	43° 31′
4h 22m corrected [4 22 corr.]		21° 58′		
4h 6m 50s	36° 19¼′			44° 25′
4h 10m 40s	36° 23′			45° 28′

Hours, minutes, seconds [H. M. S.]	Afterwards, vice versa, from cor ♏, in this way [Poſtea viceverſa a Corde ♏ hoc modo.]	Declination, upper/lower [Decl. ſup./inf.]	Altitude, upper, by the lesser quadrant [Alt. ſup. per minor. Q.]	Equatorial distance, Arcturus, west [Æq. diſt. Arctur. occ.]
4h 14m 5s	*9° 39′*	*21° 29′*		*46° 5′*
		21° 58½′		
4h 17m 0s	*9° 36′*		*10° 15′*	*46° 57′*
4h 19m 10s	*9° 33′*	*21° 30′*		*47° 32′*
		22° 0′		
4h 21m 30s	*9° 31¼′*		*9° 50′*	*48° 16′*

Hours, minutes, seconds [H. M. S.]	Once again the distance from Spica, at the 90th degree itself [Denuo rurſus diſtantia a Spica in ipſo 90 Gr.]	Declination, upper/lower [Decl. ſup./inf.]	Altitude, upper, by the lesser quadrant [Alt. ſup. per minor. Q.]	Equatorial distance, Arcturus, west [Æq. diſt. Arctur. occ.]
4h 24m 30s	*36° 30′*			*48° 58′*
4h 26⅓m	*36° 31′*	*21° 30½′*	*9° 25′*	*49° 25′*
		22° 0⅔′		

N.B. The Moon was then between opposition and the square, which is almost between perigee and the mean elongation, and it had nearly the same altitude above the horizon as Spica, so that the intrusion of refraction into the distance brought in little. But cor ♏ was a little declining; therefore they are to be limited on both sides. [*N.B. Fuit tunc ☾ inter ☍ & □ quæ inter Perigæum & mediam elongationem eſt quaſi, & habuit cum Spica fere eandem ab Horizonte altitudinem, vnde refractionis in diſtantia inſinuatio modicum intulit. Sed Cor ♏ paulo fuit decliuis, igitur limitandæ veniunt vtrinque.*]

The place[1] of the Moon, carefully computed from these as to longitude, at $4^h\ 40^m$ is 24° 26′ ♏, and in addition the arc of latitude, added, 4⅔. [Locus[1] ☾ diligenter ex hiſce ſupputatus quoad long. H. 4 M. 40 eſt 24°26′ ♏ ac inſuper arcus lat. add. 4⅔.]

20 March, in the morning [DIE 20 MARTIJ, MANE.]

We were watching for the Moon approaching 90. [*Attendebamus ad ☾ appropinquantem 90.*]

Hours, minutes [H. M.]	Distance[2] [Diſt.[2]]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]	Arcturus, west [Arcturus occid.]
$4^h\ 8^m\ 30^s$	4° 32′	25° 27½′ 25° 56′	49 59

Afterwards, by the semicircle, the Moon from Venus.[3] [*Poſtea per Semicirculum ☾ a ♀*[3].]

Hours, minutes [H. M.]	Distance of the eastern limb of the Moon and Venus [*Diſt. or. limbi ☾ & ♀*]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]	Altitude of the Moon [*Altit. ☾*]	Arcturus, west [Arcturus occid.]
$4^h\ 38⅙^m$	*86° 30′*		*7° upper [7[g] ſup.]*	*57 8*
$4^h\ 39⅓^m$		*25° 31⅓′* *26° 0′*		
$4^h\ 42^m$	*86° 25½′* **26′*4*			*58 18*
$4^h\ 44⅓^m$				*58 41*
$4^h\ 46⅙^m$	*86° 20′*	*25° 31¼′*		
	doubtful [dub.] 22′	*25° 59⅚′*	*6⅓° middle [6⅓ med.]*	
$4^h\ 50⅚^m$	*86° 21½′*	*doubtful [dubia]*	*6° lower [6 inf.]*	
$4^h\ 54⅓^m$	*86° 19½′*	*25° 33′*		
	better [melior]	*26° 3′*		
$4^h\ 57⅓^m$	*86° 16′*			
$5^h\ 1⅙^m$		*25° 32′*	*5° 25′ lower [5 25 inf.]*	
		26° 0′		

[1] From codex V. [E codice V.] [2] The name of the star is missing. [Nomen ſtellæ deeſt.] [3] Compare below, among the observations of Venus. [Cf. infra inter obſervationes Veneris.] [4] Thus in the codex. [Sic in codice.]

22 March, in the morning [DIE 22 MARTIJ, MANE.]

When the Moon was nearly ¾ of an hour before the meridian, *at about 4½ʰ*, the declination of the upper horn of the Moon, among clouds, was [Cum ☾ prope ¾ vnius horæ præceßit Meridianum, *circiter H. 4½*, erat Declinatio ſuperioris cornu ☾ inter nubes]

28° 35′	More, because of the clouds, [Plura propter nubes]
28° 36′	could not be observed. [non licuit obſeruare.]

The Moon was almost at 4½° ♉ [☾ erat quaſi in 4½ ♉]		
whose declination [*cuius declinatio*]	*23° 27′*	
Declination of the centre [*Declinatio centri*]	*28° 50′*	
Latitude and parallax [*Latit. & parallaxis*]	*5 23*	*are comm. with the solar refraction* [*comm. refract. ſolari ſunt.*]
refraction [*refractio*]	*14*	
	5 37	
	4 36	
Parallax [*Parallaxis*]	*1 1*	
which agrees well enough. [*quod ſatis quadrat.*]		

23 March, in the morning [DIE 23 MARTIJ, MANE.]

The Moon was observed after a fashion, but it could not be seen because of the daylight and the vapours at the horizon. [*Obſeruabatur ☾ vtcunque, ſed videri non potuit propter diem & vapores ad Horizontem.*]

Distance[1] [Diſtantia[1]]	Declination of the Moon [Decl. ☾]	Altitude of the Moon [Altit. ☾]	Altitude of the Sun [Altit. ☉]	Sun, east [☉ orient.]
83° 9′*	27° 55′	6° 8′	8° 10′	82 50
83° 36′	28° 15′		*better [*melior]	

The Moon crossed the meridian, having an altitude [*Tranſiuit ☾ Meridianum habens Altitudinem*]

	Distance [Diſtantia]	Declination of the Moon [Decl. ☾]	Altitude of the Moon [Altit. ☾]	Altitude of the Sun [Altit. ⊙]	The Sun was then east [*Fuit tunc* ⊙ *orient.*]
by the steel instrument [*per Chal.*]			*6° 10′ upper* [*ſup.*]		
			5° 50½′ lower, better [*inf., melior*]		
by the revolving quadrant [*per Volub.*]			*6° 21′*		
			6° 1′		*79 52*
	83° 15′			*11° 0′*	*77 49*
	82° 40′			*11⅓°*	*77 10*

This variation and deviation was produced by the Moon not appearing well, as much because of the Sun, raised about 10°, as because of the Moon itself, quite low and wrapped in the vapours of the horizon. [*Hanc varietatem & deuiationem peperit ☾ non bene apparens, tam propter Solem eleuatum partibus quaſi 10, quam propter ipſam lunam admodum decliuem & vaporibus Horizontis inuolutam.*]

9 April [DIE 9 APRILIS.]

In the evening the Moon was observed, having passed the earlier square, on the meridian and about the ninetieth degree, as follows. [Veſperi obſeruabatur ☾ □ priorem tranſuecta in Meridiano & circa nonageſimum gradum vt ſequitur.]

At 8^{h} 25⅚^{m} the western limb of the Moon had crossed to ⅓ part of its diameter, and it had altitude [H. 8 25⅚ tranſierat occ. limb. ☾ ad ⅓ partem ſuæ diametri, habuitque alt.]

	by the steel instrument [per Chalyb.]	by the revolving quadrant [per Volub.]
upper [ſuper.]	50° 5⅔′	50° 6′
lower [infer.]	49° 36′	

The Lesser Dog was then west, 46 10. [Fuit tunc Canis minor occ. 46 10]

11 April, in the evening [DIE 11 APRILIS, VESPERI.]

9^{h} 38⅙^{m}, declination of the Moon [*H. 9 M. 38⅙ Declinatio ☾*]	
upper horn [*ſuper. cornu*]	*2° 24′*
lower horn [*infer. cornu*]	*1° 51′*

9 41½: the western limb of the Moon crossed the meridian, having altitude [*9 41½ Tranſiuit occid. limbus ☾ per Meridianum habens Altitud.*]

by the steel instrument, upper [*per Chal. ſup.*]	36° 31⅓′	*lower* [*inf.*]	35° 57⅓′
by the revolving quadrant [*per Volub.*]	36° 31⅓′		35° 58½′

Cor ♌ was then west, 33 25, good. [*Fuit tunc Cor ♌ occid. 33 25 bene.*]

Therefore put, of the upper limb, [*Pone itaque ſuper. limbi*]	36° 31½′
the altitude, of the lower, [*Altitudinem infer.*]	35° 58′

Then the Moon was observed successively as it tended towards the 90. [*Deinde obſeruabatur ☾ ſucceßiue ad 90 tendens.*]

N.B. The Moon between the square and the ecliptic opposition. [*N.B. ☾ inter □ & ☍ Eclipticam.*]

Hours, minutes, seconds [*H. M. S.*]	*Western limb of the Moon from cor ♌* [*Occ. limb. ☾ a Corde ♌*]	*Declination, upper/lower* [*Decl. ſup./inf.*]	*Altitude of the upper limb* [*Alt. ſup. limbi*]	*Spica, east* [*Spica orient.*]
10h 25m 50s	35° 28½′	2° 9′		4 13
		1° 39′		
10h 30m 0s	35° 30′		35⅙	2 46
10h 34m 10s	35° 32½′	2° 6½′		1 55
		1° 35½′		

Afterwards, vice versa, the Moon was taken from Spica, as follows. [*Poſtea viceverſa ☾ a Spica capiebatur vt ſequitur.*]

Hours, minutes, seconds [*H. M. S.*]		*Declination, upper/lower* [*Decl. ſup./inf.*]	*Altitude of the upper limb* [*Alt. ſup. limbi*]	*Spica, east* [*Spica orient.*]
10h 39m 20s	18° 54′			0 39
10h 41m 50s	18° 52′	2° 4¼′	34⅚	west [occid.]
		1° 33½′		0 3
10h 45m 40s	18° 50½′	2° 3⅔′		1 3
		1° 30′		
10h 50m 10s	18° 48⅙′	2° 2′	34⅓	2 10
	good [*bona*]	1° 28′		

Then, when the Moon was approaching the 90th degree of the ecliptic, which it would reach at 12¾h, it was observed again. [Deinde cum ☾ appropinquaret 90 Gradui Eclipticæ, quo veniret H. 12¾, denuo obſeruata eſt.]

Hours, minutes, seconds [H. M. S.]	Distance of the Moon from Spica [Diſt. ☾ a Spica]	Declination, upper/lower [Declin. ſup./inf.]	Altitude [Altit.]	Spica, west [Spica occid.]
$12^h\ 13^m\ 50^s$	18° 0′	1° 30¼′ 1° 3′		24 25
$12^h\ 18^m\ 30^s$	17° 57½′		26° 45′	25 34

Hours, minutes, seconds [H. M. S.]	Vice versa, from the neck of ♎ [Viceverſa a Ceruice ♎]	Declination, upper/lower [Declin. ſup./inf.]	Altitude [Altit.]	Spica, west [Spica occid.]
$12^h\ 26^m\ 30^s$	37° 12¾′	1° 29½′ 1° 0⅙′	26° 0′	27 41
$12^h\ 29^m\ 40^s$	37° 16½′			28 34

[1] That is, the distance of the eastern limb of the Moon from the Sun. [Id eſt diſtantia orientalis limbi lunæ a ſole.]

Hours, minutes, seconds [H. M. S.]	From cor ♎ [A corde ♎]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of cor ♎ [Alt. Cor. ♎]	Spica, west [Spica occid.]
$12^h\ 34^m\ 10^s$	36° 36′	1° 27½′ 0° 56½′	17⅓	29 30 among clouds [inter nubes]
$12^h\ 37^m\ 0^s$	36° 37′			

Hours, minutes, seconds [H. M. S.]	From cor ♎ [A corde ♎]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of cor ♎ [Alt. Cor. ♎]	The neck of ♎, west [Ceruix ♎ occ.]
$12^h\ 39^m\ 50^s$	36° 38½′	1° 25½′ 0° 56½′	16½	 78 0
$12^h\ 43^m\ 30^s$	36° 39⅔′			78 49

Hours, minutes, seconds [H. M. S.]	From the neck of ♎ [A Ceruice ♎]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the neck [Alt. Ceruicis]	The neck of ♎, west [Ceruix ♎ occ.]
$12^h\ 46^m\ 50^s$	37° 26′	1° 23⅚′ 0° 53′	23° 45′	79 47 doubtful because of the clouds [dub. ob nubes]

From the northern scale of ♎. This star was very close to the meridian when the Moon was first observed from it. [A boreali Lance ♎. Erat hæc ſtella proxime iuxta Meridianum, cum ab ea ☾ primum obſeruaretur.]

Hours, minutes, seconds [H. M. S.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the neck [Alt. Ceruicis]	The northern scale of ♎, west [Bor lanx ♎ occid.]
$12^h\ 52^m\ 40^s$	43° 7′		
$12^h\ 54^m\ 50^s$	43° 6½′ 1° 22½′ 0° 51′		
$12^h\ 58^m\ 10^s$	43° 3½′	22° 20′	8 13
$1^h\ 1^m\ 10^s$	43° 0⅔′		9 0

N.B. These observations of the Moon near the 90th degree were taken, for the most part, with the fixed stars showing through clouds; they are nevertheless such that you can trust them, especially where several distances were taken continuously from the same ones; let the rest be tested by comparison with these. [N. B. Obſeruationes hæ ☾ iuxta 90 Grad. acceptæ ſunt, vt plurimum ſtellis fixis inter nubes transparentibus: ſunt tamen tales, quibus fidere potes, præſertim vbi plures diſtantiæ continuo ab ijſdem ſunt captæ: reliquæ per collationem ad has probentur.]

13 April, in the morning [DIE 13 APRILIS, MANE.]

The Moon was observed around the 90th degree, namely $1\frac{2}{3}^h$. [Obſeruabatur ☾ circa 90 Gr., H. videlicet 1⅔.]

Hours, minutes, seconds [H. M. S.]	Distance from the tail of ♌ [Diſt. a Cauda ♌]	Declination, lower/upper [Declin. inf./ſup.]	Altitude of the lower horn [Altit. inf. cornu]	The Vulture, east [Vultur orient.]
$1^h\ 49^m\ 20^s$	32° 15′	6° 24′ 5° 50⅔′	18½°	54 9
$1^h\ 54^m\ 0^s$	32° 17½′		18° 0′	53 3
$1^h\ 57^m\ 20^s$	32° 20′	6° 29½′ 5° 52′	17° 0′	52 13

Hours, minutes, seconds [H. M. S.]	From the left knee of Ophiuchus [A ſin. genu Ophiuchi]	Declination, lower/upper [Declin. inf./ſup.]	Altitude of the lower horn [Altit. inf. cornu]	The Vulture, east [Vultur orient.]
$2^h\ 4^m\ 10^s$	48° 8½′			50 20
$2^h\ 7^m\ 50^s$	48° 6′	6° 30′ 5° 56′	15½°	49 11* *uncertain because of the obstruction of the beam [*incerta ob trabis obſtaculum]
$2^h\ 16^m\ 0^s$	48° 4½′			47 15
$2^h\ 17^m\ 40^s$	48° 1½′		14½°	46 49

Hours, minutes, seconds [H. M. S.]		
$2^h\ 24^m$	To correct the armillae, Spica was observed [Pro Armillis corrigendis obſeruabatur Spica ♍]	9° 2′
	in declination [in declinatione]	9° 1⅚′
	The altitude of Spica was then [Fuit tunc Altit. Spicæ]	12° 0′

N.B. The sky was not clear enough when these things were being observed in the Moon, but was overspread with rather thin drifting mists, so that the stars were not clear enough, especially the one in the knee of Ophiuchus, which was also somewhat obscured by the brightness of the Moon. [N. B. Fuit Cœlum non ſatis ſerenum cum hæc in ☾ obſeruarentur, ſed nebulis diſcurrentibus rariuſculis ſubſtratum, adeo vt ſtellæ non ſatis perſpicuæ eßent, præcipue illa in genu Ophiuchi, quæ etiam nonnihil ſplendore ☾ obfuſcabatur.]

13 April, in the evening [DIE 13 APRILIS, VESPERI.]

Before the eclipse of the Moon occurring the same night, the Moon was observed around the meridian. [Ante Eclipſin ☾ eadem nocte contingentem obſeruabatur ☾ circa Meridianum.]

$11^h\ 48⅙^m$, meridian altitude [H. 11 M. 48⅙ Altitudo Meridiana]

	upper horn [ſuper. cornu]	lower horn [infer. cornu]
by the steel instrument [per Chalyb.]	22° 2′	21° 28¼′
by the revolving quadrant [per Volub.]	22° 1⅔′	21° 29′

and this at the transit of the western limb through the meridian. [idque in tranſitu occid. limbi per Merid.]

At the same time [Eodem tempore]	12° 6′ upper [ſuper.]
the declination of the Moon [Declinatio ☾]	12° 37½′ south [M.]

Cor ♌ was then, on the equator, 61° 17′. [Erat tunc Cor ♌ in æquatore 61 17]

Afterwards the Moon was observed in distance from fixed stars, as follows. [Poſtea obſeruata eſt ☾ in diſtantia a fixis ſtellis vt ſequitur.]

Hours, minutes [H. M.]	Western distance from Spica [Diſt. occid. a Spica ♍]	Declination, south, upper/lower [Declin. M. ſup./inf.]	Cor ♌, west [Cor ♌ occid.]
$12^h\ 2⅙^m$	12° 13⅓′		64 49
$12^h\ 6⅔^m$	12° 17′	12° 10′	65 50
		12° 42½′	

Hours, minutes [H. M.]	*Western limb from the bright star of the Vulture* [*Occid. limbus a Lucida Vult.*]	Declination, south, upper/lower [Declin. M. ſup./inf.]	*Altitude of the upper limb* [*Altit. ſup. limb.*]	*The bright star of the Vulture, east* [*Lucida Vult. orient.*]
1h 46m	*85° 58½′*	*12° 39′*		*55 20½*
1h 45⅓m corrected [1 45⅓ corr.]		*13° 10½′*		
1h 51⅓m	*85° 55½′*	*12° 38′*		*53 57*
		13° 10′		
1h 55⅚m	*85° 55′*		*16° 40′*	*53 3*
1h 59⅔m		*12° 41′*		*51 57*
		13° 12′		
2h 3½m	*85° 52⅚′*		*16° 20′*	
2h 7⅔m	*85° 50′*	*12° 43′*		
		13° 13⅓′		

Hours, minutes [H. M.]	*Western limb from the bright star of the Vulture* [*Occid. limbus a Lucida Vult.*]	Declination, south, upper/lower [Declin. M. ſup./inf.]	*Altitude of the upper limb* [*Altit. ſup. limb.*]	*The Moon, west, western limb* [☾ *occid. limb. occ.*]
2h 11⅔m	*85° 48′*		*15° 35′*	*35 3½*
2h 16⅔m	*85° 47¼′*	*12° 44⅓′*		*36 3½*
		13° 16⅓′		
2h 20⅚m	*85° 44½′*		*14° 50′*	*37 5*
2h 23m	*85° 45′*	*12° 46¼′*		*37 45*
		13° 17⅔′		
2h 26½m	*85° 44′*		*14° 20′*	*38 34½*

Hours, minutes [H. M.]	*Western limb from the bright star of the Vulture* [*Occid. limbus a Lucida Vult.*]	Declination, south, upper/lower [Declin. M. ſup./inf.]	*Altitude of the upper limb* [*Altit. ſup. limb.*]	*The Vulture, east* [*Vultur orient.*]
2h 30m 10s	*85° 41½′*	*12° 46½′*		
		13° 19½′		
2h 34m 15s	*85° 41′*		*13° 35′*	*43 11*
2h 37m 20s	*85° 40′*	*12° 49′*		*42 30*
		13° 20½′		
2h 41m 30s	*85° 37′*		*12° 50′*	*41 33*
2h 44m 50s	*85° 35′*	*12° 50½′*		*40 42*
		13° 22′		
2h 50m 30s 2h 49⅓m corrected [2 49⅓ corr.]	*85° 31′*		*12° 0′*	*39 18*

Afterwards the Moon began to be eclipsed. Put[1] *the first ingress when the Vulture was away 38½.* [*Poſtea* ☾ *incepit eclipſari. Pone*[1] *primum ingreßum cum Vultur abfuit 38½*]

Hours, minutes [H. M.]		*The Vulture, east* [*Vultur orient.*]
2^h 55^m	*The Moon was seen to lose some light.* [☾ *viſa eſt aliquid lucis amittere.*]	*38 5*
2^h $52½^m$ corrected [2 52½ corr.]		
2^h $59⅙^m$	*The Moon having entered somewhat more* [☾ *nonnihil plus ingreſſa*]	*36 58*
3^h $2⅓^m$	*perceptibly entered the shadow* [*ſenſibiliter ingreſſa eſt vmbram*]	*36 18*
3^h 6^m 50^s	*Distance of the Moon from the Vulture 85° 25′; declination 12° 56½′, 13 25; altitude, upper, 10½* [*Diſt. ☾ a Vult. 85 25 Declin.12 56½ Alt. ſup. 13 25 10½*]	*35 20*
3^h 11^m 30^s	*about a third part of the Moon was in the shadow of the earth* [*quaſi tertia pars ☾ fuit in vmbra terræ*]	*34 7, good in time* [*bona in temp.*]
3^h 16^m 0^s	*Distance 85° 25′, declination 12° 58′, 13 28* [*Diſt.85 25 Decl.12 58 13 28*]	*32 55*
3^h 19^m 20^s	*85 20½, altitude 9° 0′* [*85 20½ Alt. 9 0*]	*32 7*
3^h 21^m 30^s	*the Moon about half entered* [☾ *media ingreſſa fere*]	*31 36*
3^h 20^m corrected [3 20 corr.]		*good* [*bona*]
3^h 23^m 10^s	*with the Radius 18′, the light of the Moon* [*per Radium 18′ ☾ lumen*]	*31 9*
3^h 26^m 20^s	*with the Radius 15′, the light of the Moon* [*per Radium 15′ ☾ lumen*]	*30 19*

Therefore put the time when it was half in the shadow at 3^h 24^m, and you will err imperceptibly. [*Pone itaque tempus cum media eßet in vmbra H. 3 M. 24 & inſenſibiliter aberrabis.*]

Hours, minutes [H. M.]		*The Vulture, east* [*Vultur orient.*]
3^h 34^m 50^s	*about a third part of the Moon remaining* [*quaſi tertia pars ☾ reſidua*]	*28 11*
3^h 40^m 40^s	*about a fourth part of the Moon remained* [*quaſi quarta pars ☾ reſtabat*]	*26 52*
3^h 43^m 20^s	*Distance as before 85° 6′; declination, middle, 13° 7′, altitude 6°.* [*Diſt. vt prius 85 6 Declin. med. 13 7, Alt. 6ᵍ.*]	*26 4*
3^h 49^m 50^s	*The whole Moon having entered the shadow* [*Tota ☾ ingreſſa vmbram*]	*24 34½*
3^h 48^m corrected [3 48 corr.]		*good* [*bona*]

The Moon was in rather thick clouds all this time. [☾ *toto hoc tempore fuit in nubibus ſubdenſiuſculis.*]

N.B. From the transit of the Moon through the meridian up to its first defect, there were continuously thinner clouds around the Moon, scattered on all sides in the southern part of the sky, which, gradually growing thicker, hid the torches of the fixed stars in the neighbourhood of the Moon, so that at the rising the bright star of the Vulture, but above the Moon and at the setting Arcturus, were at least almost seen. Around the beginning of the Moon's ingress into the shadow, moreover, some small clouds also beset its eastern limb, so that it was scarcely possible to discern and observe precisely the first

entry into the shadow of the earth, which began exactly at the eastern limb; and so too neither the remaining moments of the observations, because of the clouds around the Moon, condensed more and more. The total disappearance of the Moon, however, we observed precisely enough, but among even denser clouds, which had perhaps taken the slender remaining light of the Moon out of sight a few little minutes before the total ingress. In seeking the middle of this eclipse, however, you can more safely use the observation of the first darkening, comparing with these the things that were taken above, in the southern armillary of the castle, which do not differ much from these that were observed in the subterranean observatory, noting that the Moon began to be darkened a little earlier than it was observed there, which is also indicated in the same place.[2] [N.B. A tranſitu ☾ per Meridianum vſque ad defectum eius primum fuerunt continuo rariores nubes circa ☾ vndiquaque ſparſæ in parte cœli meridionali, quæ paulatim craßiores factæ, ſtellarum fixarum faces in confinio ☾ occultabant, adeo vt ad ortum Lucida Vulturis, ſupra ☾ vero & ad occaſum Arcturus ſaltem pene viſerentur. Circa initium vero ingreſſus ☾ in vmbram etiam nubeculæ quædam illius orientalem limbum obſederunt, adeo vt primum in vmbram terræ introitum, qui exquiſite ab orientali limbo inciperetur, diſcernere & præciſe obſeruare vix liceret, vt & neque reliqua animaduerſionum momenta ob nubes circa ☾ magis magiſque condenſatas. Totalem autem ☾ diſparentiam ſatis præciſe obſeruabamus, ſed inter denſiores etiam nubes quæ exile lumen ☾ reliquum forſan aliquot minutulis ante totalem ingreßum e conſpectu abduxerant. Potes tamen pro medio deliquij huius inquirendo, animadverſionem circa primam obſcurationem tutius vſurpare, conferendo cum illis ea, quæ ſuperius in Armillari Meridionali arcis accepta ſunt, quæ non multum ab his diſcrepant, quæ in obſeruatorio ſubterraneo obſeruabantur, animaduertendo quod ☾ paululum antea obſcurari incepta eſt, quam illic obſeruabatur, quod etiam ibidem innuitur[2].]

Let the clock be corrected by the bright star of the Vulture; it seemed to be in excess by 1^m around the beginning of the eclipse, and around the end by 1⅓, as these and all the rest can be investigated more scrupulously and examined by comparing them with one another. [Corrigatur horologium ad Lucidam Vulturis, quod viſum eſt circa initium Eclipſis 1 M. abundare, circa finem vero 1⅓, prout hæc & reliqua omnia ſcrupuloſius inquiri & inter ſe conferendo examinari poßunt.]

[1] Written in the margin. [In margine adſcriptum.] [2] Compare below, after the observations of the Moon of 13 September. [Cf. infra, poſt obſervationes lunæ diei 13 Septembris.]

Observation of the same eclipse of the Moon in the southern equatorial armillae. [Obſeruatio eiuſdem Eclipſis ☾ in Armillis æquatorijs Auſtralibus.]

Diagram. A drawn lunar disk (left column, first of four): a circle with a narrow dark sliver at its left edge; the rest of the disk blank. No labels.

The bright star of the Vulture on the eastern equator, 37° 39′. It corresponds to $2^h\ 55\frac{5}{6}^m$; the Moon perceptibly failed. We seemed to ourselves, however,

not to have paid attention early enough. [Vulturis Lucida in æquatore orientali 37 39, Reſpondet H. 2 M. 55⅝ ſenſibiliter defecit ☾. Videbamur autem nobis non ſatis mature attendiße.]

Diagram. A drawn lunar disk (left column, second): a circle with a dark crescent at its left edge, a little wider than in the first disk; the rest blank. No labels.

The Vulture, east, 36 48. The Moon entered the shadow still further. [Vulture orient. 36 48 Adhuc amplius vmbram ingreßa eſt ☾.]

Diagram. A drawn lunar disk (left column, third): a circle with a hatched lune on its left side, bounded on the right by a curved line; the rest blank. No labels.

The Vulture, east, 35 1, about a fourth part of the lunar body in the shadow. [Vulture orient. 35 1, quaſi quarta pars corporis lunaris in vmbra.]

Diagram. A drawn lunar disk (left column, fourth): a circle with a hatched lune on its left side, wider than in the third disk, bounded on the right by a curved line; the rest blank. No labels.

The Vulture, east, 33 34. A third part of the Moon having entered the shadow. [Vulture orient. 33 34 Tertia pars ☾ vmbram ingreßa.]

Diagram. A drawn lunar disk (right column, first of four): a circle with a hatched area on its left side, bounded on the right by a curved line; the rest blank. No labels.

The Vulture, east, 31 20. The Moon about half in the shadow. Resp. 3^{h} 19^{m}. [Vulture orient. 31 20 Quaſi media ☾ in vmbra. Reſp. H. 3 M. 19.]

Diagram. A drawn lunar disk (right column, second): a circle hatched with close vertical strokes over most of its area from the left, bounded by a curved line towards the right; a blank region at the right. No labels.

29 38. A third part was seen remaining. [29 38 Tertia pars reliqua videbatur.]

Diagram. A drawn lunar disk (right column, third): a circle densely cross-hatched over most of its area, with a narrow blank region at the right. No labels.

28 20. Scarcely a fourth part was seen remaining. [28 20 Vix quarta pars reliqua videbatur.]

Diagram. A drawn lunar disk (right column, fourth): a circle densely cross-hatched over almost its whole area, with a thin blank edge at the right. No labels.

26 20. A little was still seen remaining. 24 35. The whole Moon disappeared. It corresponds to 3^{h} 48^{m}, agreed exactly with the one above. [26 20 Adhuc parum videbatur reliquum. 24 35 Tota ☾ diſparuit. Reſpondet H. 3 M.48, exquiſite connuenit cum ſuperiori.]

The same eclipse was observed in the northern armillae as follows. [Obſeruabatur eadem Eclipſis in Armillis ſeptentrionalibus ita.]

Diagram. A drawn lunar disk (left column, first of two): a circle with a narrow dark sliver at its left edge; the rest blank. No labels.

Arcturus, west, 45 39. Resp. 2^h 55⅖^m, the first appearance of perceptible failing. [Arcturo occident. 45 39 Reſp. H. 2 M. 55⅖, ſenſibilis defectionis prima facies.]

Diagram. A drawn lunar disk (left column, second): a circle with a cross-hatched area on its left side, bounded on the right by a curved line; the rest blank. No labels.

48 3. Second, about a fourth part darkened. [48 3 Secunda, quaſi quarta pars obſcurata.]

Diagram. A drawn lunar disk (right column, first of two): a circle hatched with close strokes over its left part, bounded by a curved line right of centre; a blank region at the right. No labels.

52 30. Resp. 3^h 22¾^m. Third. Half of the Moon darkened. [52 30 Reſp. H. 3 M. 22¾. Tertia. Media pars ☾ obſcurata.]

Diagram. A drawn lunar disk (right column, second): a circle hatched over most of its area, with a blank region at the right. No labels.

53 51. Fourth. Nearly a fourth part was discerned remaining. 58 38. Last. Wholly darkened. Resp. 3^h 47¼^m. [53 51 Quarta. Fere quarta pars reliqua cernebatur. 58 38 Vltima. Tota obſcurata. Reſp. H. 3 M. 47¼.]

A note on the eclipse of the Moon in April.[1] [Admonitio de Eclipſi ☾ in Aprili[1].]

Total disappearance in the shadow [Tota diſparitio in vmbra]	3^h 48^m [3^H48^M]
From the beginning to the middle, according to both calculations, the Alphonsine and the Copernican [Ab initio ad medium ſecundum vtrumque calculum Alph. & Cop.]	1 4
Therefore the first beginning [Ergo primum initium]	2 44
and the middle [& medium]	4 33

if you subtract 3^m for the quicker ingress. [ſi ſubtraxeris 3^M pro celeriori ingreßu.]

The equation of time, subtracted, 9^m. [Æquatio temporis ſubt. 9^M.]

Therefore the middle, observed and equated, 4^h 24^m, on which you may base yourself. [Ergo medium obſeruatum & æquatum 4^H 24^M cui te fundare poßis.]

6 May, in the evening [DIE 6 MAIJ, VESPERI.]

Observation of the Moon in quadrature. [Obſeruatio ☾ in quadratura.]

The Moon at the 90th degree at exactly 8^h. [☾ in 90 Gradu H. 8 exacte.]

9^h 16⅚^m [9^H16⅚′]	Cor ♌, west [Cor ♌ occid.]	44 28	
9 13⅔ corrected [9 13⅔ corr.]			
9 17⅙	western limb of the Moon [occid. limb. ☾]		42 40½
9 20	cor ♌	45 15½	west [occ.]

9 20½	western limb of the Moon [occid. limb. ☾]		43 28⅔
9 23⅔	Cor ♌, west [Cor ♌ occid.]	46 9	
9 24¼	western limb of the Moon [occid. limb. ☾]		44 21
	Declination, upper [Declinatio ſuper.]	17° 17′	
	lower [infer.]	16° 42′	

These were observed among clouds, when the Moon had been carried about 1⅓ hours past the 90th degree. [Hæc obſeruata ſunt inter nubes, cum ☾ circiter 1⅓ horis 90 Gradum eßet transvecta.]

Nevertheless you will still be able, applying the parallax of longitude of the Moon, which was small, to test the motion of the Moon against the hypothesis around the quadrature, between the quadrature of the eccentric and the perigee, the Moon being in quadrature with the Sun, and that at the greatest digression. [Poteris tamen nihilominus adhibita parallaxi Longitudinis ☾, quæ exigua erat, explorare motum ☾ ad hypotheſin circa □ram inter quadraturam Eccentri & Perigæum ☾ exiſtente in □ra cum ☉, idque in maxima digreßione.]

(But since both the star and the Moon were taken with a single pinnule, and the interval of time therefore then spills over into error, so that it is probable that 8′ [M. 8] must be added to the longitude of the Moon, so that it is 25° 18′ ♌.)[1] [(Cæterum quoniam per vnicum pinnacidium capta eſt tum ſtella tum ☾, ideoque interuallum temporis tum in errorem ſe effundit, vt veriſimile ſit addenda eße Longitudini ☾ M. 8, vt ſit 25 18 ♌)[1].]

For the place of the Moon from the preceding observations. [Pro loco ☾ ex antecedentibus obſeruationibus.]

9^h 15^m [H. 9 M. 15]	Distance on the equator of the western limb of the Moon [Diſt. æquat. occid. limbi ☾]	
	and of cor ♌ [& cordis ♌]	1° 53′ 30″
	Right ascension of cor ♌ [Aſc. R. cordis ♌]	146° 40′ 25″
	Therefore the right ascension of the western limb [Ergo Aſc. R. occ. limbi]	148° 33′ 55″
	Add for the semidiameter of the Moon [Adde pro ſemidiam. ☾]	15′ 0″
	Therefore put the right ascension of the Moon [Pone itaque Aſc. R. ☾]	148° 49′

Declination of the centre of the Moon [Declinatio centri ☾]	17° 1′
Resp. longitude [Reſp. Longitudo]	25° 5¾′ ♌
latitude [Latitudo]	4° 3¼′ north [B.]

For the parallax of the Moon [Pro Parallaxi ☾]

Altitude of the Moon 38° [38 g.]. Parallax in the circle of altitude 54′ 0″ from the Prutenic Tables. The Moon from the 90th degree 1^h 15^m. [Altit. ☾ 38 g. Parallaxis in circulo alt. 54′ 0″ ex Tab. Prut. ☾ a 90 Gradu H. 1 M. 15.]

Therefore the parallax of longitude 8′ 45″, added. [Ergo Parallaxis Longitudinis 8′45″ add.]

For the arc of inclination from the latitude. [Pro arcu inclinationis ex latitud.]

Distance of the Moon from the descending node [Diſtantia ☾ a ☋]	65° 40′
True latitude of the Moon [Vera latitudo ☾]	4° 48′
Arc of inclination [Arcus inclinationis]	5′ 30″ subtracted [5′30″ ſubt.]
Therefore the true observed longitude of the Moon [Ergo vera Longit. ☾ obſeruata]	25° 9′ ♌

21 May, in the morning [DIE 21 MAIJ, MANE.]

The Moon was observed around the 90th degree and the last quadrature, not far from the apogee of each of its epicycles, in the following manner. [Obſeruabatur ☾ circa 90 Grad. & vltimam □ram, non longe ab Apogæo ſui Epicycli vtriusque in modum ſequentem.]

3^h $25\frac{2}{3}{}^m$ [H. 3 M. 25⅔]	Distance of the eastern limb of the Moon [Diſt. orient. limbi ☾]	
	from Venus [a ♀]	43° 25½′, good [bona]
3 28		43 25⅔

a little more uncertain because of the dawn. [paulo incertior propter auroram.]

Declination, lower [Declin. inf.]	12° 27′	Altitude, upper [Altit. ſup.]	
upper [ſup.]	11° 58½′	horn [cornu]	13° 30′

N.B. The Moon at the 90th degree, according to the computation, at 3^h 40^m. [N. B. ☾ in 90 Gradu iuxta ſupputationem H. 3 M. 40.]

9 July, in the evening [DIE 9 IULIJ, VESPERI.]

The Moon was observed near the Winter Tropic, at the 90th degree and on the meridian, for parallax and refraction, and also for longitude, when it was close to the mean opposition with the Sun. The Moon at the 90th degree at $10\frac{1}{3}{}^h$. [Obſeruabatur ☾ circa Tropicum Hybernum in 90 & Meridiano pro parallaxi & refractione, quin etiam pro Longitudine, quando ☍ cum ☉ mediæ vicina eßet. ☾ in 90 Gradu H. 10⅓.]

Hours, minutes [H. M.]	Distance of the western limb of the Moon from the left knee of Ophiuchus [Diſt. occ. limbi ☾ a ſin. genu Oph.]	Declination, lower/upper [Declin. inf./ſup.]	Altitude, upper, by the revolving quadrant [Altit. ſup. per Volub.]	The Vulture, east [Vultur orient.]
$10^h\ 24¾^m$	38° 27½′	29° 2′ 28° 31⅓′	5° 20′	18 9

Hours, minutes [H. M.]	Distance of the western limb of the Moon from the left knee of Ophiuchus [Diſt. occ. limbi ☾ a ſin. genu Oph.]	Declination, lower/upper [Declin. inf./ſup.]	Altitude, upper, by the revolving quadrant [Altit. ſup. per Volub.]	Arcturus, west [Arcturus occid.]
$10^h\ 30½^m$	38° 29¾′			
$10^h\ 35¼^m$	38° 32′		5° 33′	68 20
$10^h\ 37^m$ corrected [10 37 corr.]				

Vice versa. The same limb from the mouth of Pegasus. [Viceverſa. Idem limbus ab ore Pegaſi.]

Hours, minutes [H. M.]		Declination, lower/upper [Declin. inf./ſup.]	Altitude, upper, by the revolving quadrant [Altit. ſup. per Volub.]	Arcturus, west [Arcturus occid.]
$10^h\ 40⅚^m$	54° 20⅔′			69 50
$10^h\ 43^m$ corrected [10 43 corr.]				
$10^h\ 42⅓^m$	eastern limb [or. limb.]			70 19
$10^h\ 45^m$ corrected [corr.]	53° 53′			

[1] From codex V. [E codice V.]

10 44⅔ 10 47 corrected [10 47 corr.]	The eastern limb of the Moon transited [Tranſiuit orient. limbus ☾ per] the meridian, having altitude [Meridianum habens altit.]

	of the upper horn [ſuperioris cornu]	of the lower horn [infer. cornu]
by the revolving quadrant [per Volub.]	5° 36′	5° 6⅓′
by the steel instrument [per Chalyb.]	5° 35½′	5° 6′

	of the upper horn [ſuperioris cornu]	of the lower horn [infer. cornu]	
Arcturus, west [Arcturus occident.]			70 50½
At the same time, declination [Ad idem tempus Declin.]	28° 31′	29° 2′	

The air was moderately clear near the southern horizon, where the Moon was being observed, and fairly steady. [Erat aër mediocriter defæcatus circa horizontem meridionalem, vbi obſeruabatur ☾, & ſatis tranquillus.]

Our place of the Moon at the time of the transit through the meridian, 8° 30′ ♑ [8ᵍ30♑′], the reduction and equation having been made, whose declination 23° 15′. [Locus ☾ noſter ad tempus tranſitus per Meridianum 8ᵍ30♑′ facta reductione & æquatione, cuius declinatio 23 15.]

The latitude adds [Latitudo addit]	5° 58′
Observed declination of the Moon [Declin. ☾ obſeruata]	28° 46′
The refraction adds [Refractio addit]	14
Apparent declination [Declin. viſa]	29° 0′
Our true declination [Declin. vera noſtra]	23° 15′
Apparent latitude of the Moon [Latit. ☾ viſa]	5° 45′
Our true latitude of the Moon [Latit. ☾ vera noſtra]	4° 57′
Parallax of the Moon in the circle of altitude [Parallaxis ☾ in circulo alt.]	48
The Prutenic parallax about [Parall. prutenica quaſi]	53

Difference 5′, but to be examined anew. [Differ. 5′, ſed denuo examinandum.]

Calculation for the true place of the Moon for 9 July from the preceding observations around the 90th degree. [Calculus pro vero loco ☾ ad diem 9 Julij ex præcedentibus obſeruationibus circa 90ᵐᵘᵐ gradum.]

10ʰ 25ᵐ [H. 10 M. 25]	Distance of the western limb from the left knee of Ophiuchus [Diſtantia occid. limbi a ſiniſtro genu Ophiuchi]	38° 28′ 0″
	Semidiameter, added [Semid. add.]	15′
	Therefore the true distance [Ergo vera diſt.]	38° 43′
	Observed declination of the Moon [Declin. ☾ obſeruata]	28° 46′ south [auſt.]
	Declination of the knee of Ophiuchus [Decl. genu Ophiuchi]	9° 38′ south [auſt.]
	Right ascension of Ophiuchus [Aſc. R. Ophiuchi]	243° 44′
	Angular difference of ascension [Ang. diff. aſcenſ.]	35° 55′ 40″
	Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	279° 39′ 40″
10ʰ 43ᵐ [H. 10 M. 43]	Distance of the centre of the Moon from the mouth of Pegasus [Diſt. centri ☾ ab ore Pegaſi]	54° 5′

Declination of the Moon [Declin. ☾]	28° 46′ south [M.]
Declination of the mouth of Pegasus [Declin. oris Pegaſi]	8° 3′ north [B.]
Right ascension of the mouth of Pegasus [Aſc. R. oris Pegaſi]	321° 5′
Angular difference of ascension [Ang. diff. aſcenſ.]	41° 9′ 10″
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	279° 55′ 50″
Limited right ascension [Aſcenſio Recta limitata]	279° 42⅔′
Resp. longitude [Reſp. Longitudo]	8° 32¾′ ♑
Latitude [Latitudo]	5° 31⅚′ south [M.]

6 September, in the evening [DIE 6 SEPTEMBRIS, VESPERI.]

The Moon was observed around the meridian. [Obſeruabatur ☾ circa Meridianum.]

The Moon at the 90th degree, $12^h\ 2^m$. [☾ in 90 Gradu H. 12 M. 2.]

$11^h\ 13^m$ [H. 11 M. 13] Transit of the Moon through the meridian among clouds, upper limb [Tranſitus ☾ per Merid. inter nubes, ſup. limb.]	
by the steel instrument [per Chalyb.]	20 15
by the revolving quadrant [per Volub.]	20 15
but the lower [inferior. vero]	
by the steel instrument [per Chalyb.]	19 48
by the revolving quadrant [per Volub.]	19 47
The Vulture, west [Vultur occidentalis]	46 55

Hours, minutes [H. M.]	Distance of the western limb from the Vulture [Diſt. occ. limbi a Vult.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude [Altit.]	The Vulture, west [Vultur occid.]
$11^h\ 27^m$	50° 7½′	13° 46½′ 14° 19′		49 34
$11^h\ 31⅙^m$	50° 10′			50 35
$11^h\ 35½^m$	50° 11′	13° 46⅔′ 14° 18¾′		51 40
$11^h\ 38⅓^m$	50° 12′			52 24
$11^h\ 41⅔^m$	50° 12¾′			53 8

Vice versa, from the bright star of the tail of the Whale. [Viceverſa a lucida Cauda Ceti]

Hours, minutes [H. M.]		Declination, upper/lower [Declin. ſup./inf.]	Altitude [Altit.]	The Vulture, west [Vultur occid.]
$11^h\ 51⅚^m$	26° 55′	13° 48½′[1]	19° 55′	55 36

Hours, minutes [H. M.]		Declination, upper/lower [Declin. ſup./inf.]	Altitude [Altit.]	The Vulture, west [Vultur occid.]
		14° 13′		
$12^h\ 3^m$	26° 53′			58 24
$12^h\ 6\frac{1}{3}^m$	26° 52′	13° 40½′		59 16
		14° 9′		
$12^h\ 11\frac{1}{6}^m$	26° 49⅔′	13° 40′		
		14° 8′		

For the correction of the armillae there was observed [Pro Armillarum correctione obſeruabatur]

the bright star of the tail [Lucida Caudæ]	10° 11½′ twice [bis]
of the Whale in declination [Cete in declinatione]	10° 12½′

10 September, in the morning [DIE 10 SEPTEMBRIS, MANE.]

The eastern limb of the Moon was observed in distance from the mouth of Pegasus. [Obſeruabatur orientalis limbus ☾ in diſtantia ab ore Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declin.]	The mouth of Pegasus, west [Os Pegaſi occ.]
$12^h\ 56\frac{1}{3}^m$	50° 20′		45 40
$12^h\ 59\frac{2}{3}^m$	50° 22¼′	upper [ſup.] 3° 12½′	46 34
		lower [inf.] 2° 42⅔′	
$1^h\ 4^m\ 0$	50° 25′		47 33
$1^h\ 15^m\ 40$	The eastern limb of the Moon transited [Tranſiuit orient. limb. ☾]		

through the meridian, having altitude [per Merid. habens Altit.]

by the steel instrument [per Chalyb.]	upper [ſup.] 37° 24′ lower [inf.] 36° 56⅙′
by the revolving quadrant [per Volub.]	upper [ſup.] 37° 23′ lower [inf.] 36° 58′

Then the mouth of Pegasus, west, was 50 23. [Tunc fuit Os Pegaſi occid. 50 23]

[1] It should be about 43. [Debet eße circiter 43.]

Vice versa, the eastern limb of the Moon from the eye of ☉. [Viceverſa orient. limb. ☾ ab oculo ☉.]

Hours, minutes [H. M.]		Declination [Declin.]	The mouth of Pegasus, west [Os Pegaſi occ.]
1^h $25\frac{2}{3}^m$	52° 15′		52 55
1^h $29\frac{1}{6}^m$	52° 14′	upper [ſup.] 3° 17′ lower [inf.] 2° 51′	53 45
1^h $33\frac{1}{6}^m$	52° 12′		54 52

For correcting the armillae there was observed [Pro corrigendis Armillis obſeruabatur]

of the bright star of the jaw [Lucidæ Mandibulæ]	2° 27½′
of the Whale the declination [Cete Declinatio]	2° 27⅙′

N.B. The Moon was then a day and a half after the full moon, and almost at the apogee. [*N. B.* ☾ *tunc fuit ſeſquialtero die poſt plenilunium & in Apogæo quaſi.*]

N.B. The Vulture on the 10th, in the evening, on the meridian had altitude by the steel instrument 41° 58⅚′, by the revolving quadrant 41° 57⅔′; from this you will search out which instrument gave the true altitude. [*N. B. Vultur die 10 veſperi in meridiano habuit alt. per Chalyb. 41 58⅚, per Volub. 41 57⅔, hinc rimabere quodnam veram altitudinem præbuerit inſtrumentum.*]

It should have been 41 58 0. [*Debuit* eße *41 58 0.*]

11 September [DIE 11 SEPTEMBRIS.]

1^h $34\frac{1}{2}^m$ [H. 1 M. 34½]	The eastern limb of the Moon transited [Tranſiuit orient. limb. ☾]
1 39⅔ corrected [1 39⅔ corr.]	through the meridian, having altitude [per Merid. habens Altit.]

	by the steel instrument [per Chalyb.]	by the revolving quadrant [per Volub.]
upper [ſup.]	43° 4⅙′	43° 3′
lower [inf.]	42° 37′	42° 37′

Then the bright star of the jaw of the Whale, east, was 17 50. [Tunc fuit Luc. mandib. Cete or. 17 50]

Examination of the ascending node from the meridian altitude. [Examinatio ☊ ex Altit. Merid.]

1^h 39^m [H. 1 M. 39]	Altitude of the centre of the Moon [Altitudo centri ☾]	42° 50′ 30″
		34 5 30

Therefore the declination of the centre of the Moon [Ergo Declin. centri ☾]	8° 45′ 0″ north [B.]

For the apparent place of the Moon. [Pro viſo loco ☾.]

When the centre of the Moon was crossing the meridian, the bright star of the jaw of the Whale was east, the ascensional difference 18° 4′. [Cum centrum ☾ tranſiret Meridianum erat Lucida mand. Cete orient., differentia aſcenſionalis 18 4]

Right ascension of the jaw of the Whale [Aſc. Recta Mandibulæ Cete]	40° 21¼′
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	22° 17¼′
Resp. apparent longitude [Reſp. viſa Longitudo]	23° 51¼′ ♈
Latitude [Latitudo]	0° 35′ 55″ south [M.]
Therefore the true longitude [Ergo vera Longitudo]	24° 7¼′ ♈
Latitude [Latitudo]	0° 3½′ north [B.]

Resp. distance from the ascending node 0° 39¼′, the angle of greatest latitude at this place being put at 5° 7′ [5^{g} 7′]. The node will therefore be [Reſp. Diſtantia a ☊ 0 39¼, poſito angulo maximæ latitudinis hoc loco 5^{g} 7′. Erit ergo nodus]

	23° 28′ ♈
	24 3
Difference from Copernicus [Differentia a Copernico]	35

Let it be compared with the year 92, 12 February. [Conferatur cum anno 92 die 12 Feb.]

Likewise with the year 95, 17 February. From this it will become clear that the nodes change unequally by reason of the small circle, and the difference greatest in the sextile and the trine with the Sun [✶ & △ ☉], just as in the opposition and the quadrature [☍ & □] it changes the greatest latitude. [Item anno 95 die 17 Feb. Vnde palam fiet nodos inæqualiter mutari ratione parui circelli & differentia maxima in ✶ & △ ☉, quemadmodum in ☍ & □ mutat maximam latitudinem.]

For the parallax of the Moon. [Pro Parallaxi ☾.]

Double longitude [Duplex Longitudo]	1^{s} 22° 16′ [ſig. 1 22 16]
Equated anomaly [Anomalia coæquata]	0 22 32

Resp. side, the distance of the Moon from the Earth according to our hypothesis [Reſp. Latus, diſtantia ☾ a terra iuxta noſtram Hypotheſin]	106916
100000 — 60 semidiameters [ſemid.] — 106916	64° 9′ semidiameters [64°9′ſemid.]
Distance of the Moon from the zenith [Diſtantia ☾ a vertice]	47° 10′
Resp. parallax in the circle of altitude [Reſp. Parallaxis in circulo alt.]	39′ 20″
Add for the correction of the parallaxes [Adde pro parallaxium corr.]	3 10
Therefore the true parallax in altitude [Ergo vera Parallaxis in altit.]	42 30
Resp. in longitude [Reſp. in Longitudine]	16 0
in latitude [in Latitudine]	39 20

12 September, in the morning [DIE 12 SEPTEMBRIS, MANE.]

2^h 29⅚^m. The transit of the eastern limb of the Moon through the meridian was observed at altitude [H. 2 M. 29⅚ Obſeruabatur tranſitus orient. limbi ☾ per Meridianum in Altitudine]

	by the steel instrument [per Chalyb.]	by the revolving quadrant [per Volub.]
upper [ſup.]	48° 27½′	48° 26′
lower [inf.]	47° 57′	47° 58′

The bright shoulder of Orion, east, was then 49 43. [Fuit tunc Lucidus humerus Orionis orientalis 49 43]

13 September [DIE 13 SEPTEMBRIS.]

Observation of the Moon at the middle place between the opposition and the second quadrature. [*Obſeruatio ☾ in medio loco inter ☍ & □ ſecundam.*]

Declination of the upper limb of the Moon [Declin. ſuperioris limbi ☾]	19° 58′
of the lower [inferioris]	19° 32½′
Declination of the Sun, north [Declinatio ☉ borea]	0° 9¼′
with the Sun east [☉^{le} orientali]	55 57

Afterwards the distance of the eastern limb of the Moon from the Sun was observed with the semicircle. [Poſtea obſeruata eſt diſtantia orientalis limbi ☾ a ☉ per ſemicirculum.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of the Moon, upper/lower [Declin. ☾ ſup./inf.]	Declination of the Sun [Decl. ☉]	The Sun, east [☉ or.]
8^h 50^m	128° 52′	20° 3′	0° 8′	47 15
		19° 36′	0° 7½′	

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of the Moon, upper/lower [Declin. ☾ ſup./inf.]	Declination of the Sun [Decl. ☉]	The Sun, east [☉ or.]
8^h 57^m	128° 48′	20° 4′	0° 7½′	45 45
		19° 38′	0° 7½′	
9^h 3^m	128° 44′	20° 4½′	0° 7⅓′	44 3
		19° 38½′	0° 7½′	

Hours, minutes [H. M.]		
8^h 50^m	Altitude of the Sun [Altitudo ☉]	22° 30′
8^h 57^m		23 13
9^h 3^m		24 0

At the time of the last observation the altitude of the upper horn of the Moon was 17° 43′. [Ad tempus vltimæ obſeruationis erat Altitudo ſuperioris cornu ☾ 17 43]

14 September [DIE 14 SEPTEMBRIS.]

After sunrise we observed the Moon, first by the zodiacal armillae, the place of the Sun being put at 0° 30′ ♎. [Poſt ortum ☉ ☾ obſeruauimus, primo per Armillas Zodiacales, poſito loco ☉ in 0 30 ♎.]

Hours, minutes [H. M.]	The eastern limb of the Moon in longitude [Orient. limb. ☾ in Longitudine]	Declination of the Moon, upper [Declinatio ☾ ſuper.]	lower [infer.]	Altitude of the upper limb of the Moon [Alt. ſuper. limbi ☾]	The Sun before Merid. [☉ ante Merid.]	Altitude of the Sun by the revolving quadrant [Altit. ☉ per Volub.]
7^h 25^m	*2° 12′ ♊*				*68 45*	*11° 40′*
7^h 30^m	*2° 14½′*	*23° 37⅓′*			*67 27*	*12° 15′*
7^h 37^m	*2° 18′*			*38*		*13° 10′*
7^h 45^m	*2° 21½′*	*23° 40′*	*23° 12′*	*37⅓*	*63 45*	*14° 15′*
7^h 52^m	*2° 23½′*	*23° 40⅓′*	*23° 12′*	*36⅓*	*61 52*	*15° 10′*
7^h 56^m	*2° 24′*	*23° 41′*	*23° 12½*	*36*		*15° 45′*
8^h 4^m	*2° 27′*	*23° 42½′*	*23° 13⅓*	*35*	*59 0*	*16° 35′*
8^h 8^m	*2° 29′*	*23° 42⅔′*	*23° 13′*	*34½*	*58 2*	*17° 5′*
8^h 11^m	*2° 30½′*			*34⅙*	*57 17*	*17° 30′*
8^h 14^m	*2° 32′*	*23° 43′*	*23° 14′*	*33⅔*	*56 40*	*17° 50′*
8^h 18^m	*2° 33½′ or at most 34′ [aut ad ſummum 34′]*	*23° 43¼′*	*23° 15½*	*33*	*55 36*	*18° 20′*

Afterwards the equatorial distances of the Sun and the Moon were taken by the equatorial armilla, as follows. [Poſtea per Armillam æquatoriam capiebantur diſtantiæ æquatoriæ Solis & Lunæ vt ſequitur.]

Hours, minutes [H. M.]	The Sun, east [⊙ orient.]	The Moon, west [☾ occident.]	Distance on the equator [Diſt. æquat.]	Declination of the Moon, upper [Declinatio ☾ ſuper.]	lower [in-fer.]	Altitude of the Moon [Altit. ☾]	Altitude of the Sun [Altit. ⊙]
8h 21m	*54 47½*	*66 1*	*120° 48½′*	*23° 43½′*	*23° 17½32*		
8h 27m	*53 10⅚*	*67 33¾*	*120° 44′ 35″*	*23° 44′*	*23° 17⅚31½*		*19⅚°*
8h 32⅔m	*51 52¾*	*68 49½*	*120° 42¼′*	*23° 45′*	*23° 18′*	*31⅙*	*20° 33′*

Let the distance of the Moon from the centre of the Sun at 8h 18m therefore be put at 2° 34′ ♊; from this the apparent semidiameter of the Moon subtracted, 14′, so that the centre of the Moon is 2° 20′ ♊, the place of the Sun then being put at 0° 30′ ♎. But since the Sun was in truth at that time 0 31½, and since the refraction of the Sun is 5½′ and the parallax 2⅚′, there remain for the refraction 2¾′, which in longitude make 2 minutes to be subtracted. The apparent place of the Sun was therefore at 0° 29½′ ♎, and for that reason at least half a minute is to be taken from the place of the Moon, which is insensible. [*Ponatur itaque H.8 Min.18 diſtantia ☾ a centro Solis 2 34 ♊, quibus ſemidiameter viſa ☾ ſubtr. 14′, vt ſit 2 20 ♊ centrum ☾, poſito tunc loco ⊙ 0 30′♎, ſed quia erat re vera eo tempore ⊙ 0 31½, cumque refractio ⊙ ſit 5½′ & parallaxis 2⅚′, remanent pro refractione 2¾′, quæ in Longitudine efficiunt 2 Minuta ſubtrahenda. Fuit itaque viſus locus Solis in 0 29½ ♎, & ob id ſaltem dimidium Minutum auferendum a loco ☾, quod eſt inſenſibile.*]

Thus at 8h 21m, the same place of the Sun being put at [*Sic H.8 M.21 Poſito eodem loco* ⊙]	*0½° ♎* [*0½ ♎*]	*180* *27½*
and, the equatorial distance of the Moon subtracted from this [*& ſubducta hinc diſtantia ☾ æquatoria*]		*121° 2½′*
there results the right ascension of the centre of the Moon [*Prouenit Aſcenſio Recta centri ☾*]		*59° 25′*
and the declination of the same then appears [*& Declinatio eiuſdem tunc apparet*]		*23° 31′*
From this is gathered the apparent longitude of the Moon [*Hinc colligitur ☾ Longitudo … viſa*]	*2° 9⅕′ ♊*	
and the latitude of the same, north [*& eiuſdem Latitudo B.*]	*2° 55′*	

Here, therefore, the two reckonings differ by about 10 minutes; the reason for this discrepancy must be looked into, and this place compared with our calculation. [*Differunt itaque hic ambæ rationes quaſi Minutis 10, cuius diſcrepantiæ ratio inquirenda venit, & locus hic cum noſtro calculo conferendus.*]

15 September, in the morning [DIE 15 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Corrected time [Tempus corr.]	Distance of the eastern limb of the Moon from the bright star of ♈ [Diſt. or. limbi ☾ a Luc. ♈]	Declination, upper/lower [Decl. ſup./inf.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
2h 46⅓m	2h 56m 39s	41° 14′		27 7
2h 48m	2h 59m 7s	41° 15′		26 30

Hours, minutes [H. M.]	Corrected time [Tempus corr.]	Distance of the eastern limb of the Moon from the bright star of ♈ [Diſt. or. limbi ☾ a Luc. ♈]	Declination, upper/lower [Decl. ſup./inf.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
2^h 51⅚^m	3^h 2⅓^m	41° 16½′	26° 12′	25 42
			25° 37½′	
2^h 55^m	3^h 5⅗^m	41° 17½′		24 53

Vice versa, the same limb of the Moon from the lower head of ♊. [Viceverſa idem limbus ☾ ab infer. capite ♊.]

Hours, minutes [H. M.]	Corrected time [Tempus corr.]	Declination, upper/lower [Decl. ſup./inf.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
3^h 0^m	3^h 9^m 7^s	34° 25′	24 0
3^h 2^m	3^h 13^m 7^s	34° 23⅓ 26° 12′	23 0
		12° 39′	
3^h 5^m	3^h 14^m 7^s	34° 21⅔′	22 45
3^h 8^m	3^h 18½^m	34° 21′ 26° 12⅓′	21 39
		25° 39½′	

[1] Thus in the codex. [Sic in codice.]

3 46 3 58 55 The eastern limb of the Moon crossed Merid., having altitude [3 46 3 58 55 Tranſiuit orient. limbus ☾ Merid. habens Alt.]

	by the steel instrument [per Chal.]	by the revolving quadrant [per Volub.]
the upper horn [ſuper. cornu]	60° 23′	60° 22½′
of the lower [inferioris]	59° 50′	59° 51′

With the bright shoulder of Orion, east, 11 33. [Lucido humero Orionis or. 11 33]

On the same day, in the morning, Cor ♌ was observed at a distance from the Lesser Dog [Eodem die mane obſeruabatur Cor ♌ in diſtantia a Cane minore]	37° 19¾′	
	37° 19⅓′	
Declination of Cor ♌ [Declinatio Cordis ♌]	13° 57⅓′ Altitude of Cor ♌ [Altit. Cordis ♌]	15° 50′
	13° 58′	

16 September, in the morning [DIE 16 SEPTEMBRIS, MANE.]

The Moon was observed in quadrature and at the greatest distance of both epicycles. [*Obſeruabatur ☾ in Quadratura & maxima diſtantia vtriuſque epicycli.*]

Because of the armillae, the bright foot of Erichthonius had declination 28° 9′ twice, with one. [*Propter Armillas Lucidus pes Erichtonij habuit Declin. 28 9 bis, vno.*]

Hours, minutes [H. M.]	The eastern limb of the Moon from Aldebaran [Or. limb. ☾ ab Aldeb.]	Declination, upper [Declinatio ſuper.]	lower [infer.]	The bright foot of Orion, east [Luc. pes Orion. orient.]
3h 29½m	*23° 53′*	*27° 57′*	*27° 20½′ doubtful* [*dub.*]	
3h 35⅔m	*24° 2′*	*27° 54′*	*27° 22′*	*7 12*
3h 39¾m	*23° 58′*	*27° 53⅚′*	*27° 20′*	*6 11*
3h 42⅙m	24° 0′	27° 54′	27° 22½′	5 35

Distance from the lower head of ♊ [Diſt. ab infer. capite ♊]

Hours, minutes [H. M.]		Declination, upper [Declinatio ſuper.]	lower [infer.]	The bright foot of Orion, east [Luc. pes Orion. orient.]
3h 50⅓m	21° 33′	27° 53′	27° 22½′	3 30
3h 54m 8	21° 32′	27° 53⅔′	27° 22⅓′	2 33
3h 56m 8	21° 30′	27° 54′	27° 22½′	2 3

Repetition of the lunar observations made in the morning, when it was near the 90th degree, and their continuation with those made afterwards, on the same day itself, at the Sun, even when the Moon was far beyond the 90th degree of the ecliptic from the east. [*Repetitio obſeruationum lunarium mane, cum ad 90 Gradum verſaretur, factarum, & continuatio cum ſequentibus poſtea & ipſo die ad Solem factis, etiam cum eſſet ☾ multum vltra 90 Eclipticæ ab oriente Gradum.*]

The Moon, therefore, being near the 90th degree of the ecliptic from the Ascendant, at the greatest remoteness of both epicycles, stood as follows: highest, near the end of ♊*, and in a great northern latitude.* [☾ *itaque apud 90 Eclipticæ Gradum ab Aſcendente verſans, in maxima remotione vtriuſque Epicycli ita ſe habuit, altiſſima circa finem* ♊ *atque in magna latitudine borea.*]

Hours, minutes [H. M.]	The eastern limb of the Moon from Aldebaran [Orient. limb. ☾ ab Aldeb.]	Declination, upper [Declinatio ſuper.]	lower [in-fer.]	The bright foot of Orion, west [Luc. pes Orion. occ.]
…	*24° 9′*			
4h 59m	*24° 10½′*			*3 5*
5h 2m	*24° 12⅓′*	*27° 55′*	*27° 23′*	*3 50*
5h 6m	*24° 13⅔′*	*27° 55′*	*27° 24′*	*4 46*
5h 9m	*24° 14¾′*	*27° 56′*	*27° 24½′*	*5 33*

Afterwards, vice versa, the Moon from the lower head of ♊. [*Poſtea viceverſa ☾ ab infer. Cap.* ♊]

Hours, minutes [H. M.]	Declination, upper [Declinatio ſuper.]		lower [infer.]	The bright shoulder of Orion, west [Luc.hum. Orion. occ.]
…	21° 20′	27° 55′	27° 23½′	
5^h $25¼^m$	21° 17′			0 8
5^h $28⅔^m$	21° 15′			0 59
5^h 30^m	21° 14′	27° 54¾′	27° 23′	1 16
5^h 33^m	21° 12′			2 5

Because the dawn was pressing in more and more, these could not be observed any further or more precisely. [*Propter Auroram ſeſe ingerentem magis magiſque hæc non poterant vlterius neque præciſius obſeruari.*]

The Moon should have been at the 90th degree at 5^h 28^m *A. M.* [☾ *debuit eſſe in 90 Gradu H. 5 M. 28 A. M.*]

Soon afterwards the eastern limb of the Moon passed through the meridian, having altitude as follows. [*Mox deinde tranſiuit orientalis limbus* ☾ *per Meridianum habens Altit. vt ſequitur.*]

At 5^h $36½^m$ *the eastern limb of the Moon in the meridian, and had the altitude* [*H. 5 M. 36½ Orientalis limbus* ☾ *in Meridiano & habuit Altitudinem*]

	by the steel instrument [per Chalyb.]	by the revolving quadrant [per Volub.]
upper [*ſuper.*]	62° 4′	62° 4¾′
lower [*infer.*]	61° 32⅚′	61° 32⅚′

At that time the bright shoulder of Orion was west, 2 50. [*Fuit autem tunc Lucidus humerus Orionis occidentalis 2 50*]

From this it will also be possible to work out, after a fashion, the right ascension of the eastern limb of the Moon, and for that reason also of the centre, by subtracting a quarter of a degree. [*vnde etiam Aſc. Rectam orientalis limbi* ☾ *quoddammodo ratiocinari licebit, & ob id etiam Centri per ſubtractionem quartæ partis gradus.*]

At 5^h 42^m *the Moon had declination, upper 27° 56⅙′, lower 27° 23¼′.* [*H 5 M. 42 habuit* ☾ *Declin. ſuper. 27 56⅙ infer. 27 23¼*]

N.B. The foot of Erichthonius, which is shared with the other horn of ♉, *had meridian altitude* [*N.B. Pes Erichtonij, qui communis eſt cum cornu altero* ♉ *habuit Altitudinem Meridianam*]

by the steel instrument [*per Chalyb.*]	62° 16¼′
by the revolving quadrant [*per Volub.*]	62° 15¼′
limited [*limitatam*]	62° 16′

And from this you will verify the meridian altitude of the Moon, bringing in also the declination of both the Moon and the star, observed near the meridian. Now the declination of that same star, limited, when it was near the meridian, was by the great

armillae 28° 8¾′, limited. Compare with this the true one, which should have been 28° 11¼′. Therefore about 2½ minutes are to be added to the declination of the Moon observed near the meridian, so that the true declination of the Moon at the time it crossed the meridian is, from the declination observed and limited, 27° 42¼′. But the altitude Meri- [*Atque hinc verificabis ☾ Altitudinem Meridianam, adhibita etiam Declinatione tam ☾ quam ſtellæ circa Meridianum obſeruatarum. Fuit autem eiuſdem ſtellæ Declinatio limitata, cum prope Meridianum eſſet, per Armillas maximas 28 8¾ limitata. Huic confer veram, quæ eſſe debuit 28 11¼. Addenda itaque 2½ fere Minuta ad declinationem ☾ obſeruatam iuxta Meridianum, vt ſit vera Declinatio ☾ tunc cum Meridianum tranſiret ex Declinatione obſeruata & limitata 27 42¼. Sed Altitudo Meri-*] *-dian gives 27° 43′, or even a little more; use this, so that the true declination of the Moon, when it was in the meridian, is, with respect to the eastern limb, as follows.* [*diana dat 27 43 vel etiam paulo plus, qua vtere, vt ſit vera Declinatio ☾, cum in Meridiano eßet, quoad orientalem limbum hoc modo.*]

Declination of the centre of the Moon [*Declinatio Centri ☾*]	*27° 43′*
Or rather, at most [*Vel potius ad ſummum*]	*27° 43½′*
Then, at about 5^h 52^m, the distance of the eastern limb of the Moon from Venus was taken by the semicircle [*Deinde Hora quaſi 5 M. 52 accipiebatur diſtantia orientalis limbi ☾ a ♀ per ſemicirculum*]	*75° 35′*
The declination of Venus was then north [*Fuit vero tunc Declin. ♀ B.*]	*8° 17′*

You can search out its altitude from the globe. [*Altitudinem eius potes ex globo rimari.*]

It was not possible to try this distance more often, because of the dawn growing stronger and dimming the sight of Venus. [*Neque ſæpius hanc diſtantiam licuit experiri ob auroram invaleſcentem & ♀ conſpectum attenuantem.*]

The declination of the Moon repeated [*Repetita Declinatio ☾*]

6^h 0^m [*H. 6 M. 0*]	*above* [*ſupra*]	*27° 57½′*	*27° 25⅔′*
6^h 5^m	*repeated* [*Repetita*]	*27° 58¼′*	*27° 26⅙′*
6^h 8^m		*27° 59′*	*27° 26¼′*
6^h 10^m	*repeated* [*Repetita*]	*27° 58⅔′*	*27° 26¼′*

From these limited values gather the one that agrees best. [*Ex hiſce limitatis collige id, quod maxime conuenit.*]

Afterwards the Moon was observed from the Sun by the semicircle, as follows. [Poſtea obſeruabatur ☾ a ☉ per ſemicirculum vt ſequitur.]

Hours, minutes [H. M.]	Distance of the Sun and the eastern limb of the Moon [Dist. ⊙ & ☾ orient. limbi]	Declination, upper [Declinatio super.]	lower [infer.]	Altitude of the Moon, upper [Altit. ☾ super.]	Altitude of the Sun [Altit. ⊙]	The Sun, east [⊙ or.]
8^h 5^m	94° 59½′	27° 59½′	27° 27⅔′	31½°	16° 30′	58⅔
8^h 13^m	94° 56′				17° 15′	56 40½
8^h 16^m	94° 54½′	27° 59⅔′	27° 27⅔′	30° 0′	17° 40′	
8^h $21⅔^m$	94° 52⅔′				18° 10′	54 29
8^h 29^m		27° 59⅚′	27° 28′	48° 52′		52 38
8^h 34^m	94° 46½′				20° 5′	51 16
8^h 35^m	94° 45½′	27° 58′	27° 28′	47° 10′	20° 20′	50 56
8^h 42^m	94° 44′	27° 58⅙′	27 ¼[1]	46° 45′		49 12
8^h $45⅙^m$	94° 42′				21° 25′	48 26
8^h $50⅚^m$	94° 38½′	27° 58½′	27° 27⅔′		21° 45′	47 1
8^h 54^m	94° 37′			45° 21′	22° 15′	46 15
8^h 57^m	94° 35½′	27° 57¼′	27° 27½′			
9^h 14^m	94° 31′	27° 57⅓′	27° 27¼′	42° 55′	24° 10′	42 37
9^h 18^m	94° 29′			42° 15′	24° 30′	41 30
9^h 21^m	94° 28′	27° 55⅓′	27° 26′		24° 50′	40 21
9^h 27^m	94° 26⅓′				25° 25′	39 56
9^h 29^m	94° 25⅓′	27° 55′	27° 26′	41° 11′	25° 40′	38 27
9^h 33^m	94° 24′	27° 57′	27° 27′	40° 25′	26° 0′	37 24
9^h 37^m	94° 23′			39° 31′	26° 30′	36 42
9^h 42^m	94° 21½′	27° 56½′	27° 28′	38° 56′	26° 55′	35 44
9^h 49^m	94° 18¼′			38° 16′	27° 30′	33 35
9^h 56^m	94° 16′	27° 56½′	27° 26⅔′	37° 18′	28° 0′	31 6
10^h 0^m	94° 14′	27° 57′	27° 27⅓′	36° 40′	28° 25′	30 18

Afterwards the Moon was observed from the Sun as before, so that its advance in the meantime, its place and its parallax might be known. [Postea obseruabatur ☾ a ⊙ quemadmodum antea, vt cognoscatur eius interea temporis promotio, locus & parallaxis.]

Hours, minutes, seconds [H. M. S.]	Distance of the Moon from the Sun [Dist. ☾ a ⊙]	Declination, upper [Declinatio super.]	lower [infer.]	Altitude of the upper limb of the Moon [Altit. super. limbi ☾]
12^h 27^m 0^s	93° 5⅚′	27° 53′	27° 24½′	about 18° [18 circiter]
12^h $33½^m$	93° 0½′			17° 49′
12^h 48^m 50^s	92° 54⅓′	27° 52½′	27° 25′	15° 5′
12^h 52^m 20^s	92° 50½′			14° 0′
12^h 58^m 20^s	92° 44½′	27° 52⅔′	27° 23¼′	13° 33′
1^h 2^m 0^s	92° 43½′	27° 52′	27° 22½′	13° 21′

[1] Thus in the codex. [Sic in codice.]

Calculation of the φαινομένων *of the Moon observed when it was very near the nonagesimal degree of the ecliptic.* [Calculus φαινομένων ☾ obseruat. cum eßet proxime nonages. gradum Eclipticæ.]

5^h 10^m, distance of the centre of the Moon from Aldebaran [H. 5 M. 10 Diſt. centri ☾ ab Aldeb.]	24° 0′
Declination of the centre of the Moon, limited [Decl. centri ☾ lim.]	27° 37½′
Angular difference of ascension, computed [Ang. diff. aſc. ſupp.]	22° 26′ 20″
Right ascension of Aldebaran [Aſc. R. Aldeb.]	63° 12′ 0″
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	85° 38′ 20″

5^h 28^m, when the Moon was exactly in the 90th degree, distance of the centre from the lower head of ♊ [H. 5 M. 28, cum ☾ exacte eßet in 90 gradu, diſt. centri ab inf. cap. ♊]	21° 29′
Angular difference of ascension [Ang. diff. aſ.]	24° 23′ 50″
Right ascension of the lower head of ♊ [Aſc. R. inf. cap. ♊]	110° 6′ 30″
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	85° 42′ 40″[1]

18 September, in the morning [DIE 18 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	*Distance of the eastern limb of the Moon from cor ♌ [Diſt. or. limbi ☾ a corde ♌]*	*Declination of the lower head of ♊ by the corrected armillae [Decl. inf. cap. ♊ per corr. arm.]*	*Declination of the Moon [Decl. ☾]*	*The bright foot of Orion, east [Luc. pes Orion. or.]*
4^h 9^m	*32° 3⅔′*	*28° 59½′*		*4 56*
		28° 59½′		
4^h 12^m	*32° 2½′*			*4 15*
4^h $18¾^m$			*26° 41⅙′*	*3 31*
			26° 7⅙′	*Altitude of the lower limb of the Moon [Alt. inf. limbi ☾]*
4^h 23^m	*32° 1¾′*		*26° 41′*	
among clouds [inter nubes]			*26° 6′*	*46° 50′*

Afterwards the Moon was observed from Venus. [Poſtea ☾ obſeruabatur a ♀.]

Hours, minutes [H. M.]	Distance of the eastern limb of the Moon from Venus [Diſt. or. limb. ☾ a ♀]	Declination of the Moon [Decl. ☾]	Altitude of the lower limb of the Moon [Alt. inf. limbi ☾]	Venus, east [♀ orient.]
5^h $56½^m$	51° 36′			76 48
5^h 57^m	51° 35′	26° 35½′	55° 7′	75 55
		26° 3′		
6^h 2^m		26° 32⅓′	55° 30′	
		26° 1′		

Hours, minutes [H. M.]	Distance of the eastern limb of the Moon from Venus [Dift. or. limb. ☾ a ♀]	Declination of the Moon [Decl. ☾]	Altitude of the lower limb of the Moon [Alt. inf. limbi ☾]	Venus, east [♀ orient.]
6^h $6¾^m$		26° 33½′	55° 55′	
		26° 1⅙′		*Azimuth of the eastern limb of the Moon [Azim. or. limbi ☾]*
6^h 12^m			*56° 20′*	*37° 0′*
6^h 17^m	*the Sun nearly risen [⊙ quaſi ortus]*	26° 31½′	56° 45′	35° 0′
		26° 1½′		
6^h 22^m		26° 31⅓′	57° 4′	
		25° 59⅔′		
6^h 25^m		26° 31⅔′	57° 20′	
		25° 59¾′		

With the Moon approaching Meridies. [☾ *ad Meridiem appropinquante.*]

Hours, minutes [H. M.]	Distance of the eastern limb of the Moon from the Sun [Dift. orient. limbi ☾ a ⊙]	Declination, upper/lower [Declin. ſup./inf.]	The Sun, east [⊙ orient.]
7^h 16^m	70° 52′		71 3½
7^h 18^m	70° 51′		70 33
7^h 21^m		26° 25⅔′	69 48½
		25° 54′	

Therefore the declination of the centre of the Moon, corrected, 26° 12½′. [*Ergo Declin. centri ☾ correcta 26 12½*]

At about 8^h the clock was corrected to the Sun, because it had moved 37^m faster than was right. [*Circa Horam 8 corrigebatur Horologium ad Solem, quod 37 Minutis iuſto celerius motum erat.*]

7^h $29½^m$, the eastern limb of the Moon crossed the meridian, having an altitude of [H. 7 M. 29½ Tranſiuit orient. limbus ☾ per Merid. habens Altitudinem]		
	60° 31′	upper [ſup.]
	60° 1½′	
by the steel instrument [per Chalyb.]	*60° 3′*	*lower, doubtful [inf., dubia]*

Approximately [En plati], because of small clouds. [*En plati propter nubeculas*]

One must consider that the upper horn was slightly inclined. [*Oportet conſiderare quod ſuperius cornu paulum erat inclinatum.*]

At 7^h 34^m the Sun was east, in the equator 66° 24′. Verify the times from this. [*H. 7 M. 34 Fuit ⊙ orientalis in æquatore 66 24. Hinc verifica tempora.*]

7^h 36½^m, repeated, upper [H. 7 M. 36½ Repetita ſup.]	
	60° 30½′
	59° 59½′
Azimuth of the eastern limb [Orient. limbi Azimuth]	*2° 45′*
The Sun, east [⊙ orient.]	*65 51*
Lower, by the steel instrument [Inferius per Chalyb.]	*59° 59⅓′*

Set down, therefore, the altitude of the lower limb of the Moon when it crossed the meridian [*Pone itaque Altitudinem infer. limbi ☾ cum per Meridianum tranſiret*]

	60° 1′
To this add for the centre [Cui adde pro centro]	*16′*
So that the true altitude of the centre was [Vt fuerit vera Altit. centri]	*60° 17′*
Or at most it was [Vel ad ſummum erat ea]	*60° 18′*
	34 5½
Declination of the centre of the Moon [Declinatio centri ☾]	*26° 12½′*
The same a little earlier by the verified armillae [Eadem paulo ante per Armillas verificatas]	*26° 12⅓′*
At least [Ad minimum]	*26° 12′*

N.B. The preceding observations were taken among rather sparse clouds; they are nevertheless fair for investigating the greatest latitude of the Moon. For at this time it was moving near the li- [*N.B. Antecedentes obſeruationes habitæ ſunt inter rariuſculas nubes, ſunt tamen mediocres pro inveſtiganda maxima ☾ Latitudine. Nam hoc tempore verſabatur ea iuxta li-*]

[1] Compare below, p. 400, after 19 September. [Cf. infra p. 400 poſt diem 19 Septembris.]

-mit, northern, in 24° ♋. Account must nevertheless be taken of the parallax, both with respect to longitude and to latitude. [*mitem boreum in 24 Gr. ♋. Habenda tamen eſt ratio parallaxeos tam quoad Longitudinem quam Latitudinem.*]

Afterwards, when the Moon was approaching the 90th degree, lacking parallax of longitude. [*Poſtea ☾ cum appropinquaret 90 Gradui carens Parallaxi Longit.*]

It must have been in the 90th degree at 8^h 45^m. [*Debuit eſſe in 90 G. H. 8 M. 45.*]

Hours, minutes [H. M.]	*Distance of the Moon and the Sun [Diſt. ☾ & ⊙]*	*Declination of the Moon [Declin. ☾]*	*Altitude of the Moon by the revolving quadrant [Alt. ☾ per Volub.]*	*The Sun, east [⊙ orient.]*
8^h 38^m		*26° 15⅓′* better [melior]		
		25° 44′		
8^h 40^m corrected [corr.]		*26° 14′*	*57° 51′*	*50 0*
		25° 45′	*57° 20′*	
9^h 6^m	70° 12′ better [melior]	26° 13½′ 25° 42¼′	55⅓°	43 34¼

Hours, minutes [H. M.]	*Distance of the Moon and the Sun [Diſt. ☾ & ☉]*	*Declination of the Moon [Declin. ☾]*	*Altitude of the Moon by the revolving quadrant [Alt. ☾ per Volub.]*	*The Sun, east [☉ orient.]*
9^h 13^m		26° 10½′	54° 55′	
		25° 41½′		
9^h 15^m	70° 4′*	26° 10′	54° 45′	41 30
*doubtful because of clouds [*dubia propter nubes]		25° 39½′		

N.B. So that the declination of the Moon that it had when it was near the 90th degree at about 8⅔^h could be corrected, the brighter of the two in the foot of Perseus, which is above the Pleiades in almost the same position, was taken earlier in the morning in its declination, [*N.B. Vt emendari poßit Declinatio ☾ quam habuit, cum eßet prope 90 Gradum circa Horam 8⅔, accipiebatur antea mane lucidior duarum in pede Perſei, quæ eſt ſupra Pleiades in eodem quaſi ſitu, in ſua declinatione,*]

and was found [& inuenta]	*I*	*30°34⅓′*
the same [eſt eadem]	*II*	*30°34⅔′*
And this with a single pinnule at least [Idque vnico ſaltem pinnac.]	*III*	*30°34⅚′*
In the year 89 the same star had the declination [Anno 89 habuit eadem ſtella Declinationem]		*30°36½′*

But the 6 following years increase its declination by about 1¼′, so that this year it is at least 30° 37¾′. Therefore about 3′ must be added to the declination of the Moon in such a position, so that it may stand as true. [*At 6 anni inſequentes augent eius Declinationem Minuto quaſi vno ¼, vt ſit hoc anno ad minimum 30 37¾. Sunt igitur adddenda ad declinationem ☾ in tali ſitu quaſi Minuta 3 vt conſtet vera.*]

But a trial can also be made by the transit of this star through the meridian this year. [*Sed poteſt etiam fieri periculum per tranſitum huius ſtellæ hoc anno per Meridianum.*]

19 September [DIE 19 SEPTEMBRIS.]

The Moon was observed again when it was roughly midway between the last quadrature and the following new moon, and that by day, as far as it was possible to take it from the Sun given that clearness of the sky, the Moon being dimmed by the light of the day. The clock was corrected to the Sun. [*Rurſus obſeruabatur ☾ cum eßet intermedia quaſi quadraturæ vltimæ & novilunio ſequenti, idque interdiu quantum ex Sole pro ea ſerenitate capere licuit ☾ attenuata ob lumen diej. Corrigebatur Horologium ad Solem.*]

Hours, minutes [H. M.]	*Distance of the centre of the Sun and the eastern limb of the Moon [Diſt. centri ☉ & ☾ or. limbi]*	*Declination [Declinatio], upper [ſuper.]*	*lower [in-fer.]*	*Altitude [Altitudo], the Sun [☉]*	*the Moon, lower limb [☾ inf. limb.]*	*The Sun, east [☉ orient.]*
9^h 57^m	*56° 52′*	*22° 43′*	*22° 12½′*	*27*	*52½*	

Hours, minutes [H. M.]	*Distance of the centre of the Sun and the eastern limb of the Moon [Diſt. centri ⊙ & ☾ or. limbi]*	*Declination [Declinatio], upper [ſuper.]*	*lower [in-fer.]*	*Altitude [Altitudo], the Sun [⊙]*	*the Moon, lower limb [☾ inf. limb.]*	*The Sun, east [⊙ orient.]*
10^h 5½^m	56° 48¼′	22° 40′	22° 11¼	27½	52	
10^h 9⅓^m	56° 46⅙′	22° 39½′	22° 10′	27⅔	51½	27 34
10^h 13^m	56° 44½′	22° 38½′	22° 8½	28		26 41
10^h 17⅓^m	56° 43′	22° 38⅔′	22° 7⅚′	28¼	51	25 34
10^h 21¾^m	56° 41′ good [bona]	22° 36¼′	22° 7½	28½		24 31
10^h 26½^m	56° 39½′	22° 35′	22° 5′		50	23 11

The Moon, however, must have been in the 90th degree at 9^h 37^m, namely 20^m before the observation was made. And therefore, taking account then of the subsequent motion from the Sun, by adding 10′ it must have been distant 57° 2′; to these add the semidiameter of the Moon, 14′, so that the true distance of the centres of both luminaries is 57° 16′. The apparent declination of the centre of the Moon at the same time was 22° 35′, account being taken, that is, of its increase and of the correction of the armillae. [*Debuit autem ☾ eße in 90 Gradu H. 9 M. 37 nempe 20 Minutis antequam obſeruatio fiebat. Ideoque tunc habita ratione motus ſequentis a ⊙ per add. 10 M. debuit diſtare p. 57 M. 2 quibus ſemidiameter ☾ add. 14 M., vt ſit vera diſtantia centri vtriusque luminaris 57 16. Declinatio vero centri ☾ viſa ad idem tempus 22 35, habita videlicet ratione ſui augmenti & correctionis Armillarum.*]

For the greatest latitude of the Moon [*PRO ☾ LATITUDINE MAXIMA*]

C, the lower head of ♊ *[C inf. cap.* ♊*]*	*declination 28° 56½′ [Decl. 28 56½]*	*right ascension 110° 7⅖′ [Aſc. R. 110 7⅖]*	*I. In the triangle CAB [I In triangulo CAB]*	*II. In the triangle ABD [II In triangulo ABD]*
D, Aldebaran [D Aldebora]	*15° 37¾′*	*63° 12⅓′*		
B, the Moon [B luna]	*27° 42½′*	*CB 21 30*		
A, the pole [A polus]		*BD 24 7*	*CAB 24 25½*	*BAD 22 32⅗*

Therefore on 16 September, when the Moon was near the 90th degree at 5^h 28^m, its declination is found from the foregoing to be 27° 42½′, and the limited distance then from the lower head of ♊ *21° 30′, and from Aldebaran 24° 7′, with respect to the centre. From this is gathered its* [*Ergo die 16 Septembris cum ☾ eßet iuxta 90 Grad. H. 5 M. 28 reperitur ex antecedentibus eius Declin. 27 42½ & tunc limitata diſtantia ab inferiori capite* ♊ *21 30, ab Aldebora vero 24 7 quoad centrum. Hinc colligitur ip-*] *equatorial difference from Aldebaran is 22° 32½′, from the lower head of* ♊ *24° 25½′, and from this the right ascension of the Moon is composed: with respect to Aldebaran 85° 45′, but with respect to the lower head of* ♊ *85° 42′. Taking, therefore, the mean of these, which is 85° 43½′, and applying the declination of the Moon prescribed above, 27° 42½′, there results* [*ſius differentia æquatoria ab Aldebora*

22 32½, ab inferiori capite ♊ *24 25½, hincque conflatur Aſc. R.* ☾ *reſpectu Aldeboræ 85 45. Sed quoad inferius caput* ♊ *85 42. Accipiendo itaque medium horum, quod eſt 85 43½ & applicando declinationem præſcriptam* ☾ *p.27 M.42½ prouenit*]

Longitude of the Moon in 26° 11⅙′ ♊, *latitude 4° 14⅓′ north [B.].* [☾ *Longitudo in 26 11⅙* ♊, *Latitudo 4 14⅓ B.*]

If, however, you carry these down to the transit of the Moon through the meridian, which followed shortly after, within 6 minutes of time, the longitude of the Moon would then have been in 26¼ ♊. *And so the right ascension 85° 47′. Applying, however, the declination of the Moon, which was then 27° 43′ north [B.], the latitude of the Moon comes out at 4° 14⅔′. You may therefore put 4° 15′ north [B.].* [*Si vero hæc ad tranſitum* ☾ *per Meridianum deducas, qui mox intra 6 Minuta temporis ſequebatur, fuerit tunc Longitudo* ☾ *in 26¼* ♊. *Ideoque Aſc. R. 85 47. Adhibita vero Declinatione* ☾ *quæ tunc erat 27 43 B., prouenit Latitudo* ☾ *4 14⅔. Potes itaque ponere 4 15 B.*]

But the parallax of latitude from the Prutenic calculation is then 27½′, so the true latitude will be 4° 42½′ north [B.]. And since the Moon, near the 90th degree, is distant 27° 40′ from the northern limit, the latitude ought to have been 4° 39′, if the greatest, 5¼; therefore 3½ are lacking. The ascending node [☊] in 27⅚ ♈. [*At Parallaxis Latitudinis ex calculo Prutenico tunc eſt M.27½, quare vera Latitudo erit 4 42½ B. Cumque diſtet a limite boreo* ☾ *circa 90 Gradum p.27 M.40, debuit eſſe Latitudo 4 39, ſi maxima 5¼, igitur deficiunt 3½.* ☊ *in 27⅚* ♈.]

On 18 September at 7½ʰ, when the eastern limb of the Moon was passing through the meridian, it is gathered from the foregoing observations of that day that the distance of the centre of the Sun and the centre of the Moon, everything having been limited and brought down to this time in the proper way, was 70° 58′, and the declination of the centre of the Moon 26° 12′ north [B.], the apparent declination of the Sun 1° 44′ south [M.], the longitude of the Sun, refracted, then 4° 24′ ♎, *the right ascension of the Sun 184° 2′, the angular difference of ascension 67° 45½′. The right ascension of the centre of the Moon is therefore 116° 16½′, and its declination 26° 12′. To these corresponds* [*Die 18 VIIbris H. 7½, cum* ☾ *orientalis limbus tranſiret per Meridianum, colligitur ex antecedentibus eius diej obſeruationibus quod fuerit diſtantia centri* ☉ *& centri* ☾ *omnibus limitatis & huc deductis debito modo p.70 M.58, & declinatio centri* ☾ *p.26 M.12 B., declinatio Solis viſa p.1 M.44 M., longitudo* ☉ *refracte tum 4 24* ♎, *Aſc. recta* ☉ *184 2, angulus differentiæ aſc. 67 45½. Aſcenſio R. itaque centri* ☾ *116 16½ & declinatio eiusdem 26 12. His reſpondet*]

Longitude of the Moon 23° 29⅓′ ♋, *latitude 4° 48⅙′ north [B.].* [☾ *Longitudo 23 29⅓* ♋, *Latitudo 4 48⅙ B.*]

On the same day at 8ʰ 45ᵐ, when the Moon was near the 90th degree of the ecliptic from the horizon, lacking parallax of longitude, it is gathered that it was distant centrally from the Sun 70° 25′ and had a declination, also with respect to the centre, of 26° 2′; the apparent declination of the Sun was then 1° 46′ and the apparent right ascension of the Sun 184° 5′. Subtract the angle of difference 67° 9′: right ascension of the centre of the Moon 116° 56′, its declination 26° 2′, to which corresponds [*Die eodem H.8 M.45, cum* ☾ *eſſet iuxta 90 Eclipticæ Gradum ab Horizonte carens Parallaxi*

Longitudinis, colligitur diſtitiße centraliter a ☉ p.70 M.25 & habuiße declinationem etiam quoad centrum P.26 M.2, fuit autem tunc declinatio ☉ viſa p. 1 M. 46 & Aſc. R. ☉ viſa 184 5. Subtrahe angulum differentiæ 67 9, Aſc. R. centri ☾ 116 56, declinatio eiusdem 26 2, quibus reſpondet]

Longitude of the Moon 24° 6⅙′ ♋, latitude 4° 44½′ north [B.]. [☾ *Longitudo 24 6⅙ ♋, Latitudo 4 44½ B.*]

On the 19th at 9^h 37^m, the Moon being in the 90th degree, the distance of the centres of the Sun and the Moon is then gathered as 57° 16′, and the limited declination of the Moon then 22° 35′ north [B.]. Moreover, the apparent declination of the Sun was 2° 11′ and the right ascension 185° 2′; subtract the angle of difference 55° 44½′; from this results the right ascension of the centre of the Moon 129° 17½′, its declination 22° 35′. From which [*Die 19 H.9 M.37, luna exiſtente in 90 gradu, diſtantia tunc centrorum ☉ & ☾ colligitur 57 16 & declinatio ☾ limitata tunc 22 35 B. Fuit inſuper ☉ declinatio viſa 2 11 & Aſc. R. 185 2, ſubtrahe angulum differentiæ 55 44½, hinc prouenit Aſc. R. centri ☾ 129 17½, Declinatio eiusdem 22 35. Vnde*]

Longitude of the Moon 5° 52⅗′ ♌, latitude 3° 50⅙′ north [B.]. [☾ *Longitudo 5 52⅗ ♌, Latitudo 3 50⅙ B.*]

20 September, in the morning [DIE 20 SEPTEMBRIS, MANE.]

Observation of the Moon when it was midway between the last quadrature and the new moon; but it had a large parallax. [*Obſeruatio ☾ cum eßet media inter vltimam Quadraturam & Nouilunium, ſed habuit magnam Parallaxin.*]

Hours, minutes [H. M.]	*Distance of Venus and the eastern limb [Diſt. ♀ & or. limbi]*	*Declination of the Moon [Declinatio ☾], upper [ſuper.]*	*lower [infer.]*	*Declination of Venus [Declin. ♀]*		*Altitude of Venus [Alt. ♀]*	*Altitude of the Moon, lower limb [Alt. ☾ inf. limbi]*	*The bright foot of Orion, east [Luc. pes Orion. or.]*
5^h 22^m	26° 7½′	18° 49′	18° 18′	6° 26½′	6° 27′	10⅓°	33¼°	14 0
5^h 30^m	26° 6′			6° 26′ in both [vtroque]			34¼°	15 53
5^h 36^m	26° 4′	18° 46′	18° 17′			12°	35°	16 57
5^h 42½^m	26° 2′			6° 25′	6° 25⅔′	12° 41′	36° 2′	
5^h 47⅚^m	26° 0½′	18° 44¾′	18° 15½′			13° 51′		

N.B. The observations made on Venus on the 15th can be applied here by the daily motion, and compared with the following ones to be taken on Venus, if any can be had close at hand. [*N.B. Poßunt obſeruationes in ♀ factæ Die 15 huc applicari per motum diurnum & conferri cum ſequentibus in ♀ accipiendis, ſi quæ in propinquo haberi queant.*]

The Sun rose among clouds at 6^h 5^m, approximately [en plati]. It should then have been at about 6⅓^h. [☉ *inter nubes oriebatur H. 6 M. 5 en plati. Debuit tunc eße H. 6⅓ quaſi.*]

On this day the Moon should have been near the 90th degree at 11^h 3^m. [☾ *debuit hoc die eße iuxta 90 Gradum H. 11 M. 3.*]

Hours, minutes [H. M.]	Distance of the eastern limb of the Moon from the Sun [Diſt. orient. limbi ☾ a ☉]	Declination of the Moon [Declinatio ☾]	Altitude of the Sun [Altit. ☉]	Altitude of the centre of the Moon [Altit. centri ☾]	The Sun, east [☉ orient.]
$11^h\ 32^m$	42° 50½′		31° 0′		8 35
$11^h\ 45⅓^m$		17° 24′ 17° 23⅙′ of the centre [centri]		44° 3½′	5 30
$11^h\ 59^m$	42° 38½′	17° 27½′ upper [ſup.]			2 47
	the Sun was not shining enough [☉ non ſplendebat ſatis]	16° 52½′ lower [inf.] among clouds [inter nubes]			

Somewhat later, namely when the Sun was still 8° 35′ before the meridian, the distance of the eastern limb of the Moon from the Sun was [*Aliquanto vero poſt, cum videlicet ☉ eßet ante Meridianum adhuc p.8 M.35, erat diſt. orientalis limbi ☾ a ☉*]

11 26 42° 50½′

11 49 42° 38½′although in the last observation the Sun did not appear clearly enough [licet in vltima obſeruatione ☉ non ſatis videbatur clare.]

Around the middle of these times, however, the declination of the middle, or centre, of the Moon, taken roughly, was 17° 24′. But concerning this, not doubtful; middling, however. The altitude of the centre of the Moon, according to the first observation, which was also the better, 45° very nearly. Put, therefore, at $11^h\ 3^m$, the distance of the Moon from the centre of the Sun 43° 3′. But for the semidiameter add 12, because the Moon was very thin, so that the true distance of the centre of the Moon from the Sun was then 43° 15′. The declination of the Moon, however, you can adjust roughly: 17° 30′ north [B.]. [*Fuit vero circa medium horum temporum Declinatio medietatis ſiue centri ☾ vtcunque ſumpta p. 17 M.24. Sed de hac non dubium, mediocris tamen. Altitudo vero centri ☾ iuxta primam obſeruationem, quæ etiam melior erat, p. 45 proxime. Pone itaque H. 11 M. 3 diſt. ☾ a centro ☉ 43 3. Sed propter ſemidiametrum adde 12, quia luna admodum tenuis erat, vt fuerit tunc vera diſtantia centri ☾ a ☉ 43 15. Declinationem vero ☾ potes vtcunque adaptare p. 17 30 B.*]

The Sun was then 6° 31½′ ♎, its declination 2° 36′ south [M.], right ascension 185° 59′; the ascensional difference, by the attached figure, 38° 51′, to be subtracted. Right ascension of the Moon 147° 8′. Applying, therefore, the declination 17½, there results: longitude of the Moon 23° 25½′ ♌, latitude 3° 58½′ north [B.]. [*Fuit tunc ☉ 6 31½ ♎, eius Declinatio 2 36 M., Aſc. R. 185 59, Differentia aſcenſionalis per adiectam figuram 38 51 ſubtrahenda. Aſc. R. ☾ 147 8. Adhibita igitur Declinatione 17½ prouenit ☾ Longitudo 23 25½ ♌, Latitudo 3 58½ B.*]

Diagram. A small figure of curved lines set at the left of the paragraph ”lior erat … Latitudo 3 58½ B.” (the ”adiecta figura” of the text): two arcs descend

from a vertex A at the top, the left one to B at the lower left (passing D a little above B), the right one to E at the lower right (passing C a little above E). An arc runs from D across to E, sagging downwards, and a second arc runs from B up to C; the two cross arcs intersect near the middle of the base. No figures or words are printed in it.

- A (top): A
- C (right side, above E): C
- D (left side, above B): D
- E (lower right): E
- B (lower left): B

21 September, in the morning [DIE 21 SEPTEMBRIS, MANE.]

Then[1] also on the Moon, now old and approaching the Sun, inasmuch as it was at least 2½ days distant from the new moon. [*Deinde[1] etiam in ☾ iam veteri & Soli appropinquanti vtpote 2½ diebus ſaltem a Nouilunio diſtante.*]

Hours, minutes [H. M.]	*Venus and the eastern limb of the Moon [♀ & or. limb. ☾]*	*Declination of Venus [Decl. ♀]*	*Declination of the Moon [Declinatio ☾]*	*Altitude of Venus [Altit. ♀]*	*Altitude of the Moon [Altit. ☾]*	*Sirius, east [Syrius orient.]*
5h 50½m	*12 31*	*5° 56½′*		*13*		*2 23*
5h 54m	*12 29⅔*	*5° 56′*	*12° 49⅚′*	*12° 18½′*	*25*	*1 24*
5h 59m	*12 28½*	*5° 55¼′*	*12° 50′*	*12° 19¾14⅙*	*25½*	

22 September, in the morning [DIE 22 SEPTEMBRIS, MANE.]

Meanwhile, while the students in the observatory outside the house were noting from the heavens what has been recorded for this day, I myself[2] saw the following by eye, higher up at the house of Uraniborg. [Interea dum ſtudioſi in obſeruatorio extra domum ea, quæ ad hunc diem annotata ſunt, cœlitus denotant, ego ipſemet[2] ſuperius apud domum Vraniburgi ſequentia ad oculum vidi.]

When the last of the Belt of Orion was on the meridian, the centre of the whole lunar body (which also appeared clearly enough, besides the small illuminated part) was distant from the star Venus by about two diameters of its body, that is, 1⅙° as nearly as possible; and that on the straight line which seemed to be drawn from Venus through the Moon to the Bright Star of Lyra, which appeared aslant near the northern horizon. Both Venus and the Moon, moreover, were as it were level with respect to the horizon as regards their centres, except that the Moon was seen slightly higher. [Cum vltima Balthei Orionis eßet in Meridiano, diſtabat centrum totius corporis lunaris (quod etiam ſatis evidenter apparuit præter particulam illuminatam) a ♀ ſtella, quaſi per duas diametros ſui corporis, id eſt Gr. 1⅙ quam proxime, idque in ea linea recta, quæ duci videbatur a ♀ per ☾ in Lucidam Lyræ, circa Septentrionalem Horizontem decliuiter apparentem. Erant autem tam ♀ quam ☾ quaſi in æquilibrio Horizontis quo ad centra, niſi quod ☾ paulo altior cernebatur.]

Mercury, however, was lower than both, and formed with them a triangle not very large, but with unequal sides, so that from Mercury to the centre of the Moon was nearly double the interval from the centre of the Moon to Venus. [☿ autem erat vtriſque decliuior & conſtituebat cum illis triangulum non adeo magnum, ſed laterum inæqualium, ita vt a ☿ ad centrum ☾ fuerit ferme duplum eius interualli, quod a ☾ centro ad ♀.]

[1] That is, after the observations of Venus. [Id eſt, poſt obſervationes Veneris.]
[2] These were not written by Tycho himself. [Hæc non ab ipſo Tychone ſcripta ſunt.]

When the bright star in the shoulder of Orion was on the meridian, these three planets showed such a φάσιν [Greek: phasin, "phase, appearance"] as the following figure indicates. [Quando lucida humeri Orionis in meridiano erat, talem φάσιν oſtendebant hi tres planetæ, prout ſubſequens figuratio deſignat.]

DB two Moons [*DB duæ Lunæ*]
DC three and a half Moons [*DC tres & ſemis Lunæ*]
CB 3.0
The angle CAB was nearly a right angle. [*Angulus CAB erat ferme rectus.*]

A straight line drawn from Mercury through the lower horn of the Moon went to the middle and brighter of the neck of ♌, as far as could be discerned by eye. [Linea vero recta ducta a ☿ per inferius cornu ☾ tendebat in mediam & lucidiorem Ceruicis ♌ quantum oculis diſcernere licuit.]

When the third part of its phase, which is between the bright shoulder of Orion and the Greater Dog, was seen on the meridian, so that the bright shoulder was nearer the meridian and had not passed it by as much as Sirius was removed towards the east, the same planets appeared in this way. [Quando tertia pars eius phaſis, quæ eſt inter lucidum humerum Orionis & Canem maiorem, videbatur in meridiano, ita vt lucidus humerus propior eßet meridiano, nec tantum eundem præterierat, quantum Syrius ad ortum remouebatur, tali modo apparebant ejdem Planetæ.]

AC and AB are equal, except that AC a little longer. CA was directed almost to the zenith, inclining at least a little at the top towards the south; AC and AB, moreover, were about three Moons, or very nearly 2 degrees. [*AC & AB ſunt æquales, niſi quod AC paulo longior. CA dirigebatur ferme in verticem paululum ſaltem inclinans ſuperius verſus meridiem, erant autem AC & AB quaſi tres Lunæ vel 2 proxime gradus.*]

Meanwhile the distance of Venus and Mercury was also taken with the Radius, and that twice: [Interea vero etiam per Radium capiebatur diſtantia ♀ & ☿, idque bis:]

$5^h\ 32^m$ [H. 5 M. 32]	$3^\circ\ 4'^1$
$5^h\ 35^m$	$3^\circ\ 1\frac{1}{2}'^1$

For these you can set up a roughly intermediate distance, namely 3° 2′ [tres Gr. 2 M.], without perceptible error. [Pro quibus potes conſtituere diſtantiam quaſi intermediam vtpote tres Gr. 2 M. absque ſenſibili errore.]

But the observation by the sextant, from their measured places, gives the distance 2° 16′. [*Sed obſeruatio per Sextantem ex locis eorum menſis dat diſt. 2 16.*]

At 5^h 45^m the declination of the Moon was: upper 6° 4′, [*H.5 M.45 fuit ☾ Decl. ſuper. 6 4*]

lower 5° 40′ [*infer. 5 40*]

The Greater Dog, east 2 52 [Canis maior orient. 2 52]

Diagram. A reproduced manuscript drawing (the "ſubſequens figuratio" of the text) to the right of the first paragraphs. The Moon is drawn as a circle shaded with vertical hatching, with a dark spot inside and a thick crescent along its lower-left edge. A star at the right is marked B, with the sign of Venus beside it; a star at the lower left is marked C, with the sign of Mercury standing to its left. Solid lines run from the Moon to B (two lines, one from its upper edge and one from its centre), from the Moon's left edge and from its lower edge down to C, and from B down to C. Dashed lines run from C up past the right side of the Moon, one of them continuing to a star at the top right, beside which handwritten words stand. At the far left a vertical line, with a dotted line beside it, carries a handwritten word written upwards. A dot stands between the Moon and C.

- A (upper left of the Moon's circle): A
- B (star at right): B; beside it the sign ♀
- C (star at lower left): C; to its left the sign ☿
- line from the Moon's centre to B: "10", preceded by a stroke crossing the line [?]
- line from the Moon's lower edge to C: a mark resembling a small "a" or "p" [?], a dot, and a mark resembling "2" [?]
- line from B to C: "3", with a crossing tick and a dot
- star at the top right: "media" and a second handwritten word below it [?], followed by a large looped stroke [?]
- vertical line at the far left: a handwritten word written upwards [?]

Diagram. A second reproduced manuscript drawing, below the first, beside the paragraphs "AC & AB ſunt æquales …" to "Canis maior orient. 2 52" (the planets "tali modo" of the text). The Moon is drawn as an unshaded circle with a thick crescent along its lower-left edge. A at the left edge of the circle; a solid line runs from A through the circle to a star at the right marked B, with the sign of Venus above it; a solid line runs from A down to a star at the lower left marked C, with the sign of Mercury to its left, and a dashed line runs beside it; a solid line joins B and C. At the upper left a handwritten word stands vertically.

- A (left edge of the Moon's circle): A
- B (star at right): B; above it the sign ♀
- C (star at lower left): C; to its left the sign ☿
- line from B towards C, just below B: two or three faint small marks [?]

• upper left: a handwritten word written vertically [?]

At 5^h 40^m the lower limb of the Moon was taken from Venus with the Radius: 1° 42′ [partis vnius M. 42]. And a little later, namely at 5^h 47^m, the same was found to be 1° 44′. From these it is gathered that the distance of the centres of the Moon and Venus at about $5¾^h$ was 1° 40′ as nearly as possible. [H. 5 M. 40 Inferior limbus ☾ capiebatur a ♀ per Radium partis vnius M. 42. Et paulo poſt, videlicet H. 5 M. 47 deprehendebatur eadem p. 1 M. 44. Ex his colligitur diſtantia centrorum ☾ & ♀ circa H.5¾ fuiße p.1 M.40 quam proxime.]

Their declinations, however, about the same time you can gather from the other observations made on this same day and recorded on these nearby pages. [Declinationes vero eorundem circa idem tempus colligere potes ex reliquis obſeruationibus hoc eodem die factis & in his proximis pagellis annotatis.]

[1] Struck through with lines. [Lineis inducta.]

28 September [DIE 28 SEPTEMBRIS.]

Since in the intervening days after the 23rd, on which we observed the eclipse of the Sun in some manner among rather scattered clouds, and the 25th, when Mercury together with Venus were taken once and again in the morning, approximately [ἐν πλάτει], however — on account of the inconstancy of the clear weather — on this day at last, before the setting of the Sun, some clear weather shone out. And since the Moon was at the beginning of the last decury of ♐, in southern latitude, tending to the greatest limit, and so for that reason not far from its greatest depression in the meridian, we gave our attention, with what accuracy was possible, to noting its height from the heavens. Although the light of the day, because the Sun was still above the horizon, weakened the Moon (so that it did not present itself clearly enough to the eyes) and hindered the most exact certainty of the observation, the following were nevertheless found. [Cum intermedijs diebus poſt 23, quo ☉ Eclipſin aliquo modo inter rariuſculas nubes obſeruauimus, & diem 25, quando ☿ cum ♀ ſemel atque iterum mane accepti ſunt ἐν πλάτει tamen, ob ſerenitatis inconſtantiam, hoc tandem die ante occaſum ☉ aliqualis affulſit ſerenitas. Et quoniam ☾ verſabatur in vltimæ decuriæ ♐ principio iuxta latitudinem auſtrinam, ad limitem maximum tendentem, idque ob id non longe a maxima decliuitate in Meridiano, ad eius ſublimitatem cœlitus denotandam, qua fieri poterat accuratione, attendimus. Diej lumine, ob $☉^{lem}$ adhuc ſupra Horizontem exiſtentem, $☾^{nam}$ (quominus oculis ſe ſatis apparenter ingereret) attenuante & obſeruationis exquiſitißimam certitudinem impediente, inuenta tamen ſunt ſequentia.]

First the clock was corrected to the Sun by its equatorial distance, as far as could be done at that low position of the Sun, where account must also be taken of its refraction. [Primo corrigebatur horologium ad $☉^{lem}$ per eius diſtantiam æquatoriam, quoad fieri poterat in iſta decliuitate ☉, vbi etiam refractionis eius habenda eſt ratio.]

Afterwards, when the western limb of the Moon, which was seen whole, touched the meridian, and that at 4^h $43½^m$ [Hora 4 M. 43½], and the Sun, then west, appeared in the equatorial armilla at 70° 21½′ [p. 70 M. 21½], the meridian altitude of the Moon was as follows [Poſtea cum occidentalis limbus ☾ qui integer viſus eſt, Meridianum attigit, idque Hora 4 M. 43½, & ☉ tunc occidentalis in Armilla æquatoria appareret p. 70 M. 21½, fuit ☾ Altitudo Meridiana hoc modo]

(the Sun west 70 21½, nearly 4^h $41½^m$) [*(☉ occident. 70 21½, fere H. 4 M. 41½)*]

	Upper horn [cornu ſuperius]	*Lower [inferius]*
by the steel instrument [per Chalyb.]	5° 24¼′	4° 58′
by the revolving quadrant [per Volub.]	5° 22′	4° 55′

The difference of these is a little greater than 2′ [2 M.]; intolerable indeed, but excusable in the Moon, which for the reasons stated above presented itself to the eyes with difficulty. [Differentia horum eſt paulo maior 2 M., intolerabilis quidem, ſed in ☾ ob cauſas ſupra dictas difficulter oculis ſe ingerentem excuſabilis.]

Put, therefore, the altitude of the centre of the Moon 5° 10′ [p. 5 M. 10], and you will scarcely err by one M. [vno M.], on this side or beyond. [Pone itaque Altitudinem centri ☾ p. 5 M. 10 & vix vno M. aberrabis, cis vel vltra.]

29 September [DIE 29 SEPTEMBRIS.]

The Moon was observed when it was 20° [20 Gr.] from the meridian, $7½^h$ [H. 7½], because earlier it was not clear. The Moon in the 90th degree [in 90 g.], $5¼^h$ [H. 5¼]. [Obſeruabatur ☾ cum a Meridiano abeßet 20 Gr., H. 7½ quia prius non erat, ſerenum. ☾ in 90 g. H. 5¼.]

Corrected times [Tempora correcta]	Declination of the Moon, lower/upper [Declin. ☾ inf./ſup.]	Altitude of the lower limb of the Moon [Altit. inf. limbi ☾]	The bright star of the Vulture, west [Lucida Vult. occ.]
6^h 51^m	29° 16′ 28° 50′	3° 0′	4 25
6^h 56^m	29° 17′ 28° 50′	2° 55′	5 41
7^h 2^m	29° 17′ 28° 49⅔′	2° 40′	7 13

You can compare with yesterday's declination. [Potes conferre cum Declinatione heſterna.]

Hours, minutes [H. M.]	Distance of the western limb of the Moon from the eastern shoulder of ♒ [Diſt. occid. limbi ☾ ab or. hum. ♒]	Declination [Declin.]	Altitude [Altit.]	The Vulture, west [Vult. occ.]
$7^h\ 12^m$	40° 56′	29° 21′ 28° 47½′		9 44

Hours, minutes [H. M.]	From the hinder one in the tail of ♑ [A poſteriore in cauda ♑]	Declination [Declin.]	Altitude [Altit.]	The Vulture, west [Vult. occ.]
$7^h\ 19^m$	38° 29⅚′	29° 16½′ 28° 46′	2⅙°	11 24
$7^h\ 25^m$	38° 26′	29° 16¼′ 28° 45⅚′	1° 55′	13 7
$7^h\ 30^m$	38° 24½′	29° 16′ 28° 45′	1° 45′	14 20

About the same time or a little later the declination of the bright star in the head of ♐ was taken, which seemed to be as it were in a straight line with both horns of the Moon and the Bright Star of Lyra, approximately [ἐν πλάτει], however. Its declination, moreover, was [Circa idem tempus vel paulo poſt accipiebatur Declinatio Lucidæ ſtellæ in capite ♐, quæ videbatur quaſi in recto ductu cum vtroque cornu ☾ & lucida Lyræ, ἐν πλάτει tamen. Fuit autem eius Declinatio]

		Altitude [Altitudo]
with one [vno]	21° 31′	
with the other pinnule [alt. pinn.]	21° 30½′	*8½*

I took the declination of this star chiefly for the sake of testing the armilla, because it was in almost the same position as the Moon with respect to the meridian. [Accepi autem huius ſtellæ declinationem potißimum propter Armillæ examinationem, quia erat in conſimili quaſi cum ☾ poſitu a Meridiano.]

N.B. The declination of the brighter star in the head of ♐ was observed at altitude 8½ [*N.B. Lucidioris ſtellæ in capite ♐ obſeruabatur Declinatio in Altitudine 8½*]

21° 30½′
21° 31′

From these correct the preceding, as was also noted earlier for this reason. [*Ex his corrige antecedentia vt antea quoque ob id annotatum eſt.*]

The last day of September, in the evening [DIE VLTIMO SEPTEMBRIS, VESPERI.]

The Moon near its greatest southern latitude. The Moon was in the 90th degree [in 90 Gr.] at 5^h 31^m [H. 5 M. 31]. As soon as Jupiter could be seen, the western limb of the Moon was observed from Jupiter by the semicircle. Corrected times. [☾ iuxta maximam Latitudinem Auſtrinam. ☾ in 90 Gr. fuit H. 5 M. 31. Cum primum conſpici potuit ♃, obſeruabatur occidentalis limbus ☾ per Semicirculum a ♃. Tempora correcta.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination: upper [Declinatio ſuper.]	Lower [infer.]	Altitude of the lower horn [Altit. inf. cornu]	Altitude of Jupiter [Altit. ♃]	The Vulture, east [Vultur. orient.]
5^h $50¾^m$	64° 40½′				6° 35′	
5^h 55^m	64° 40′	27° 26⅔′	27° 59′	5° 45′		
6^h $7⅚^m$	64° 38½′	27° 26½′	27° 59½′		8° 40′	5 24
6^h 11^m	64° 37⅔′	27° 26½′	28° 0⅙′		10° 10′	4 27
6^h 19^m	64° 35′					2 26
6^h 28^m	64° 31′	27° 27′	28° 0¼′		12° 0′	0 16

6^h 39^m the western limb of the Moon passed through the meridian, having altitude [6 39 Tranſiuit occid. limbus ☾ per Merid. habens Alt.]

The Vulture, west [Vultur occid.]
2 23

	Of the upper limb [ſuperioris limbi]	Of the lower [inferioris]
by the steel instrument [per Chalyb.]	6° 43½′	6° 10′
by the revolving quadrant [per Volub.]	6° 44′	6° 11′

N.B. I put the declination of the centre of the Moon 27° 40′ and the distance from Jupiter 64° 20′ at about $6⅓^h$ [iuxta horam 6⅓]. The longitude of the Moon was found in 25° 13′ ♍, the latitude 6° 37′ south [M.][1]. But approximately [en plati]. [*N.B. Poſui declinationem centri ☾ 27 40 & Diſtantiam a ♃ 64 20 iuxta horam 6⅓. Inventa eſt Longitudo ☾ in 25 13 ♍, Latitudo 6 37 M[1]. Sed en plati.*]

3 October, in the evening [DIE 3 OCTOBRIS, VESPERI.]

Hours, minutes [H. M.]	The western limb of the Moon from Jupiter [Occ. limbus ☾ a ♃]	Declination: upper [Declinatio ſuper.]	Lower [in-fer.]	Altitude of the upper limb [Alt. ſuper. limbi]	Altitude of Jupiter [Altit. ♃]	The Vulture, east [Vultur or.]
$5^h\ 53^m$	27° 1⅔′	16° 9¼′	16° 40⅙′	20° 20′	8° 10′	
$5^h\ 58^m$	27° 1′			8° 27′	8° 46′	4 55
$6^h\ 2^m$	27° 0′	16° 8½′	16° 39½′	8° 39′	9° 15′	4 5
$6^h\ 7^m$	26° 59⅔′			9° 3′	9° 57′	2 50
$6^h\ 11^m$	26° 59½′	16° 8′	16° 38′	9° 25′	10° 22′	1 55
$6^h\ 14^m$	26° 58′			9° 52′	10° 57′	0 57
$6^h\ 17^m$	26° 56′	16° 7′	16° 37⅔′	10° 10′	11° 21′	0 12

Vice versa, the same limb of the Moon was observed from the lower horn of ♍. [Viceverſa idem limbus ☾ obſeruabatur ab inferiori cornu ♍.]

Hours, minutes [H. M.]		Declination: upper [Declinatio ſuper.]	Lower [in-fer.]	Altitude of the lower limb [Alt. inf. limbi]	Altitude of the horn of ♍ [Alt. cornu ♍]	The Vulture, west [Vultur occ.]
$6^h\ 28^m$	32° 34′	16° 5′	16° 34½′	10° 32′		2 29
$6^h\ 33^m$	32° 37′			10° 55′		3 43
$6^h\ 36^m$	32° 40′	16° 4⅚′	16° 35′	11° 10′	17° 55′	4 26
$6^h\ 40⅓^m$	32° 41′			11° 29′		
$6^h\ 42½^m$	32° 42′	16° 3′	16° 31⅔′	11° 45′		6 17
$6^h\ 49^m$	32° 44′			12° 10′		7 42
$6^h\ 52^m$	32° 45⅓′	16° 1½′	16° 30¼′	12° 30′	17° 56′	8 34

Afterwards the declination of the bright star of the tail of ♍ was taken: 17° 56′, 17° 56⅙′. [Poſtea capiebatur Declinatio Lucidæ Caudæ ♍ 17 56, 17 56⅙.]

$9^h\ 5^m$ the western limb of the Moon passed through the meridian, having altitude [9 5 Tranſiuit occid. limbus ☾ per Merid. habens Alt.]

of the upper horn [ſuperioris cornu]	by the steel instrument [per Chalyb.]	18° 30′	by the revolving quadrant [per Volub.]	18° 31⅔′
of the lower [inferioris]		18° 2½′		18° 4½′
Declination [Declin.]	15° 35′	16° 8′	The outermost of the wing of Pegasus, east [Extrema alæ Pegaſi orient.]	23 45

Corrected time [Temp. corr.]	Distance of the western limb of the Moon from the left shoulder of ♒ [Dift. occ. limbi ☾ a ſin. hum. ♒]	Declination: upper [Declinatio ſuper.]	Lower [infer.]	The outermost of the wing of Pegasus, east [Extrema alæ Peg. orient.]	
$9^h\ 20^m$	18° 34½′			20 8	
$9^h\ 26^m$	18° 36′	15° 34′	16° 6¾′	18 38	Distances uncertain because of [Dift. incertæ propter]
$9^h\ 29^m$	18° 38′			17 47	the brightness of the Moon. [ſplendorem ☾.]

[1] Compare the computation of the place of the Moon below, after 16 October. [Confer calculum loci ☾ infra, poſt diem 16 Octobris.]

Corrected time [Temp. corr.]	Distance from Jupiter [Diſtantia a ♃]	Declination: upper [Declinatio ſuper.]	Lower [infer.]
$9^h\ 32^m$	25° 40′	15° 32½′	16° 4′
$9^h\ 35^m$	25° 39½′		
$9^h\ 39^m$	25° 38′	15° 32′	16° 3¾′
$9^h\ 42^m$	25° 37′		

$10^h\ 20½^m$ Declination of the outermost of the wing of Pegasus [Declinatio extremæ alæ Pegaſi]	13° 4′
for correcting the armillae [pro armillis corrigendis]	13° 3⅚′

4 October [DIE 4 OCTOBRIS.]

In the evening the Moon was observed, still very nearly midway between the square and the opposition, and about the 90th degree [circa 90 Gr.]. Distance of the western limb of the Moon from the left shoulder of ♒. [Veſperi obſeruabatur ☾ adhuc media inter □ & ☍ proxime & circa 90 Gr. Diſtantia occid. limbi ☾ a ſiniſtro humero ♒.]

Hours, minutes [H. M.]	Distance [Dift.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the lower horn [Alt. inf. cornu]	The Vulture, west [Vultur occid.]
$6^h\ 37^m$	27° 2′	10° 49′ 11° 21⅔′	12° 15′	5 27
$6^h\ 42^m$	27° 3⅙′		12° 45′	6 48
$6^h\ 44^m$	27° 4′	10° 48½′ 11° 22′	13° 0′	7 22
$6^h\ 51^m$	27° 6′		13° 44′	9 9
$6^h\ 55^m$	27° 7⅔′	10° 46½′	14° 2′	9 53

Hours, minutes [H. M.]	Distance [Dift.]	Declination, upper/lower [Declin. fup./inf.]	Altitude of the lower horn [Alt. inf. cornu]	The Vulture, west [Vultur occid.]
		11° 21′		

Vice versa, from the bright star of ♈. [Viceverſa a Lucida ♈]

Hours, minutes [H. M.]	Distance [Dift.]	Declination, upper/lower [Declin. fup./inf.]	Altitude of the lower horn [Alt. inf. cornu]	The Vulture, west [Vultur occid.]
7^h $1½^m$	51° 56¼′		14° 50′	11 37
7^h $5½^m$	51° 55′	10° 44⅔′	15° 2′	12 36
		11° 28′		
7^h 9^m	51° 53⅔′		15° 21′	
7^h 11^m	51° 51½′	10° 44′	15° 36′	
		11° 18′		

For the correction of the armillae the declination of Jupiter was observed: 3° 2′, 3° 1⅔′. [Pro Armillarum correctione obſeruabatur Declinatio ♃ 3 2 / 3 1⅔]

7 28 The altitude of Jupiter was then 20° 10′ by the revolving quadrant, the Vulture west 18 12. [7 28 Altit. ♃ tunc fuit 20 10 per Volub., Vultur occidentalis 18 12]

7 October [DIE 7 OCTOBRIS.]

N.B. The Moon full, in apogee, and near eclipsing. The Moon in the 90th degree of the ecliptic, $9⅖^h$ [H. 9⅖]. [N. B. ☾ plena in apogæo & circa eclipſationem. ☾ in 90 Gradu Eclipticæ H. 9⅖.]

Corrected times [Temp. correcta]	Distance of the western limb from the mouth of Pegasus [Dift. occ. limbi ab ore Pegaſi]	Declination, upper/lower [Decl. fup./inf.]	Altitude of the lower limb [Altit. inf. limbi]	The mouth of Pegasus, west [Os Pegaſi occid.]
9^h 2^m	55° 51½′			
9^h $5½^m$	55° 52½′	6° 29⅔′	31° 10′	17 23
		6° 2′ among clouds [inter nubes]		
9^h 14^m	55° 54′	6° 31′	31° 55′	
		5° 59½′		

Vice versa, the eastern limb of the Moon from Aldebaran. [Viceverſa orient. limbus ☾ ab Aldebora]

Corrected times [Temp. correcta]		Declination, upper/lower [Decl. fup./inf.]	Altitude of the lower limb [Altit. inf. limbi]
9^h 21^m	45° 14′		

Corrected times [Temp. correcta]		Declination, upper/lower [Decl. ſup./inf.]	Altitude of the lower limb [Altit. inf. limbi]
$9^h\ 23^m$	45° 13′	6° 35′ 6° 2′	32° 40′
$9^h\ 29^m$	45° 11′ among clouds [inter nubes]		33° 31½′
$9^h\ 32^m$	45° 10′ better [melior]	6° 37⅔′ 6° 9′ among clouds [inter nubes]	33° 48′

For correcting the clocks there was taken [Pro corrigendis Horologijs accipiebatur]

7 37 The bright star of the Vulture, west, 53 28 [7 37 Vulturis Lucida occid. 53 28]

The clock was corrected, $10^h\ 4⅙^m$ [Hora 10 M. 4⅙], which was running slower than it should. [Horologium corrigebatur Hora 10 M. 4⅙ quod minus iuſto mouebatur.]

For correcting the armillae there was taken the declination of the following horn of ♈, $10^h\ 13⅔^m$ [H. 10 M. 13⅔]: 18° 48½′, 18° 48′. [Pro corrigendis Armillis capiebatur ſequentis cornu ♈ H. 10 M. 13⅔ Declinatio 18 48½ / 18 48]

It ought to be 18° 48½′, so they are in good order. [Debet eße 18 48½, quare bene ſe habent.]

Again, for correcting the armillae, there was taken, $10^h\ 20½^m$ [H. 10 20½], the declination of the bright star of the jaw of the Whale: 2° 27½′, 2° 28′. It should have been 2° 27½′. [Rurſus pro corrigendis Armillis capiebatur H. 10 20½ Lucidæ Mandib. Cete Declinatio 2 27½ Debuit eße / 2 28 2 27½]

Therefore the armillae are in good order in this position. [Ergo Armillæ bene habent hoc in loco.]

Afterwards the Moon was observed approaching the meridian, from the eye of ♉. [Poſtea obſeruabatur ☾ appropinquans Meridiano ab oculo ♉.]

Corrected times [Temp. correcta]	Distance [Diſt.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude of the Moon [Alt. ☾]	The first of the wing of Pegasus, west [1 alæ Peg. occ.]
$11^h\ 9⅔^m$		6° 56½′ 6° 27½′	39° 55′	
$11^h\ 27½^m$	44° 51′			32 53
$11^h\ 32^m$	44° 49½′	7° 2⅚′ 6° 34′		33 57
$11^h\ 35½^m$	44° 49′			34 52
$11^h\ 45^m$	Transit of the western limb of the Moon [Tranſitus occid. limbi ☾]			37 17

through the meridian, having altitude [per Merid. habentis Altitudinem]

by the steel instrument [per Chalyb.]	upper [ſup.]	41° 12½′	lower [inf.]	40° 44′
by the revolving quadrant [per Volub.]		41° 10′		40° 45′

Declination of the Moon by the largest armillae [Declin. ☾ per Armillas maximas]	7° 5½′
	6° 37¼′

Afterwards the same limb of the Moon was observed [Poſtea obſeruabatur idem limbus ☾]

Corrected times [Temp. correcta]	From the first of the wing of Pegasus [a prima alæ Pegaſi]	Declination, upper/lower [Declin. ſup./inf.]	The first of the wing of Pegasus, west [Prima alæ Peg. occid.]
$11^h\ 54½^m$	37° 0′		39 37
$11^h\ 57^m$	37° 1′		40 20
$12^h\ 0^m$	37° 1⅔′	7° 6′	40 56
		6° 37⅚′	
$12^h\ 1½^m$	37° 2½′		41 15

For the place of the Moon from the preceding observations near the 90th degree. [Pro loco ☾ ex antecedentibus obſeruationibus iuxta 90^m gradum.]

$9^h\ 14^m$ [H. 9 M. 14] Distance of the centre of the Moon	
from the mouth of Pegasus [Diſt. centri ☾ ab ore Pegaſi]	56° 8′
Declination of the centre of the Moon [Declin. centri ☾]	6° 15′
Declination of the mouth of Pegasus [Declin. oris Pegaſi]	8° 4′
Angular difference of ascension, computed [Ang. diff. aſc. ſupput.]	56° 35′ 13″
Right ascension of the mouth of Pegasus [Aſc. recta oris Peg.]	321° 6⅚′
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	17° 42′ 3″
$9^h\ 23^m$ [H. 9 M. 23] Distance of the centre of the Moon	
from Aldebaran [Diſt. centri ☾ ab Aldebora]	45° 28′
Declination of Aldebaran [Declin. Aldeboræ]	15° 28′
Right ascension of Aldebaran [Aſc. R. Aldeboræ]	63° 12′
Angular difference of ascension [Ang. diff. aſc.]	45° 25′ 27″
Therefore the right ascension of the Moon [Ergo Aſc. recta ☾]	17° 46′ 33″
$9^h\ 24^m$ [H. 9 M. 24] Right ascension of the Moon, limited [Aſc. R. ☾ limitata]	17° 46¾′
Declination [Declinatio]	6° 17′
Resp. longitude [Reſp. Longitudo]	18° 47⅓′ ♈
Latitude [Latitudo]	1° 11½′ south [M.]

8 October, in the morning [DIE 8 OCTOBRIS, MANE.]

N.B. These observations of the Moon were taken alternately, taking now the distance of the eastern limb from Aldebaran, now that of the western. For the

Moon was completely full, as its eclipse testifies. [N. B. Hæ obſeruationes in ☾ ſunt alternatim ſumptæ, accipiendo nunc diſtantiam orientalis limbi ab Aldebora, nunc occidentalis. Nam ☾ fuit prorſus plena, teſtante eius Eclipſatione.]

Hours, minutes [H. M.]	Distance from Aldebaran [Diſt. ab Aldeb.]	Declination [Declin.]	Altitude [Altit.]	The bright shoulder of Orion, west [Luc. hum. Orion. occ.]
$5^h\ 40^m$	western [occ.]	8° 30′	8° 5′	
$5^h\ 46^m$ corrected [corr.]	42° 27′	8° 0½′		
$5^h\ 43¼^m$	eastern [or.]		7° 40′	26 21
$5^h\ 49½^m$ corrected [corr.]	41° 52⅓′			

Hours, minutes [H. M.]	Distance from Aldebaran [Diſt. ab Aldeb.]	Declination [Declin.]	Altitude [Altit.]	Aldebaran, west [Aldeb. occid.]
$5^h\ 46½^m$	western [occ.]	8° 32′	7° 10′	
$5^h\ 53^m$ corrected [corr.]	42° 20′	8° 2½′		
$5^h\ 51^m$	eastern [or.]	8° 32′	6° 35′	48 42
$5^h\ 58½^m$ corrected [corr.]	41° 46′	8° 3½′		
$5^h\ 53⅓^m$	western [occ.]	8° 35¼′	6° 0′	49 39
$6^h\ 2^m$ corrected [corr.]	42° 15′	8° 5′		
$5^h\ 56⅓^m$	eastern [or.]	8° 37′	5° 30′	50 31
$6^h\ 5½^m$ corrected [corr.]	41° 41′	8° 7½′		

The observation of the eclipse of the Moon, as much of it as was seen here and could be seen at the western edge of our horizon. [Obſeruatio Eclipſeos ☾ quanta hic viſa eſt viderique poterat in occiduo noſtri Horizontis limite.]

By the clock [Horologio]	or, corrected according to what follows, $6^h\ 39⅗^m$ [vel iuxta ſequentia correctum H. 6 M. 39⅗]
$6^h\ 23^m$	

Something was thought to be missing from the Moon (it is clear, therefore, that it was 3^m or 4 earlier on the clock [3 Minutis vel 4 antea]). [Putabatur aliquid deeße ☾ (patet itaque eße in horologio 3 Minutis vel 4 antea).]

6 27 Altitude of the lower limb of the Moon 0° 15′. [6 27 Altitudo inferioris limbi ☾ 0 15]

6 32 the middle of the Moon set. [6 32 occidit medium ☾.]

Investigation of the time for correcting the clock from the setting of the middle of the Moon in the eclipse. [Inquiſitio temporis pro corrigendo horologio ex medio ☾ occaſu in Eclipſi.]

From the reduction of the motion of the Moon from the observations made about the 90th degree before and after the eclipse there results [Ex reductione motus ☾ ab antecedentibus & ſequentibus Eclipſis obſeruationibus circa 90 Gr. habitis prouenit]

$6\frac{5}{6}^{h}$, in the morning [H. 6⅝ matutina], its true	
longitude [Longitudo]	23° 9′ ♈
latitude [Latitudo]	0° 1⅔′ north [B.]
For the parallax of altitude of the Moon on the horizon [Pro Parallaxi Altit. ☾ in Horizonte]	
Equated anomaly of the Moon [Anomalia ☾ coæquata]	0 7 10
Distance of the Moon from the zenith [Diſt. ☾ a vertice]	90° 0′
Resp. parallax in the circle of altitude [Reſp. Parallaxis in circulo alt.]	53 0
Refraction of the Moon [Refractio ☾]	34 0
Remainder of the parallaxes [Reſiduum Parallaxium]	19 0
Resp. in longitude [Reſp. in Longit.]	15 30
in latitude [in Latit.]	12 40
Therefore the apparent longitude of the Moon [Ergo viſa ☾ Longit.]	22° 53′ ♈
Latitude [Latit.]	0° 11′ south [M.]
Resp. apparent right ascension of the Moon [Reſp. Aſc. R. ☾ viſa]	21° 13′
Apparent declination of the Moon [Declin. ☾ viſa]	8° 45′
Right ascension of the Sun [Aſc. Recta $\odot^{lis}$]	202° 22′

Diagram. A circle in the right column, at the left of the "In triangulo BAC" values. A horizontal diameter crosses it; a second straight line runs from the lower left of the circumference up to the upper right. From two points on the upper circumference, two curved arcs descend and meet at a point just above the horizontal diameter, left of centre. Labels: three letters are printed.

- A (top of the circle): the upper end of one descending arc.
- B (upper left of the circle): the upper end of the other descending arc.
- C (where the two arcs meet, just above the diameter, left of centre; the letter is crossed by the oblique line).

In the triangle BAC [In triangulo BAC]	
BA	34 5½
BC	81 15
CA	90 0
CBA	103 40
Resp. [Reſp.]	$6^{h}\ 50^{m}\ 5^{s}$ [H.6 M.50 5″]
By the clock [Horol.]	$6^{h}\ 32^{m}\ 0^{s}$ [6 32 0]

In the triangle BAC [In triangulo BAC]
18 5

From these it is gathered that the beginning of the eclipse was 6^h 35^m [H. 6 M. 35] by the corrected clock. [Colligitur ex his initium Eclipſeos fuiße iuxta correctum horologium H. 6 M. 35.]

The half-duration according to the reckoning of our latitude and of the daily motion, as follows: [Dimidia duratio iuxta noſtræ latitudinis rationem & motus diurni hoc modo:]

Semidiameter of the Moon [Semidiameter ☾]	15′ 0″
Semidiameter of the shadow, limited [Semidiameter vmbræ limit.]	39 16
Sum of the semidiameters [Aggregatum Semid.]	54 16
Resp. 53 36, sum of incidentiæ & moræ dimidiæ [Reſp. 53 36, ſumma incidentiæ & moræ dimidiæ]	
Minutes of latitude of the Moon [Scrupula Latit. ☾]	8 25
Hourly motion of the Moon from the Sun [Motus horarius ☾ a ☉]	27
Resp. in time [Reſp. in tempore]	1^h 59^m 6^s [H. 1 59^m 6^s]
dimid. duratio	
Therefore the middle of the eclipse [Ergo medium deliquij]	8^h 34^m [H. 8 34]
Equation of time [Æquatio temporis]	22^m 40^s [22 40″]
The equated middle [Medium æquatum]	8^h 11^m 20^s [H. 8 11 20]
The corresponding mean motions from the Prutenic Tables [Medij reſpondentes motus ex Tab. Prut.]	

Simplex longitude of the Moon [Simplex Longitudo ☾]	2^s 58° 42′ 25″
Anomaly of the Moon [Anomalia ☾]	0 8 3 30
Our Simplex ☉ [Simplex ☉ noſter]	*3 26 12 23*
Our true Sun [Verus ☉ noſter]	*♎ 24° 15′ 36″*

Repetition of this eclipse. The beginning observed by the clock corrected by proportion from the preceding observations by Aldebaran. [Reiteratio Eclipſis huius. Initium obſeruatum iuxta horologium correctum per proportionem ab antecedentibus obſeruationibus per Aldeboram.]

6^h 31^m [H.6 M.31]	For at least 8^m [8 Min.] are added [Adduntur enim ſaltem 8 Min.]
4	subtract for the true beginning [ſubtrahe pro vero initio]
6 27	The true beginning [Verum initium]
1 59	Dimidia duratio

8 26 The middle of the eclipse [Medium Eclipſis]

Appearances of the eclipsed Moon on 8 October [DIE 8 VIII$^{BRI^s}$], which it was possible to observe here at Uraniborg, the corrected time being added throughout. [APPARENTIÆ ☾ ECLIPSATÆ DIE 8 VIII$^{BRI^s}$ quas hic Vraniburgi obſeruare licuit, tempore vbique correcto appoſito.]

Diagram. Four circles in a row across the full width of the page, reproduced from drawings by hand, each showing the eclipsed part of the Moon as a shaded segment cut off on the upper left by a curved line. The shaded part grows from the first circle to the fourth: in the first a narrow dark segment at the upper left; in the second a wider dark segment; in the third a larger segment shaded with crossed hatching; in the fourth the largest, hatched with horizontal and oblique strokes, its boundary running from the top of the circle down to the lower left. The first and second circles carry a printed dot near the centre. Each circle carries a handwritten word to the right of the shaded part, except the fourth.

- Circle 1 (left): handwritten "dubia" (doubtful).
- Circle 2: handwritten "bona" (good).
- Circle 3: handwritten "bona" (good).
- Circle 4 (right): no word.

Hours, minutes [H. M.]	Hours, minutes [H. M.]	Hours, minutes [H. M.]	Hours, minutes [H. M.]
$6^h\ 23^m$	$6^h\ 27^m$	$6^h\ 30^m$	$6^h\ 31½^m$
$6^h\ 39⅗^m$ corrected [corr.]	$6^h\ 44½^m$ corrected [corr.]	$6^h\ 48⅔^m$ corrected [corr.]	$6^h\ 50^m$

8 October, in the evening, until midnight [DIE 8 OCTOBRIS, VESPERI vsque ad mediam noctem.]

The clock was first corrected from the bright star of the Vulture, $7^h\ 23^m$ [H. 7 M. 23], which had been running slower than it should by 13^m [13 minutis] from the preceding noon [a Meridie præcedente]. [Horologium prius corrigebatur a Lucida Vulturis H. 7 M. 23, quod tardius iuſto mouebatur 13 minutis a Meridie præcedente.]

The times are corrected. [Tempora ſunt correcta]

The eastern limb of the Moon was observed from the first of the wing of Pegasus. [Obſeruabatur orient. limbus ☾ a 1 alæ Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination, upper/lower [Declin. ſup./inf.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Peg. occ.]
$11^h\ 22⅓^m$	47° 10′	12° 26½′	44½°	52 29

Hours, minutes [H. M.]	Distance [Dist.]	Declination, upper/lower [Declin. sup./inf.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Peg. occ.]
		11° 56′	approxi-mately [quasi]	
11^h $32\frac{1}{6}^m$	47° 13′			54 56
11^h $35\frac{1}{2}^m$	47° 15′	12° 26¾′	45° 2′	
		11° 56′		
11^h $38\frac{1}{4}^m$	For correcting the clocks [Pro corrigendis horologijs]			
	there was taken the mouth of Pegasus, west [capiebatur Os Pegasi occid.]			56 29

Afterwards the same limb of the Moon was observed from the eye of ☿. [Postea obseruabatur idem limbus ☾ ab oculo ☿]

Hours, minutes [H. M.]	Distance [Dist.]	Altitude [Altit.]	*The bright foot of Orion, east* [*Luc. Pes Orion. ori.*]
11^h 47^m	32° 43′	45° 28′	54 2
11^h 53^m 20^s	32° 40′	45° 42′	52 27

Declination of the bright star of the Vulture for correcting the declination of the Moon [Declinatio Lucidæ Vulturis pro corrigenda Declinatione ☾]	7° 56′
observed yesterday morning [heri mane obseruata]	7° 57′

at an altitude of 4° 50′ [in altitudine 4 50], among clouds. [in altitudine 4 50, inter nubes.]

The eastern limb of the Moon passed through the meridian, having altitude [Transijt orient. limbus ☾ per Meridianum habens Altitudinem]

by the steel instrument [per Chalyb.]	upper [super.]	46° 41′	lower [infer.]	46° 7′
by the revolving quadrant [per Volub.]		46° 42⅔′		46° 6′

Among somewhat dark clouds. [Inter obscuriusculas nubes.]

The Moon in the 90th degree, 10^h 23^m [H. 10 M. 23]. [☾ in 90 gradu H. 10 M. 23.]

11^h 40^m [H. 11 M. 40] Difference of ascension of the Moon and the first of the wing of Pegasus [Diff. asc. ☾ & 1 alæ Pegasi]	48° 14′ 5″

the Moon and Aldebaran [☾ & Aldeb.]	39° 48⅚′

Right ascension of the Moon [Aſc. Recta ☾]	29° 24⅔′
Declination north [Declin. B.]	12° 14′
Resp. longitude [Reſp. Longitudo]	1° 38⅚′ ♉
Latitude [Latitudo]	0° 9′ north [B.]
Parallax in longitude [Parall. Long.]	9′ 30″, add [add.]
in latitude [Latit.]	36 25, add [add.]
True longitude of the Moon [Vera ☾ Longitudo]	1° 48⅓′ ♉
Latitude [Latitudo]	0° 46′ north [B.]

12 October [DIE 12 OCTOBRIS.]

In the evening the eastern limb of the Moon was observed from the bright star of ♈. [Veſperi obſeruabatur orient. limbus ☾ a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination, upper/lower [Declin ſup./inf.]	Altitude of the lower limb of the Moon [Altit. inf. limbi ☾]	The first of the wing of Pegasus, west [1 alæ Peg. occ.]
11^h 0 1/12^m	48° 15′		34° 33′	30 36
11^h $3\frac{2}{3}^m$	48° 15⅔′	27° 13′ 26° 40½′	35° 1′	31 32
11^h 7^m	48° 17′		35° 25′	32 22

Vice versa, from the upper head of ♊. [Viceverſa a ſuperiori Capite ♊.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination, upper/lower [Declin ſup./inf.]	Altitude of the lower limb of the Moon [Altit. inf. limbi ☾]	The first of the wing of Pegasus, west [1 alæ Peg. occ.]
11^h $10\frac{1}{3}^m$	24° 52′	26° 41½′	35° 52′	33 12
11^h $13\frac{1}{3}^m$	24° 51′		36° 18′	33 57
11^h $15\frac{2}{3}^m$	24° 50′		36° 33′	34 28

Altitude of the upper head of ♊ [Altitudo ſuperioris Capitis ♊]	26° 0′

The times are corrected. [Tempora correcta ſunt.]

For the correction of the armillae the bright foot of Erichthonius was observed, having declination 28° 13′, 28° 13⅙′. [Pro Armillarum correctione obſeruabatur Lucidus pes Erichtonij habens Declin. 28 13 / 28 13⅙]

The first of the wing of Pegasus, west, 35 14. [Prima alæ Pegaſi occid. 35 14.]

13 October, in the morning [DIE 13 OCTOBRIS, MANE.]

The Moon was observed about the 90th degree and the meridian. The Moon *in the 90th degree, 3⅓^{h} [H. 3⅓].* Distance of the eastern limb of the Moon from the bright star of ♈. [Obſeruabatur ☾ circa 90 Gradum & Meridianum. ☾ *in 90 Gradu H. 3⅓.* Diſt. orient. limbi ☾ a Lucida ♈.]

Corrected times [Temp. correcta]	Distance [Diſtantia]	Declination, upper/lower [Declinatio ſup./inf.]	The bright star of the jaw of the Whale, west [Luc. mandib. Cete occ.]
3^{h} 16^{m}	49° 57′	27° 13′	35 37
3^{h} 21½^{m}	49° 58½′	27° 37½′ 27° 2½′	37 0
3^{h} 27^{m}	49° 59′		38 23
3^{h} 37½^{m}	The eastern limb of the Moon passed [Tranſiuit orient. limbus ☾] through the meridian, having altitude [per Meridianum habens Altit.]		

by the steel instrument [per Chalyb.]	upper [ſup.]	61° 49′	lower [infer.]	61° 16′
by the revolving quadrant [per Volub.]		61° 39½′[1]		61° 15′

The bright star of the jaw of the Whale, west, 41 0. [Luc. Mandib. Cete occid. 41 0]

Vice versa, the distance of the same limb from the upper head of ♊. [Viceverſa Diſtantia eiusdem limbi a ſuperiori Capite ♊.]

Corrected times [Temp. correcta]	Declination, upper/lower [Declinatio ſup./inf.]	The bright star of the jaw of the Whale, west [Luc. mandib. Cete occ.]
4^{h} 7⅓^{m}	22° 51′	48 28
4^{h} 8⅚^{m}	22° 49′ 27° 32½′ 27° 3′	48 51
4^{h} 12¾^{m}	22° 48½′	49 49

For correcting the armillae, the declination [Pro corrigendis Armillis Declinatio]	
of the bright foot [Lucidi pedis]	28° 13¼′
of Erichthonius [Erichtonij]	28° 13½′

Among little clouds rising from below. [Inter nubeculas ſuborientes.]

At the following noon [in Meridie ſequente] the clock was going faster than it should by 9½^{m} [9½ M.]. [Horologium in Meridie ſequente ibat iuſto celerius 9½ M.]

For investigating the place of the Moon on 13 October.[2] [Pro inueſtigatione loci ☾ ad 13 Oct.[2].]

3^h 20^m [H. 3 M. 20], when the Moon was in the 90th degree [quando ☾ fuit in 90 gradu]

Distance of its centre from the bright star of ♈ [Diſtantia centri eius a luc. ♈]	49° 12′
Declination of the centre of the Moon [Declinatio centri ☾]	27° 28′
Declination of the bright star of ♈ [Declinatio ♈ luc.]	21° 31½′
Its right ascension [Aſc. R. eius]	26° 8⅔′
Angular difference of ascension [Angulus diff. aſc.]	54° 39′
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	80° 47⅔′
Resp. longitude [Reſp. Longitudo]	21° 49⅙′ ♊
Arc of latitude, add [Arcus latit. add.]	6⅙′
Longitude of the Moon in its own circle [Longitudo ☾ in proprio circulo]	21° 55⅓′ ♊

14 October, in the morning [DIE 14 OCTOBRIS, MANE.]

N.B. The Moon about its middle longitude and greatest northern latitude, tending toward the square. [N. B. ☾ circa mediam longitudinem & maximam latitudinem Boream tendens ad □.]

4^h 32^m [H. 4 M. 32]. The eastern limb of the Moon passed through the meridian, having altitude [Tranſijt orient limbus ☾ per Meridianum habens Altitudinem]

of the upper limb, by the steel instrument [ſuperioris limbi per Chalyb.]	62° 18′	by the revolving quadrant [per Volub.]	62° 19½′
of the lower [inferioris]	61° 48½′		61° 50′

Declination by the largest armillae, upper [Declinatio per Armillas max., ſuper.]	28° 13⅔′	among [inter]
lower [infer.]	27° 45′	clouds [nubes]

Put the altitude of the centre of the Moon at 62° 4′, safely enough. The true declination from the altitude of the centre, 27° 58½′. [Pone altitudinem centri ☾ 62 4 ſatis tuto. Declin. vera ex altitudine centri 27 58½.]

4^h 31^m [H. 4 M. 31]: longitude of the Moon 4° 57′ ♋, latitude 4° 33′ north [B.]. [H. 4 M. 31 Longitudo ☾ 4 57 ♋, Latitudo 4 33 B.]

[1] Thus in the codex. Also in V., where however 39½ has been corrected to 49½. [Sic in codice. Etiam in V., ubi tamen 39½ correcta ſunt in 49½.] [2] From codex V. [E codice V.]

Distance of the eastern limb of the Moon from the bright star of the neck of ♌. [Diſtantia orientalis limbi ☾ a Lucida Ceruicis ♌.]

Corrected times [Tempora correcta]	Distance [Diſtantia]	Declination, upper [Declinatio ſup.]	lower [inf.]	The Lesser Dog, west [Canis min. occ.]	For correcting the clock, the Greater Dog, west [Pro corrigendo horologio Canis maior occ.]
4^h $50\frac{5}{6}^m$	48° 22′			3 50	
4^h $53\frac{1}{2}^m$	48° 19′	28° 13′*	27° 45⅙′		15 15 * among [* inter]
5^h $44\frac{2}{3}^m$	48° 1′			4 34	clouds [nubes]
5^h $47\frac{3}{4}^m$	48° 0′	28° 12½′	27° 41½	5 20	
5^h 52^m 55^s [5 52 55″]	47° 58′			6 55	

On the same day, 14 October, the Moon about the 90th degree [90 Gr.]. N.B. The Moon about the beginning of ♋ and the greatest northern latitude, tending toward the square of the Sun. [Eodem die 14 Octobris, ☾ circa 90 Gr. N. B. ☾ circa initium ♋ & maximam Latitudinem boream, tendens ad □ ☉.]

The times are verified. [Tempora ſunt verificata.]

Hours, minutes [H. M.]	Distance of the Sun and the eastern limb of the Moon [Diſt. ☉ & or. limbi ☾]	Declination, upper [Declinatio ſup.]	lower [inf.]	Altitude of the lower limb of the Moon [Alt. inf. limbi ☾]	Azimuth of the Moon [Azim. ☾]	Altitude of the Sun [Alt. ☉]	The Sun, east [☉ or.]
8^h 55^m	113° 12′	28° 2⅔′	27° 34′	38° 24′		12½°	46 13
8^h $59\frac{1}{2}^m$	113° 11½′			36° 6½′		13°	44 49½
9^h $4\frac{1}{2}^m$	113° 10′	28° 2′	27° 32⅓	35° 32′		13⅓°	43 49
9^h $8\frac{1}{3}^m$	113° 9′	28° 1⅔′	27° 32′	35° 0′		14° 0′	42 53

Hours, minutes [H. M.]	Distance of the Sun and the eastern limb of the Moon [Diſt. ☉ & or. limbi ☾]	Declination, upper [Declinatio ſup.]	lower [inf.]	Altitude, upper [Alt. ſup.]	Azimuth of the Moon [Azim. ☾]	Altitude of the Sun [Alt. ☉]	The Sun, east [☉ or.]
9^h 13^m 0^s	113° 7′			34° 47½′		14° 15′	41 46
9^h $15\frac{3}{4}^m$	113° 4′	28° 1′	27° 31½	34° 16′		14⅔°	40 48
9^h $22\frac{2}{3}^m$	113° 0′			33° 20′		15° 0′	39 19½
9^h $26\frac{2}{5}^m$	112° 57′	28° 0½′	27° 31′	32° 51′	92° 0′	15° 20′	38 23½
9^h $30\frac{1}{2}^m$	112° 55½′			32° 22′	92° 50′	15° 50′	37 23
9^h $40\frac{2}{3}^m$	112° 52′	27° 59½′	27° 30′	31° 5′	94° 50′	16° 40′	34 51

Hours, minutes [H. M.]	Distance of the Sun and the eastern limb of the Moon [Dift. ⊙ & or. limbi ☾]	Declination, upper [Declinatio ſup.]	lower [inf.]	by the steel instrument [per Chalyb.]	Azimuth of the Moon [Azim. ☾]	Altitude of the Sun [Alt. ⊙]	The Sun, east [⊙ or.]
9^h $44\frac{1}{6}^m$	112° 50′			29 15		17° 0′	33 57
9^h $53\frac{2}{3}^m$	112° 45′					17° 40′	31 34
9^h $58\frac{1}{6}^m$	112° 44′	27° 59′	27° 28½	28 43		18° 0′	30 27
10^h $10\frac{1}{2}^m$	112° 40′	27° 59½′	27° 29⅔	7 0		19° 0′	27 22
10^h $15\frac{1}{3}^m$	112° 38′			26 34		19° 15′	26 10
10^h $21\frac{5}{6}^m$	112° 35′	27° 56½′	27° 28½	25 36		19° 50′	24 43

15 October, in the morning [DIE 15 OCTOBRIS, MANE.]

Since it was not clear, we watched carefully for when the Moon would shine through the clouds, if by chance they should part now and then so as to allow a sight of it; and for that reason we examined the following both by the quadrant, in azimuths and altitudes, and by the armillae, in declinations. The times are corrected. [Quoniam non erat ſerenum, attendimus diligenter quando ☾ per nubes transpareret, ſi forte ſubinde dividerentur, vt eius aſpectum admitterent, & ob id tam per Quadrantem in Azimuthis & Altitudinibus, quam Armillis Declinationum ſequentia ſcrutati ſumus. Tempora ſunt correcta.]

Hours, minutes [H. M.]	Declination of the Moon [Declin. ☾]	Altitude of the Moon [Altit. ☾]	Azimuth of the eastern limb of the Moon [Azim. orient. limbi ☾]
5^h 51^m	27° 14′	61° 4′	8° 55′
	26° 47′	60° 34½′	
5^h $54\frac{2}{3}^m$	27° 15′	60° 54½′	11° 10′
	26° 46′	60° 29′	
6^h 3^m 0^s		60° 42½′	14° 15′
		60° 16⅓′	
6^h 11^m 0^s	27° 14′	60° 35′	

Hours, minutes [H. M.]	Declination of the Moon [Declin. ☾]	Altitude of the Moon [Altit. ☾]	Azimuth of the eastern limb of the Moon [Azim. orient. limbi ☾]
from the Lesser Dog [a Cane min.]	26° 45⅓′	60° 4½′	
6^h 5^m 0^s [1]	27° 13′	60° 8′	21° 0′
	26° 45′	59° 38′	
6^h $21\frac{1}{2}^m$	27° 13⅙′	59° 54′	22° 15′
	26° 42′	59° 21′	
		59° 22′ by the steel instrument [per Chal.]	
6^h 26^m	27° 12⅚′	59° 36′	
	26° 43′	59° 9′	

No star appeared while these things were being observed. But the Lesser Dog was seen among the clouds only once, at $6^h\ 16^m$ [H. 6 M. 16]; it was then western, 11 35. From this the other times are to be corrected. [Stella nulla dum hæc obſeruantur apparuit. Sed ſemel duntaxat Canis minor inter nubes viſus eſt H. 6 M. 16, fuit is tunc occidentalis 11 35. Hinc cœtera tempora corrigenda.]

From the preceding observations, especially those when the Moon was near the 90th degree, at $5^h\ 51^m$ [H. 5 M. 51], the declination of the centre of the Moon was correctly 27° 0′. The longitude correspond- [Ex antecedentibus, præſertim ijs, quando ☾ erat iuxta 90 Gradum H. 5 M. 51, fuit Declinatio centri ☾ 27 0 correcte. Longitudinem competen-]

[1] Thus in the codex. Without doubt the time has been corrected by the observation of Procyon, for the calculation shows the correction of the clock to have been about — 8^m. [Sic in codice. Sine dubio tempus correctum eſt per obſervationem Procyonis, nam calculus oſtendit correctionem horologii fuiße circiter — 8^m.]

-ing — seek it from yesterday's observations and the following day's, and that for investigating the greatest latitude of the Moon. [-tem quære ex obſeruation-ibus heſternis & ſequentis diej, idque pro ☾ Latitudine maxima perveſtiganda.]

Diagram. A semicircle standing on a horizontal baseline, in the left column under the opening remark. Within it a second arc rises from a point on the baseline near the left end up to the top of the outer arc; a curve runs from a point on this inner arc up and to the right to a point on the outer arc right of the top; a further curve runs from a point on the outer arc at the left down and to the right to the baseline, crossing the inner arc. Table I. stands to the right of the figure.

- A (left, on the outer arc): A
- B (below the baseline, at the foot of the inner arc): B
- C (on the inner arc, where the curve to E leaves it): C
- D (top, where the inner arc meets the outer arc): D
- E (on the outer arc, right of D, at the end of the curve from C): E

	I.	II.	III.
DE	34 5½	34 5½	34 5½
DC	29 10½	29 18	29 30
CDE	170 35	168 20	165 15
EC	63 1⅚	63 1⅔	63 0½

Therefore the mean of these [Medium itaque horum]	63 1
	26 59

N.B. The azimuths and altitudes according to the first three observations give the declination of the Moon as 26° 59′, which falls short by almost a single

minute of that which was taken by the armillae, rightly corrected. But one should rather trust the assigned and limited declination of the armillae. [N.B. Azimutha & Altitudines iuxta tres primas obſeruationes dant Declinationem ☾ 26 59, quod quaſi vnico Minuto deficit ab ea, quæ per Armillas capiebatur, recte correcta. Sed fidendum potius aßignatæ & limitatæ Armillarum Declinationi.]

16 October, in the morning [DIE 16 OCTOBRIS, MANE.]

The Moon, being before the meridian and the 90th degree of the ecliptic, in the last square, near the greatest digression and the greatest northern latitude. The times are corrected. [☾ ante Meridianum & 90 Gr. Eclipticæ exiſtens in □ vltima iuxta maximam digreßionem & maximam Latitudinem boream. Tempora correcta ſunt.]

Hours, minutes [H. M.]	Eastern limb of the Moon from the lower head of ♊ [Or. limb. ☾ ab inf. cap. ♊]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	Aldebaran, west [Aldeb. occid.]
4^h $10\frac{1}{2}^m$	13° 46¼′	24° 55½′ 24° 22′	50° 50′	29 12
4^h $14\frac{5}{6}^m$	13° 49′	24° 55′ 24° 22′	51° 8½′	30 23
4^h $19\frac{1}{3}^m$	13° 51′	24° 54′ 24° 21½′	51° 32′	31 21
4^h $24\frac{1}{2}^m$	13° 53′ among clouds [inter nubes]	24° 53′ 24° 21½′	52° 6′	32 47
4^h 30^m	13° 55⅓′	24° 53′ 24° 21′	52° 30′	34 0
4^h 33^m	13° 57′		52° 48′	34 46

Afterwards, vice versa, the same eastern limb of the Moon was observed from cor ♌. [Poſtea viceverſa a Corde ♌ obſeruabatur idem limbus ☾ orientalis.]

Hours, minutes [H. M.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	
4^h $35\frac{3}{4}^m$	22° 56½′ 24° 52⅚′ 24° 20⅔′	53° 8′	35 37

Hours, minutes [H. M.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	
4^h 40^m	22° 53⅔′ 24° 52½′ 24° 20½′	53° 45′	36 54

Hours, minutes [H. M.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	The Lesser Dog, east [Can. min. or.]
$4^h\ 45\frac{1}{3}^m$	22° 52′	54° 0′	8 15
$4^h\ 50\frac{5}{6}^m$	22° 49⅚′24° 51½′	54° 33′	

Hours, minutes [H. M.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	The Greater Dog, west [Can. mai. occ.]
	24° 19′		5 43

Hours, minutes [H. M.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	The bright shoulder of Orion, west [Luc. hum. Orion. occ.]
$4^h\ 59\frac{3}{4}^m$	22° 48′ 24° 49½′	55° 1′	21 11
$5^h\ 1^m$	22° 47⅔′	55° 40′	21 57

Afterwards, vice versa, the Moon was taken from the lower head of ♊. Times corrected. [Poſtea viceverſa capiebatur ☾ ab inf. cap. ♊ Tempora correcta.]

Hours, minutes [H. M.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	
$5^h\ 5^m$	14° 12⅙′	55° 31′	22 45
$5^h\ 11\frac{1}{2}^m$	14° 12′	55° 51′	24 15
$5^h\ 14^m$	14° 13⅔′24° 46½′	56° 12′	25 30
	24° 16⅓′		
$5^h\ 17^m$	14° 14½′24° 46′	56° 12′[1]	
	24° 16′		

$5^h\ 23^m$ [5 23]: the lower head of ♊ crossed the meridian, having an altitude [Tranſijt inf. Caput ♊ per Merid. habens Altit.] by the steel instrument [per Chalyb.] of 63° 0′, by the revolving quadrant [per Volub.] of 63° 1′. Aldebaran was then west [Fuit tunc Aldebora occid.] 47 7.

Declination 29° 58½′ with both pinnules. [Declinatio 29 58½ vtroq. pinnacidio.]

Afterwards the Moon was observed from cor ♌. [Poſtea ☾ a Corde ♌ obſeruabatur.]

Corrected time [Temp. corr.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	The Lesser Dog, west [Can. min. occ.]
$5^h\ 31^m$	22° 32′ 24° 45½′	57° 2′	
	24° 14′		
$5^h\ 34\frac{1}{4}^m$	22° 31¼′24° 45′		4 5

Corrected time [Temp. corr.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	The Lesser Dog, west [Can. min. occ.]
	24° 13⅚′		
5h 37½m	22° 30½′ 24° 43½′	57° 16′	4 38
	24° 14′		
5h 41m		57° 25′	5 32
5h 43½m	22° 27⅚′ 24° 43′	57° 31′	6 10
	24° 16¼′		

Corrected time [Temp. corr.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	The bright shoulder of Orion, west [Luc. hum. Orion. occ.]
6h 4⅓m	22° 20⅔′	58° 2′	37 38
6h 7m	22° 20′ 24° 43′	58° 6′	

Corrected time [Temp. corr.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	Canicula, west [Canicula occ.]
	24° 9⅓′		12 6
6h 9½m	22° 18½′ 24° 42′	58° 10′	12 43
	24° 9′		

Vice versa, from the bright foot of Erichthonius. [Viceverſa a lucido pede Erichtonij.]

Corrected time [Temp. corr.]	Declination of each horn [Declin. vtriusque cornu]	Altitude of the lower limb [Altit. inf. limbi]	
6h 12¼m	45° 6½′	58° 12′	13 26
6h 13⅚m	45° 8′ 24° 41½′	58° 12½′	
	24° 8′		
6h 15⅚m	45° 9′	58° 13′	14 5
6h 18m	45° 10′ 24° 41⅓′		
	24° 6⅓′		

[1] Thus in the codex. [Sic in codice.]

6 28 4″ The eastern limb of the Moon crossed the meridian, having an altitude [Tranſiuit orient. limb. ☾ per Merid. habens Altitudinem], upper [ſuper.]: by the steel instrument [per Chal.] 58° 43′, by the revolving quadrant [per Vol.] 58° 39′; lower [infer.]: 58° 10¼′, 58° 12′. The Lesser Dog was then west [Fuit tunc Canis minor occid.] 16 25. It had, moreover, a declination [Habebat autem Declin.], upper [ſuper.], 24° 40¼′; lower [infer.], 24° 7′.

6 39¼ The Moon was examined again by the revolving quadrant, in azimuth 2° 0′ [Denuo ☾ per Volub. examinabatur in Azimutho 2° 0′,]; altitude, upper [Altit. ſup.], 58° 38½′; lower [inf.], 58° 7⅓′.

N.B.[1] That Johannes, while observing, took more than was right of the limb of the Moon on this side can be gathered from the following calculation; and then also from the meridian altitude, which he observed on the revolving quadrant. [N.B. Johannes inter obſeruandum ab hac parte plus iuſto de ☾ limbo cepiße ex ſequenti calculo colligi poteſt: deinde etiam ex Altitudine Meridiana, quod ille obſeruabat in Volubili.]

With the Moon approaching the 90th degree, the same was observed from Mars. [☾ appropinquante ad 90 gradum, eadem obſeruabatur a ♂.]

Corrected time [Temp. corr.]	Distance of the eastern limb from Mars [Diſt. orient. limbi a ♂]	Declination of the Moon [Declinatio ☾]	Altitude of the lower horn of the Moon [Altit. ☾ inf. cornu]	Altitude of Mars [Altit. ♂]	Mars, west [♂ occid.]	
$6^h\ 43^m$	69° 43½′	24° 35½′	24° 7′	20½°		
$6^h\ 50½^m$	69° 45½′	24° 34¼′	24° 4′ 57° 45′		81 52	
$6^h\ 54^m$	69° 47⅔′	24° 34¼′	24° 3½′		82 40	
$6^h\ 57^m$	69° 48¼′	24° 32½′	24° 3½′upper limb [ſup. limbi]	18½°	83 17	
$6^h\ 59^m$	69° 49′	24° 32′	24° 2⅙58° 20′	18° 0′ *	84 3	* approximately [ἐν πλάτει]

Corrected time [Temp. corr.]	Distance of the eastern limb from Mars [Diſt. orient. limbi a ♂]	Declination of the Moon [Declinatio ☾]	Altitude of the lower horn of the Moon [Altit. ☾ inf. cornu]	Altitude of Mars [Altit. ♂]	Mars, west [♂ occid.]	Azimuth of the eastern limb [Azim. or. lim.]
$7^h\ 3½^m$	69° 50′	24° 31′	24° 1½′			15¾°
$7^h\ 5⅓^m$	69° 52′	24° 30½′	24° 1′ 57° 35′	17¼°		17° 25′

Afterwards no stars appeared, because the Sun was tending toward rising. [Poſtea nullæ ſtellæ apparebant, ob Solem ad ortum tendentem.]

At $7^h\ 21¾^m$ [H. 7 M. 21¾] the limb of the Sun began to rise [incepit limbus ☉ oriri]; $7^h\ 23^m$ [7 23] the Sun half risen [☉ medius ortus]; $7^h\ 26^m$ [7 26] the Sun wholly risen [☉ totus exortus].

After the Sun had risen that same morning and no stars appeared, but the Moon itself was approaching the 90th degree as closely as possible, we observed the following. The times are corrected. [Poſtquam ☉ eodem mane exortus eſt & nullæ ſtellæ apparerent, ipſa vero ☾ ad 90 gradum quam proxime applicaret, ſequentia obſeruauimus. Tempora ſunt correcta.]

Hours, minutes [H. M.]	Declination of the Moon [Declinatio ☾]	Altitude of the Moon, upper [Altitudo ☾ ſup.]	lower [inf.]	Azimuth of the eastern limb of the Moon [Azim. or. limbi ☾]	Altitude of the Sun [Altit. ☉]
7^h 16^m	24° 29½′	57° 14′	56° 46½′	1° 0′	
7^h 20^m	24° 28½′	24° 0′ 57° 2′	56° 33′	22° 30′	
7^h 24^m	24° 28⅓′	23° 59⅔′ 56° 49′	56° 21⅓′	24° 0′	
7^h $27⅔^m$	24° 28½′	23° 59′ 56° 35½′	56° 7′	25° 30′	1° 50′
7^h 31^m	24° 27½′	23° 58½′ 56° 20½′	55° 52′	27° 0′	2° 10′

Next, the eastern limb of the Moon from the Sun, near the 90th degree. [Deinceps orientalis limbus ☾ a ☉ iuxta 90 Gradum.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of the Moon [Declinatio ☾]	Azimuth of the Sun [Azim. ☉]	Altitude of the Sun [Altit. ☉]
7^h $41½^m$		24° 25′	23° 57½′	3° 25′
7^h $42⅔^m$		24° 24′	23° 57′ 62° 2′	3° 40′
7^h $46⅔^m$	89° 21′	24° 23½′	23° 56¼′ 61° 5′	4° 0′
7^h 51^m	89° 18′	24° 23′	23° 55½′ 60° 15′	4° 27′
7^h 57^m	89° 17′	24° 21′	23° 53⅔′ 59° 5′	5° 12′
8^h $1⅓^m$	89° 17′	24° 21′	23° 53⅔′ 58° 5′	5° 45′

The refraction of the Sun is to be guarded against everywhere in these. [Refractio ☉ in his vbique præcauenda.]

N. N. Rather use the following, because of the smaller refraction. [N. N. Vtere potius ſequentibus ob refractionem minorem.]

[1] Written in the margin. [In margine adſcriptum.]

Continuation of the observation of the Moon from the Sun. [Continuatio obſeruationis ☾ a ☉.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of the Moon [Declinatio ☾]	Altitude of the upper limb of the Moon [Altit. ☾ ſup. limb.]	Altitude of the Sun [Altit. ☉]	Azimuth of the Sun [Azim. ☉]	The Sun, distance on the equator [☉ diſt. æquat.]
8^h 11^m	89° 16′	24° 20′	23° 52′ .. 55′	6° 32′	56° 30′	
8^h $12¼^m$	89° 14½′	24° 19½′	23° 51½′ 52° 40′	7° 21′	55° 0′	
8^h 21^m	89° 11′	24° 19′	23° 50½′ 52° 5′	8° 0′	53° 40′	54° 49′
8^h $26⅙^m$	89° 9′	24° 18½′	23° 50′ 51° 43′	8° 25′	52° 50′	53° 56′
8^h 31^m	89° 6½′	24° 16′	23° 49′ 51° 2′	9° 10′	51° 25′	52° 14′
8^h $38⅔^m$	89° 4½′	24° 15′	23° 48½′	9° 47′	49° 50′	50° 26′
8^h 47^m	89° 1½′	24° 14′	23° 45′ 49° 21′	10° 51′	47° 45′	48° 16′
8^h 57^m	88° 56′	24° 11′	23° 43¼′ 48° 0′	11° 55′	45° 30′	45° 42′
9^h $1¾^m$	88° 53½′	24° 10′	23° 42′	12° 21′	44° 25′	44° 34′

Use any one of these and choose the best, and first work out the apparent place of the Sun in longitude and latitude by resolving the altitudes and by

our tables. From this derive the declination and right ascension of the Sun, and compare them with the distance, adding 15 for the semidiameter of the Moon. [Vtere aliqua harum & elige optimam, ac primum locum ☉ viſum effice in Longitudine & Latitudine per reſerationem Altitudinum & Tabulas noſtras. Hinc deduc Declinationem & Aſcenſionem Rectam ☉, quæ confer cum diſtantia, addendo 15 pro ſemidiametro ☾.]

For the place of the Moon on the last day of September, in the evening, from the observations written above. [Pro loco ☾ ad Diem vltimum Septembris Veſperi ex obſeruationibus ſupra ſcriptis.]

The Moon at 90, at 5½^{h}. [☾ in 90 H. 5½.]

At 5^{h} 50^{m} [H.5 M.50], distance of the centre of the Moon from Jupiter [Diſt. centri ☾ a ♃]	64° 26′
Declination of the centre of the Moon [Declin. centri ☾]	
limited [limitata]	27° 40½′ south [M.]
Declination of Jupiter [Declin. ♃]	2° 49½′ south [M.]
Angular difference of ascension [Ang. diff. aſcenſ.]	62° 29′
Right ascension of Jupiter, reduced [Aſc. Recta ♃ reducta]	357° 31′ 10″
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	295° 2′ 10″
Resp. longitude [Reſp. Longitudo]	22° 8′ 26″ ♑
Latitude [Latitudo]	6° 3′ 35″ south [M.]

For investigating the parallax of the Moon in the circle of altitude, or the meridian. [Pro Parallaxi ☾ in circulo Altitudinis ſeu Merid. inquirenda.]

At 6^{h} 39^{m} [H. 6 39], longitude of the Moon [Longitudo ☾]	22° 36′ ♑
The node ☊ [Nodus ☊]	23° 6′ ♈
Distance of the Moon from ☊ [Diſtantia ☾ a ☊]	8^{s} 29° 30′
Resp. true latitude [Reſp. vera Latit.]	5° 14′ 56″ south [M.]
Resp. apparent declination of the Moon [Reſp. Declin. viſa ☾]	27° 38′ 20″
True declination [Declin. vera]	26° 48′ 5″
Difference of the parallaxes and refraction [Parallaxium & refract. differentia]	50 15

Distance of the Moon from the 90th degree, 20^{m} of time [Diſtantia ☾ a 90 Gr. 20^{m} temporis,]	
Resp. parallax of longitude [Reſp. Parallaxis Longit.]	2′ 20″ added [add.]
For the arc of inclination [Pro arcu inclinationis]	8″ subtracted [ſubt.]
Therefore the true longitude of the Moon [Ergo vera Longitudo ☾]	22° 10⅔′ ♑
for the given time in the sky [ad datum tempus in cœlo.]	

The difference of parallax and refraction in altitude is put[1] at exactly 6° 50′ [6° M. 50], for the refraction exceeded the parallax by about ¼′ in ½ degree. [Ponitur parallaxis & refractionis differentia in altitudine 6° M. 50 exacte, nam circiter ¼′ ſuperabat refractio parallaxin in ½ grad.]

Calculation of the place of the Moon from the preceding observations made on 16 October in the morning, so that it may be compared with the following one, taken near the 90th degree from Mars. [Calculus loci ☾ ex antecedentibus obſeruationibus die 16 Octobris Mane habitis, vt conferatur cum ſequenti circa 90 Gradum a ♂ accepto.]

At $6\frac{1}{6}^{h}$ [H. 6⅙], distance of the centre of the Moon from Regulus [Diſt. centri ☾ a Regulo]	22° 35′
Declination of the centre of the Moon [Declin. centri ☾]	24° 25′
Declination of Regulus [Declin. Reguli]	13° 55′
Angular difference of ascension, computed [Ang. diff. aſc. ſupput.]	21° 13′ 15″
Right ascension of Regulus [Aſc. Recta Reguli]	146° 41′ 0″
Therefore the right ascension of the Moon [Ergo Aſc. R. ☾]	125° 27′ 45″
At 6^{h} 18^{m} [H. 6 18], distance of the centre of the Moon [Diſt. centri ☾]	
from the upper horn of ♉ [a ſup. cornu ♉]	44° 54′
Declination of the centre of the Moon [Declin. centri ☾]	24° 23′
Declination of the foot of Erichthonius [Decl. pedis Erichtonij]	28° 11′
Angular difference of ascension [Ang. diff. aſcenſ.]	50° 15′
Right ascension of the foot of Erichthonius [Aſc. R. pedis Erichtonij]	75° 11½′
Resp. right ascension of the Moon [Reſp. Aſc. R. ☾]	125° 26½′
Put, at $6\frac{1}{6}^{h}$, the right ascension of the Moon (keeping more closely to Regulus) [Pone H. 6⅙ Aſc. R. ☾ (adhærendo magis Regulo)]	125° 27′
Declination, north [Declin. B.]	24° 25′
Resp. longitude [Reſp. Longitudo]	2° 0′ 4″ ♌
Latitude [Latitudo]	4° 43′ 32″ north [B.]
Parallax of altitude [Parallaxis Altit.]	30′
Side of longitude [Latus Longit.]	20′
Resp. parallax of longitude [Reſp. Parallaxis Longit.]	10′ subtracted [ſubt.]
Therefore the true longitude [Igitur vera Longitudo]	1° 50′ ♌

[1] Written in the margin. [In margine adſcriptum.]

At 7^{h} 0^{m} [H. 7 0′], observed longitude of the Moon[1] [Obſeruata Longitudo ☾[1]]	2° 20′ 40″
For the parallax subtract [Pro Parallaxi ſubtrahe]	2 40
True longitude of the Moon [Vera Longitudo ☾]	2° 18′ 0″ ♌
Difference of time 50, difference of motion [Diff. temporis 50, diff. motus]	28 0

This difference corresponds exactly to our daily motion of 13° 24′ for the given interval of time. [Hæc differentia exacte correſpondet motui noſtro diurno 13° 24′ pro dato temporis interuallo.]

Longitude of the Moon in its own orb [Longitudo ☾ in proprio orbe]	2° 15⅔′ ♌
Distance from the node ☊ [Diſtantia a nodo ☊]	100° 8′

Computation of the place of the Moon when it was very near the 90th degree of the ecliptic on either side, from the preceding observations on 16 October, in the morning. [Supputatio loci ☾ cum eßet proxime 90 Gr. Eclipticæ vtrinque ex præcedentibus obſeruationibus die 16 Octobris, Mane.]

At 7^h 0^m [H. 7 M. 0], distance of the eastern limb of the Moon from Mars [Diſt. or. limbi ☾ a ♂]	69° 49½′
Apparent declination of Mars [Declin. viſa ♂]	17° 53′
Distance of the centre of the Moon from Mars [Diſt. centri ☾ a ♂]	69° 35′
Declination of the centre of the Moon, verified [Declin. centri ☾ verif.]	24° 16′
Angular difference of ascension [Ang. diff. aſc.]	75° 7′ 47″
Right ascension of Mars from the reduced observations [Aſc. R. ♂ ex obſeruationibus reductis]	50° 40′ 0″
Put therefore 7^h 0^m [Pone itaque H. 7 M. 0]	
Right ascension of the Moon [Aſc. R. ☾]	125° 47¾′
Resp. longitude [Reſp. Longitudo]	2° 20⅔′ ♌
Latitude [Latitudo]	4° 41⅙′ north [B.]
At 8^h 12^m [H. 8 M. 12], distance of the eastern limb of the Moon from the centre of the Sun [Diſt. or. limbi ☾ a centro ☉]	89° 16′
True place of the Sun [Verus locus ☉]	2° 14⅓′ [sign: ?]
Observed altitude of the Sun [Alt. ☉ obſeruata]	6° 30′
Parallax [Parallaxis]	3 0
Refraction [Refractio]	13 10
Remainder of the refraction in the altitude of the Sun [Reſiduum refractionis in alt. ☉]	10 10
Resp. in longitude [Reſp. in long.]	8 5
in latitude [in latit.]	6 3
Therefore the apparent longitude of the Sun [Ergo viſa ☉ Longitudo]	2° 6¼′ [sign: ?]
Latitude [Latitudo]	0° 6 1/12′
Resp. right ascension of the Sun [Reſp. Aſc. Recta ☉]	209° 56¾′
Declination [Declinatio]	12° 9⅙′ south [M.]
Distance of the centre of the Moon from the Sun [Diſt. centri ☾ a ☉]	89° 30′
Declination of the Moon, observed and limited [Declin. ☾ obſeruata & limitata]	24° 5′ north [B.]

Diagram. A spherical triangle drawn with curved arcs at the head of the right column. A left arc runs down from the apex A to near B, and a short

vertical stroke continues it to B; a right arc runs from A down through C and on to the lower right corner of the figure. A curve rises from B to C. A second curve runs from a point on the left arc above B to the lower right corner, crossing the curve B–C. A bottom arc closes the figure. Three labels are printed.

- A (apex, top): A
- C (right side): C
- B (lower left): B

BA	102 9 0
CA	65 55
BC	89 30
BAC	83 54 50
The Sun, ascension [⊙ Aſc.]	209° 56′ 45″
At 8^h 12^m [H.8 M.12], right ascension of the Moon [Aſc. R. ☾]	126° 1′ 55″
Resp. longitude [Reſp. Longitudo]	2° 35′ 52″ ♌
Latitude [Latitudo]	4° 33′ 31″ north [B.]

The Moon, however, should have been at the 90th degree at 7^h 18^m [H.7 M.18], lacking parallax of longitude. Around the first observation, moreover, the altitude of the Moon was 58°. And therefore the parallax in the vertical was 0 30, very nearly, which makes only 2 minutes to be subtracted in longitude, and 29¾ to be restored in latitude. The other observation had a parallax of the altitudes of about 34′. Therefore the longitude adds 6′, the latitude adds 33½′. For this reason the true place of the Moon comes out: [Debuit autem ☾ eße in 90 Gr. H.7 M.18, carens parallaxi longitudinis. Fuit autem circa primam obſeruationem Altitudo ☾ 58°. Ideoque Parallaxis in verticali 0 30 proxime, quod facit in Longitudine ſaltem 2 Minuta ſubtrahenda, & in Latitudine 29¾ reddenda. Altera obſeruatio habuit Parallaxin Altitudinum quaſi 34′. Ergo Longit. 6′ addit, Latit. 33½′ addit. Quapropter verus locus ☾ prouenit]

Hours, minutes [H. M.]	True longitude [Longit. vera]	True latitude [Latit. vera]
7^h 0^m	2° 18½′ ♌	5° 11′ north [B]
8^h 12^m	2° 42′ ♌	5° 7′ north [B.]
Difference [Differentia] 1^h 12^m	0° 24′	0° 4′

(N.B. I took the parallaxes only approximately [ἐν πλάτει], and so they are to be corrected.) [(N.B. Ego parallaxes ſaltem ἐν πλάτει accepi, quare caſtigandæ).]

This advance is too slow. For they ought to complete 40′ [40 M.] in the meantime. Therefore these are to be reviewed, and the observation toward Mars is rather to be trusted, a comparison being made with the distance from the star defined before 16. [Quæ promotio nimis lenta eſt. Nam debent interea

conficere 40 M. Quare hæc revidenda, & potius obſeruationi ad ♂ fidendum, collatione facta cum diſtantia a ſtella antea definita 16.]

N.B. The Moon was then distant from the node, when it was at the 90th degree, 10° 15′ [part. 10 M. 15]; it makes a latitude of 5° 10′, agreeing well enough. [N. B. ☾ tunc diſtabat a Nodo cum eßet in 90 Gradu part. 10 M. 15, facit Latitudinem 5 10 ſatis conuenienter.]

27 October [DIE 27 OCTOBRIS.]

In the afternoon the Moon was observed near the meridian. The Moon near the middle of ♍, in the greatest southern latitude. [Poſt Meridiem obſeruabatur ☾ circa Meridianum. ☾ circa medium ♍ in maxima Latitudine auſtrina.]

[1] See below. [Vide infra.]

Corrected times [Tempora correcta]	Declination of the Moon [Declin. ☾]	Altitude of the Moon by the revolving quadrant [Alt. ☾ per Volub.]	Azimuth, east [Azim. or.]	The Sun, west [☉ occ.]
4^h $21\frac{1}{2}^m$	28° 13¾′	5° 47½′	3° 30′	63½ ἐν πλάτει [Greek: ἐν πλάτει, "approximately"]
	28° 38¼′	5° 21′		
4^h 29^m	28° 13½′	5° 52′	2° 0′	
	28° 37½′	5° 25′		
4^h 30^m	The lowest part of the Sun was seen to set. [Infima pars ☉ viſa eſt occidere.]			
4^h 33^m	28° 13¼′	5° 53′	1° 0′	
	28° 38′	5° 26⅔′		
4^h 37^m	The western limb of the Moon in the south [Occid. limbus ☾ in Meridie]			
	28° 11¼′	5° 54′		
	28° 38′	5° 26⅔′		
		5° 54⅔′ } by the steel instrument [per / Chalyb.]		
		5° 26′ }		
4^h 44^m	28° 10⅚′	5° 52½′ } by the revolving quadrant [per / Volub.]		
	28° 37½′	5° 25⅓′ }		

The Moon at the 90th degree at 3^h 38^m. [☾ in 90 Gr. H. 3 M. 38.]

Afterwards the western limb of the Moon was observed from Jupiter. [Poſtea obſeruabatur occid. limb. ☾ a ♃.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of the Moon [Declin. ☾]	Altitude of the upper limb of the Moon [Alt. ſup. limbi ☾]	Jupiter, east [♃ orient.]
4^h $46\frac{1}{2}^m$	67° 26½′	28° 36⅓′	5° 50′	62 39

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of the Moon [Declin. ☾]	Altitude of the upper limb of the Moon [Alt. ſup. limbi ☾]	Jupiter, east [♃ orient.]
		28° 10¼′		
4h 49m	67° 26⅓′	28° 36⅙′	5° 45′	
		28° 9½′		
4h 52m	67° 25′	28° 36¼′	lower [infer.]	61 15
		28° 9⅓′	5° 25′	

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of the Moon [Declin. ☾]	Altitude of the upper limb of the Moon [Alt. ſup. limbi ☾]	Jupiter, east [♃ orient.]
4h 56m	67° 23½′	28° 36½′		60 17
		28° 8⅔′	5° 20′	
5h 0m	67° 22′	28° 36⅔′		59 27
		28° 8⅓′	5° 17′	
5h 4m	67° 21½′	28° 35⅔′		58 36
		28° 7⅔′	5° 15′	
5h 7½m	67° 18⅔′	28° 36′		57 43
		28° 7½′	5° 11′	
5h 10m	67° 17½′	28° 35⅔′		56 53
		28° 6¾′	5° 7′	
5h 14m	67° 15⅓′	28° 35½′		55 54

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of the Moon [Declin. ☾]	Altitude of the upper limb of the Moon [Alt. ſup. limbi ☾]	The Vulture, west [Vultur occid.]
		28° 6¼′	5° 2′	
5h 16⅓m	67° 14⅚′	28° 35′		
		28° 6′	4° 55′	7 32
5h 19m	67° 14½′	28° 34⅔′		8 13
		28° 5⅚′	4° 50′	
5h 21m	67° 14′	28° 35′		8 42
		28° 4′	4° 43′	

It was fairly clear, and the Moon was near the meridian in ♍, close to the greatest southern latitude. Account must nevertheless be taken of refraction and parallax, for it was somewhat beyond the 90th degree. [Fuit ſatis bene ſerenum & ☾ erat iuxta Meridianum in ♍ prope maximam Latitudinem Auſtrinam. Habenda tamen ratio eſt refractionis & parallaxeos. Nam erat nonnihil vltra 90 Gradum.]

28 October, in the evening [DIE 28 OCTOBRIS, VESPERI.]

The Moon was observed near the 90th degree. [Obſeruabatur ☾ circa 90 Gradum.]

Corrected times [Tempora correcta]	Distance of the western limb from Jupiter [Diſt. occid. limbi a ♃]	Declination of the Moon, upper [Declinatio ☾ ſup.]	Altitude, lower [inf.]	Altitude, upper [Altitudo ſup.]	Azimuth [Azim.] lower [inf.]	Azimuth [Azim.]	Altitude of Jupiter [Alt. ♃]	Jupiter, east [♃ orient.]
$4^h\ 18^m$		25° 50⅔′	26° 19′		6° 32½′	15		
$4^h\ 21^m$		25° 51′	26° 18′	7° 9′	6° 41′	14		
$4^h\ 26^m$		25° 50⅙′	26° 16⅔′	16½′	6° 51′	13		
$4^h\ 31^m$		25° 49′	26° 16½′	28′	6° 56½′	12		
$4^h\ 36^m$		25° 48′	26° 16½′	35′	7° 4⅔′			
$4^h\ 42^m$	54° 15½′	25° 48′	26° 16¾′			9° 50′		
$4^h\ 44⅓^m$	54° 15′	25° 47½′	26° 16⅔′		7° 15′	9° 25′		62 10
$4^h\ 46⅔^m$	54° 14½′				7° 30′	9° 0′	12½°	61 35
$4^h\ 50^m$	54° 14⅙′	25° 47½′	26° 16⅓′		7° 35′	8° 5′		
$4^h\ 52½^m$	54° 12′	25° 46½′	26° 15⅔′		7° 37′	7° 15′	13° 0′	60 8
$4^h\ 56½^m$	54° 11′			8° 0′	7° 39′		13° 35′	59 23
$4^h\ 58⅓^m$	54° 10⅙′	25° 45′	26° 15⅛′	2′	7° 40′			58 55
$5^h\ 1¾^m$	54° 8⅔′			8° 4′	7° 44′		14° 0′	58 4
$5^h\ 4^m$	54° 8½′	25° 44⅔′	26° 15⅛′	7′	7° 47′			57 14
$5^h\ 7^m$	54° 7′			8° 11′	7° 50′		14° 55′	56 19
$5^h\ 9½^m$	54° 5′	25° 44¼′	26° 15′	8° 12′	7° 52′			55 45
$5^h\ 12¾^m$	54° 4′			8° 15′			15° 35′	54 56

Corrected times [Tempora correcta]	Distance of the western limb from Jupiter [Diſt. occid. limbi a ♃]	Declination of the Moon, upper [Declinatio ☾ ſup.]	Altitude, lower [inf.]	Altitude, upper [Altitudo ſup.]	Azimuth [Azim.] lower [inf.]	Azimuth [Azim.]	Altitude of Jupiter [Alt. ♃]	The Vulture, west [Vultur occ.]
$5^h\ 16^m$	54° 2⅓′	25° 43′	26° 12′	8° 17′	7° 55′			8 28
$5^h\ 17⅔^m$	54° 0′			8° 18′	7° 56′			8 53
$5^h\ 26⅔^m$	The western limb of the Moon crossed the meridian, having [Tranſiuit occid. limbus ☾ per Merid. habens]							11 9⅚
	an altitude [Altitudinem]			8° 24½′	7° 52⅔′ by the steel instrument [per Chalyb.]			precisely [præciſe]
		25° 41⅔′	26° 11⅜′	8° 23′	7° 53′ by the revolving quadrant [per Volub.]			

29 October [DIE 29 OCTOBRIS.]

Observation of the Moon near the 90th degree, for parallax and refraction. [Obſeruatio ☾ iuxta 90 Gr. pro Parallaxi & Refractione.]

Hours, minutes [H. M.]	Altitude of the Moon [Altitudo ☾]	Declination [Declin.]	Azimuth
$4^h\ 30^m$	8° 33′ upper [ſup.]	22° 13′	25° 0′
	8° 0¾′ lower [inf.]	22° 41⅓′	
$4^h\ 40⅙^m$	9° 1′	22° 12½′	23° 0′
	8° 31½′	22° 41′	among clouds [inter nubes]

30 October, in the evening [DIE 30 OCTOBRIS, VESPERI.]

At $7^h\ 0^m$ [H. 7 M. 0] the clock was corrected by the bright star of the Vulture. [corrigebatur Horologium ad Vulturis Lucidam.]

At $7^h\ 4⅙^m$ [H. 7 M. 4⅙] the western limb of the Moon crossed the meridian, having an altitude [Tranſiuit occid. limbus ☾ per Meridianum habens Altitud.]

by the steel instrument [perChalyb.]	16° 48¾′	by the revolving quadrant [perVolub.]	16° 48′ upper [ſup.]
	16° 18¾′		16° 15′ lower [inf.]
7 10½ declination [Decl.]	17° 14′ upper [ſup.]		the Vulture, west [Vultur occ.]
	17° 45′ lower [inf.]		39 19

These observations approximately [en plati], among clouds. [Hæ obſeruationes en plati inter nubes.]

3 November, in the evening [DIE 3 NOUEMBRIS, VESPERI.]

The Moon in the middle place between the square and the opposition of the apogee. [☾ in medio loco inter □ & ☍ Apogæi.]

The Moon a little before the 90th degree. [☾ paulo ante 90 gradum.]

Hours, minutes [H. M.]	Distance from the right shoulder of ♒ [Diſt. a dextro hum. ♒]	Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	The Vulture, west [Vultur occid.]
$6^h\ 24⅖^m$	47° 35′	4° 26′		31 13
		3° 51′	24° 41′	
$6^h\ 28⅚^m$			25° 2′	32 18
$6^h\ 30⅔^m$	47° 41′ }	4° 25⅔′ }		32 49
	better [melior] }	3° 51½′ } *	25° 22′	*better [*melior]
$6^h\ 34^m$	47° 42½′		25° 48′	33 32

Vice versa from the bright star of ♈, *with the star inclined more towards the zenith.* [Viceverſa a Lucida ♈, inclinata ſtella magis verſus zenith.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	The Vulture, west [Vultur occid.]
6^{h} 36⅖^{m}	*21° 23′*		*26° 1′*	*34 15*
6^{h} 38^{m}	*21° 22′*			*34 40*

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	The mouth of Pegasus, west [Os Peg. occ.]
6^{h} 40⅓^{m}	*21° 23′* }	*4° 24′*		
	doubtful [dubia] }	*3° 57½′*	*26° 28′*	*6 51*

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	The bright star of the Vulture, west [Luc. Vult. occ.]
6^{h} 57^{m} }	*4° 30′*		
6^{h} 55⅙^{m} }	*3° 58½′*		*39 23*
7^{h} 3⅓^{m}	*4° 31⅔′*	*29° 48′*	

The lower limb was not seen well. [inferior limbus non bene viſus eſt.]

Afterwards the Moon from Jupiter, because no other stars were visible. The Moon at the 90th degree at 7⅓^{h} [H. 7⅓]. [Poſtea ☾ a ♃ quia nullæ aliæ ſtellæ apparebant. ☾ in 90 Gr. H. 7⅓.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	Jupiter, east [♃ or.]
7^{h} 23⅔^{m} }	20° 21′		31° 8′	
7^{h} 22½^{m} }				
7^{h} 25^{m} }	20° 22′	4° 37⅔′		
7^{h} 24^{m} }		4° 8′	31° 15′	
7^{h} 33¾^{m} }	20° 25′		32° 10′	13 28
7^{h} 33½^{m} }				

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	Jupiter, east [♃ or.]
7^{h} 37^{m}	20° 26′		32° 20′	12 35
7^{h} 43½^{m}		4° 42′ good [bona]		
		4° 13′	33° 0′	

The Moon and Mars vice versa [☾ & ♂ viceverſa]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	Jupiter, east [♃ or.]
7h 49m	*31 46*	*33° 30′*	

The Moon again from Jupiter [☾ rurſus a ♃]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	Jupiter, east [♃ or.]
7h 51 1/12m	*20° 29⅔′*	*33° 42′*	*9 5*
7h 53m	*20° 31′*		*8 25*
7h 54½m	*4° 45⅓′*		
	4° 15½′	*33° 50′*	
8h 2⅔m			5 57

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	The Vulture, west [Vultur occ.]
8h 8⅚m }			
8h 0m corrected [corr.] }			55 48

Afterwards the Moon, approaching the meridian, was taken from the first of the wing of Pegasus. [Poſtea ☾ appropinquans meridiano capiebatur a prima alæ Pegaſi.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	Aldebaran, east [Aldeb. or.]
9h 23½m			*38° 36′*	*52 46*
9h 25⅔m	*33° 53′*			*52 21*
9h 28m	*33° 54⅓′*		*38° 40′*	*51 43*
9h 30m		*5° 9′*		
		4° 36′		
9h 30½m	*33° 56⅔′*			
9h 35m	*33° 57′*	*5° 6½′*		*49 48*
9h 39⅙m	The western limb of the Moon crossed [Tranſiuit ☾ occid. limbus]			
	the meridian, having an altitude [per Meridianum habens Altitud.]			
	by the steel instrument 39° 17⅓′, by the revolving quadrant 39° 15′ [per Chalyb. 39 17⅓ per Volub. 39 15]			
	38° 43½′, 38° 46′ [38 43½ 38 46]			
	Aldebaran, east, was then 48 45, approximately [en plati]. [Fuit tunc Aldeb. orient. 48 45 en plati.]			
9h 45⅙m	*Declination of the Moon above 5° 13′, good* [Decl. ☾ ſupra 5 13 bona]			

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	Aldebaran, east [Aldeb. or.]
	Aldebaran, east, 47 11 [Aldeb. orient. 47 11]			
$9^h\ 48^m$	*Repeated 5° 13′* [Repetita 5 13]			
	Declination 4° 42′ [Decl. 4 42]			

Afterwards the Moon was taken vice versa from Aldebaran, as follows. [Poſtea ☾ viceverſa capiebatur ab Aldebora vt ſequitur.]

Hours, minutes [H. M.]	*Distance [Diſt.]*	*Declination [Decl.]*	*Altitude of the lower limb [Alt. inf. limbi]*	*Aldebaran, east [Aldeb. or.]*
$9^h\ 54¼^m$	*48° 52′*			*45 22*
$9^h\ 56⅙^m$	*48° 51′*			*44 31*
$9^h\ 59^m$	*48° 50¼′*		*38° 42′*	*43 33*
$10^h\ 1⅔^m$	*48° 49′*	*5° 17′*	*38° 40′*	*42 50*
		4° 46½′		
$10^h\ 4⅚^m$	*48° 47′*		*38° 37′*	
$10^h\ 8⅙^m$	*48° 45½′*		*38° 33′*	

Soon again vice versa from the first of the wing of Pegasus [Mox denuo viceverſa a prima alæ Pegaſi]

Hours, minutes [H. M.]	*Distance [Diſt.]*	*Declination [Decl.]*	*Altitude of the lower limb [Alt. inf. limbi]*	The jaw of the Whale, east [Mandib. Cete or.]
$10^h\ 10¾^m$	*34° 3⅚′*		*38° 31′*	
$10^h\ 13¼^m$	*34° 6⅓′*	*5° 21½′*		*16 44*
		4° 50′		

Hours, minutes [H. M.]	*Distance [Diſt.]*	*Declination [Decl.]*	*Altitude of the lower limb [Alt. inf. limbi]*	*Aldebaran, east [Aldeb. or.]*
$10^h\ 15^m$	*34° 6⅔′*			
$10^h\ 18^m$	*34° 8⅔′*	*5° 22′*		*37 12* }
		4° 52′		*$10^h\ 23^m$ [H. 10 M. 23]* }

For the place of the Moon. [Pro loco ☾.]

$7^h\ 22^m$, distance of the centre of the Moon from Jupiter [H. 7 M. 22 Diſt. centri ☾ a ♃]	20° 36′
Declination of the centre of the Moon [Declin. centri ☾]	4° 12′ north [B.]
Declination of Jupiter [Declin. ♃]	3° 43½′ south [M.]
Angular difference of ascension [Ang. diff. aſcenſ.]	19° 1′ 48″

Right ascension of the centre of the Moon [Aſc. recta centri ☾]	14° 15′ 28″
7⅚ʰ, the Moon from Mars, distance [H. 7⅚ ☾ a ♂ diſt.]	31° 31′
Declination of the Moon [Declin. ☾]	4° 18′ north [B.]
Declination of Mars [Declin. ♂]	17° 3′
Angular difference of ascension [Ang. diff. aſcenſ.]	29° 24⅔′
Right ascension of the Moon [Aſc. recta ☾]	14° 24′ 0″
Put 7⅓ʰ: right ascension of the Moon [Pone H. 7⅓ Aſc. R. ☾]	14° 14′
Declination [Declinationem]	4° 12′ north [B.]
Resp. longitude [Reſp. Longitudo]	14° 43½′ ♈
Latitude [Latitudo]	1° 46½′ south [M.]

To test the armillae, the declination of Aldebaran was observed again [Pro examine Armillarum obſeruabatur denuo declinatio Aldeb.]: 15° 39⅚′; 15° 38⅚′.

Altitude of Aldebaran [Alt. Aldeb.] 42½

At 10ʰ 38ᵐ [H. 10 M. 38], the bright foot of Orion, east [Lucidus pes Orionis or.]: 43 32⅓

6 November, in the evening [DIE 6 NOUEMBRIS, VESPERI.]

The Moon was at full moon near the mean opposition. [☾ erat in plenilunio iuxta ☍ mediam.]

The Moon was observed near the 90th degree at 10⅔ʰ. [Obſeruabatur ☾ iuxta 90 Gr. H. 10⅔.]

Distance of the western limb of the Moon from the lower head of ♊. [Diſtantia occid. limbi ☾ ab inferiori capite ♊.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination [Declin.]	Altitude, upper [Altit. ſuper.]	The bright foot of Orion, east [Luc. pes Orion. or.]
{ 10ʰ 22ᵐ 50ˢ	56° 3½′	20° 27′	51° 32′	45 35
{ 10ʰ 26⅔ᵐ corrected [corr.]		19° 54′		
{ 10ʰ 27ᵐ 20ˢ	56° 2′*	20° 29′	51° 40′	44 15
{ 10ʰ 31ᵐ corrected [corr.]		19° 55′	*among clouds [*inter nubes]	
{ 10ʰ 30⅓ᵐ	56° 0½′			43 47
{ 10ʰ 34¼ᵐ corrected [corr.]				
{ 10ʰ 32⅓ᵐ	55° 59′			43 20
{ 10ʰ 36½ᵐ corrected [corr.]				
{ 10ʰ 37ᵐ 10ˢ	55° 56⅔′			41 50
{ 10ʰ 41ᵐ 0ˢ corrected [corr.]				

Vice versa, the eastern limb of the Moon from the bright star of ♈. [Viceverſa orient. limbi ☾ a Lucida ♈.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination [Declin.]	Altitude, upper [Altit. ſuper.]	The bright foot of Orion, east [Luc. pes Orion. or.]
{ 10h 44m 20s	21° 41⅓′			40 12
{ 10h 48¼m corrected [corr.]				
10h 46⅔m	21° 41¾′			39 44½
{ 10h 49m 0s	21° 42′			39 1
{ 10h 53m 0s corrected [corr.]				
10h 51m 0s	21° 44⅔′	20° 34′ upper [ſup.]		38 30½

Distance of the western limb of the Moon from the lower head of ♊. [Diſt. occid. limbi ☾ ab inf. capite ♊.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination [Declin.]	Altitude, upper [Altit. ſuper.]	The bright foot of Orion, east [Luc. pes Orion. or.]
10h 54½m	55° 54′			37 42
10h 56m 50s	55° 52⅓′			37 3
{ 11h 5½m	55° 49′			34 48
{ 11h 9⅚m corrected [corr.]				
11h 8m 40s		20° 36′ good [bona]		
		19° 59′		
{ 11h 45⅔m	The western limb of the Moon on the meridian [Occid. limbus ☾ in Meridiano]			
{ 11h 50½m corrected [corr.]	having an altitude [habens Altitudinem]			
	by the steel instrument [per Chalyb.] 54° 46¾′, 54° 16½′			
	by the revolving quadrant [per Volub.] 54° 45′, 54° 18′			
	Declination [Declin.] 20° 43⅓′ upper [ſuper.]			
	20° 11′ lower [infer.]			

Dense clouds covered the sky, so that no more stars were seen. [Nubes denſæ cœlum operiebant, adeo vt nullæ ſtellæ amplius ſunt viſæ.]

Computation of the place of the Moon from the preceding observations. [Supputatio loci ☾ ex antecedentibus obſeruationibus.]

10^h 35^m, distance of the centre of the Moon [H. 10 M. 35 Diſt. centri ☾]	
from the lower head of ♊ [ab inf. cap. ♊]	55° 45′ 0″
taking the semidiameter [accipiendo ſemid.]	15½′
Declination of the centre of the Moon [Declin. centri ☾]	20° 11½′ north [B.]
Declination of the lower head of ♊ [Declin. inf. cap. ♊]	28° 57′
Angular difference of ascension [Ang. diff. aſc.]	61° 11′ 30″
Right ascension of the lower head of ♊ [Aſc. R. inf. cap. ♊]	110° 7½′
Therefore the right ascension of the centre of the Moon [Ergo Aſc. R. centri ☾]	48° 56′ 0″
$10¾^h$, distance of the centre of the Moon from the bright star of ♈ [H. 10¾ Diſt. centri ☾ a luc. ♈]	21° 24¾′
Declination of the centre of the Moon [Declin. centri ☾]	20° 13½′
Declination of the bright star of ♈ [Declin. lucidæ ♈]	21° 31½′
Angular difference of ascension [Ang. diff. aſc.]	22° 53⅔′
Right ascension of the bright star of ♈ [Aſc. R. lucidæ ♈]	26° 8′ 50″
Right ascension of the centre of the Moon [Aſc. R. centri ☾]	49° 2′ 30″
$10⅔^h$, right ascension of the Moon [H. 10⅔ Aſcenſio Recta ☾]	48° 59′ 15″
Declination of the Moon, north [Declinatio ☾ B.]	20° 12′ 30″
Resp. longitude [Reſp. Longitudo]	21° 57⅔′ ♉
Latitude [Latitudo]	1° 57⅙′ north [B.]
Arc of inclination [Arcus inclinationis]	6′, added [6 add.]
Resp. true longitude of the Moon [Reſp. vera Longitudo ☾]	22° 4¼′ ♉

From Prut., the Moon [Ex Prut. ☾]	Simpl. Long. [Simpl. Long. S. 2 29°23′21″]	2^s 29° 23′ 21″
Equation of time [Æq.temp.]	Anom. simp. [Anom. ſimp.]	0 34 36 12
24^m [M. 24]	Our Simpl. ☉ [Noſt. Simpl. ☉]	7 25 22 3

All things[1] considered, about 2′ more can be added to the motion of the Moon, so that it is 22° 6½′ ♉. [Rebus[1] omnibus penſitatis poßunt addi adhuc ad motum ☾ 2 M. quaſi, vt ſit 22 6½ ♉.]

10 November, in the morning, among clouds [DIE 10 NOUEMBRIS, MANE, inter nubes.]

The Moon at the beginning of ♋, in the greatest northern latitude. [☾ in principio ♋ in Borea latitudine maxima.]

[1] Written in the margin. [In margine adſcripta.]

When the Moon had crossed the meridian. [Cum ☾ eßet tranſuecta Merid.]

3½ in azimuth. [3½ in Azim.]

Altitude of the limb by the revolving quadrant [Altitudo per Volub. limbi]

upper [ſup.]	62° 17½′ }	Approximately [En plati]
lower [inf.]	61° 42′ }	
Altitude of the lower limb by the steel instrument [Altit.infer.limbiperChalyb.]	61° 41′ }	
Declination, upper [Declin. ſup.]	28° 8′	
lower [inf.]	27° 33⅔′	

Afterwards, when the sky had cleared somewhat, the eastern limb of the Moon was observed from Regulus for the daily motion, as follows. [Poſtea, facta aliqua ſerenitate obſeruabatur pro motu diurno orient. limbus ☾ a Regulo vt ſequitur.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination, lower/upper [Decl. inf./ſup.]	Altitude of the Moon, upper [Altit. ☾ ſuper.]	Saturn, *east* [♄ *orient.*]
5^h 58^m	51° 29½′		42° 10′	11 15
6^h 1⅓^m	*51° 28½′*	*27° 33′* *28° 6½′*	41° 42′	10 25

Hours, minutes [H. M.]	Distance [Diſt.]	Declination, lower/upper [Decl. inf./ſup.]	Altitude of the Moon, upper [Altit. ☾ ſuper.]	Arcturus, east [Arct. or.]
6^h 16⅓^m		*27° 31′* *28° 5½′*	39° 29′	56 9

To test the armillae, the lower head of ♊ *was taken* [Pro examine Armillarum capiebatur inferius caput ♊]

in declination [in Declinatione]	*28° 57⅓′*
Repeated [Repetita]	*28° 57½′*

13 November, in the morning [DIE 13 NOUEMBRIS, MANE.]

The eastern limb of the Moon was observed from the lower head of ♊. [Obſeruabatur orient. limbus ☾ ab inf. cap. ♊.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of the upper limb [Alt. ſuper. limbi]	Canicula, west [Canicula occid.]
6^h 4^m	25° 3′		48° 35½′	56 51
	25° 5′	20° 54½′ 21° 29′	48° 15′	58 32

Hours, minutes [H. M.]	Distance of Saturn and the Moon [Dist. ♄ & ☾]	Declination [Declin.]	Altitude of the lower limb [Alt. inf. limbi]	Canicula, west [Canicula occid.]
	24° 46′		46° 54′	60 29
	24° 45⅔′			60 54
	24° 43¾′	20° 49′	46° 40′	61 31
		21° 25′		

The dawn took from us the opportunity of observing more. [Plura obſeruandi occaſionem Aurora nobis præripuit.]

16 November [DIE 16 NOUEMBRIS.]

Before noon the eastern limb of the Moon was taken from the Sun. [Ante Meridiem capiebatur orient. limbus ☾ a ☉.]

The Moon at the 90th degree at 10¼^{h}. [☾ in 90 Gradu H. 10¼.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of the Moon [Declin. ☾]	Altitude of the lower limb of the Moon [Altit. ☾ inf. limbi]	The Sun, east [☉ or.]
11^{h} 33¼^{m}	67° 12¾′		19° 40′	6 35

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of the Moon [Declin. ☾]	Altitude of the Sun [Alt. ☉]	The Sun, east [☉ or.]
11^{h} 36⅔^{m}	67° 12½′		13° 3′	5 47½
11^{h} 39⅙^{m}	67° 12′	2° 23′	13° 5′	5 12⅓
		2° 55′		

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of the Moon [Declin. ☾]	Altitude of the Sun [Alt. ☉]	The Sun, east [☉ or.]
11^{h} 43¾^{m}	67° 8′	2° 54½′	13° 7′	4 0

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of the Moon [Declin. ☾]	Altitude of the Moon, lower [Alt. ☾ inf.]	The Sun, east [☉ or.]
	67° 4⅓′	2° 24½′		
11^{h} 46⅚^{m}	67° 0⅔′		17⅖°	2 36⅔
11^{h} 47¼^{m}	67° 0′	2° 52′	17° 2′	1 51¼
		2° 21½′		
11^{h} 46⅚^{m}		altitude of the Sun [Alt. ☉]	13° 10′	
11^{h} 47¼^{m}			13° 11⅓′	

17 November [DIE 17 NOUEMBRIS.]

The eastern limb of the Moon was observed when it was about 90° [90 Gr.] from the Sun. [Obſeruabatur orientalis limbus ☾ cum eßet circa 90 Gr. a ☉^{le}.]

Hours, minutes [H. M.]	Distance [Dist.]	Declination, lower/upper [Declin. inf./sup.]	Altitude of the upper limb [Altit. sup. limbi]	The Sun, east [☉ or.]
11h 14⅓m			21° 31⅙′	11 50
11h 16¼m	53° 57′	4° 25′	21° 16½′	11 26
		3° 54′		
11h 20⅓m	53° 52′		20° 58′	10 24
11h 22m	53° 50′		20° 40′	10 0
11h 23⅔m	53° 47′	4° 26½′		9 32
		3° 56′		
11h 30¾m	53° 41½′		18° 34′	7 45

No more could be taken because of the frequent clouds. [Plura capi propter crebras nubes non potuerunt.]

To correct the clock, the equatorial distances of the Moon must be limited, by a comparison made with the clock, since they could be observed only with difficulty, because the horizontal circle scattered the shadow of the Sun on the equator. [Pro horologio corrigendo oportet distantias æquatorias ☾ limitare, collatione facta cum horologio, siquidem illæ difficulter obseruari poterant ob circulum horizontalem ☉$^{l_{is}}$ vmbram in æquatore dißipantem.]

25 November [DIE 25 NOUEMBRIS.]

At 4h 0m [H. 4 0], meridian altitude of the Moon. [☾ Altit. Merid.]

	upper [super.]	lower [infer.]
on the steel instrument [in Chalyb.]	10° 28¼′	10° 1½′
on the revolving quadrant [in Volub.]	10° 29′	10° 1¾′

N.B. The Moon had passed the meridian by the semidiameter of the Moon, or 20′ [20 M.] at most. Then the western limb of the Moon was observed from Jupiter. [N.B. Fuit ☾ transuecta Meridianum semidiametro ☾ vel 20 M. ad summum. Deinde obseruabatur occid. limb. ☾ a ♃.]

N.B. Moreover, the Moon was nearly in the middle place between the conjunction and the square of the Sun, and also at the mean distance from the Earth. [N.B. Fuit autem ☾ medio loco fere inter ☌ & □ ☉ in media etiam a terra distantia.]

Hours, minutes [H. M.]	Distance [Dist.]	Declination, lower/upper [Declin. inf./sup.]	Altitude of the lower limb [Alt. inf. limbi]	Jupiter, east [♃ or.]
4h 22⅙m	46° 40′		9° 58′	
4h 23½m	46° 38⅔′	24° 5′		37 52
		23° 31′		
4h 28⅔m	46° 36½′			36 25
4h 30⅔m	46° 35′	24° 4½′	9° 45′	35 52
		23° 30′		

The Moon had passed the 90th degree a little. Therefore account must be taken of the parallax of longitude. [Fuit ☾ 90 Gradum aliquantulum tranſuecta. Ideoque Parallaxis Longitudinis habenda eſt ratio.]

For correcting the clock [Pro corrigendo Horologio]

4 38	the Vulture, west [Vultur occid.]	28 46
4 42½		29 54

4 December [DIE 4 DECEMBRIS.]

In the evening we observed the Moon around the 90th degree, approaching the opposition of the Sun. [Veſperi obſeruabamus ☾ circa 90 Gradum appropinquantem oppoſitioni ☉.]

The Moon at the nonagesimal degree at $9^h\ 32^m$. [☾ in nonageſ. gradu H. 9 M. 32.]

Distance of the western limb from the bright star of ♈. [Diſt. occid. limbi a Lucida ♈.]

Hours, minutes, seconds [H. M. S.]	Distance, eastern limb [Diſt. or.limb.]	Declination, lower/upper [Declin. inf./ſup.]	Altitude, lower [Altit. inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
{ $9^h\ 8^m$ { $9^h\ 12^m\ 50^s$ corrected [corr.]	28° 51′		54° 13′	43 32

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.], western [occid.]	Declination, lower/upper [Declin. inf./ſup.]	Altitude, lower [Altit. inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
$9^h\ 9⅓^m$	28° 22′	22° 29¼′ 23° 0⅓′		
$9^h\ 12⅙^m$	28° 23′		54° 26′	42 27
$9^h\ 14⅙^m$	28° 24⅙′	22° 30′ 23° 0½′	54° 46′	41 59
{ $9^h\ 16^m$ { $9^h\ 20^m$ corrected [corr.]	28° 25′			

Vice versa, from the lower head of ♊. [Viceverſa ab infer. capite ♊.]

Hours, minutes, seconds [H. M. S.]	Declination, lower/upper [Declin. inf./ſup.]	Altitude, lower [Altit. inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
$9^h\ 19½^m$	47° 58½′ 22° 31′ 23° 3′	54° 53′	40 40

Hours, minutes, seconds [H. M. S.]	Declination, lower/upper [Declin. inf./ſup.]	Altitude, lower [Altit. inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
9^h 21½^m	47° 55⅔′		
9^h 23⅔^m	47° 54½′ 22° 31⅔′ 23° 3¼′	54° 55′	39 36
9^h 25½^m	47° 52⅔′	55° 0′	
{ 9^h 27⅔^m	47° 52′	55° 23′	38 28
{ 9^h 33^m corrected [corr.]			

To test the armillae, the declination of Aldebaran was observed [Pro examine Armillarum obſeruabatur Declinatio Aldeboræ]: 15° 37′ 0″; 15° 37½′.

6 December, in the evening [DIE 6 DECEMBRIS, VESPERI.]

To test the armillae with which the Moon will be observed afterwards, the northern declination of the horn of ♉ was observed at 11^h 4^m [H. 11 M. 4]: 28° 11′; 28° 11½′, twice, with both pinnules. [Pro examine Armillarum quibus ☾ poſtea obſeruabitur, obſeruabatur Declin. borealis Cornu ♉ H. 11 M. 4 28 11 28 11½ bis vtroque pinnacidio.]

The altitude of the same northern horn of ♉ on the meridian, by the steel instrument, 62° 16⅓′. This altitude is not to be trusted, because the star, while crossing the meridian, was so wrapped in small clouds that it could not be observed precisely enough. [Altitudo eiusdem borealis Cornu ♉ per Meridianum per Chalyb. 62 16⅓. Huic Altitudini non eſt fidendum, quod ſtella Meridianum tranſiens nubeculis ita inuoluta fuerit, vt ſatis præciſe obſeruari nequiuerit.]

N.B. The Moon observed being nearest to full moon, to the summer tropic and to the greatest latitude. [N.B. ☾ obſeruata proxima exiſtens plenilunio & Tropico Æſtiuo atque Latitudini maximæ.]

The clock was corrected a little before these observations were made. [Corrigebatur horologium paulo ante has obſeruationes factas.]

Hours, minutes [H. M.]	Distance from the bright star of ♈ [Diſt. a luc. ♈]	Declination, upper/lower [Decl. ſup./inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
11^h 33^m	53° 41′ western limb [occ. limb.]	27° 50½′	5 33
		27° 19′	
11^h 38¾^m	54° 12½′ eastern [orient.]		4 5
11^h 40⅔^m	54° 13½′ eastern [orient.]		3 35
11^h 42^m	54° 15′ eastern [orient.]		
11^h 43½^m	54° 15⅔′	27° 51′	2 47
		27° 20′	
{ 11^h 48^m	54° 16¾′		1 37
{ 11^h 50⅔^m			

Vice versa, the eastern limb of the Moon from the lower head of ♊. [Viceverſa orient. limbus ☾ ab inferiori Capite ♊.]

Hours, minutes [H. M.]	Declination, upper/lower [Decl. ſup./inf.]	The right shoulder of Orion, east [Dext. hum. Orion. or.]
{ 11^h $51\frac{1}{3}^m$	21° 15⅓′	0 46
{ 11^h 54^m 5^s corrected [corr.]		
11^h $53\frac{1}{6}^m$	21° 15′ 27° 50⅚′	0 17

Hours, minutes [H. M.]	Declination, upper/lower [Decl. ſup./inf.]	The same [idem]
	27° 19⅔′	
11^h $54\frac{1}{3}^m$	21° 13′	0 2

N.B. The Moon at the 90th degree at exactly 12^h [H. 12]. [N.B. ☾ in 90 Gradu H. 12 exacte.]

Put, at the hour 11^h 50^m [Horam 11 M. 50], rectified however, the distance of the Moon

from the bright star of ♈ [a Lucida ♈]	*54° 17½′* }	*as to the eastern limb.* [quoad orient. limb.]
the same from the lower head of ♊ [eandem ab inf. cap. ♊]	*21° 16¼′* }	

For the semidiameter, moreover, take 16′, and from this you will compound the place of the Moon, applying the declination to the said time; but, as seen, it is to be emended somewhat by the parallax, because of some distance, namely ⅙ of an hour, from the 90th degree; then make a trial in what follows. [Pro ſemid. autem accipe 16′, & hinc conflabis locum ☾, applicata Declinatione ad dictum tempus, ſed viſum nonnihil emendandum per Parallaxin ob aliqualem videlicet ⅙ horæ diſtantiam a 90 Gradu, fac deinde periculum in ſequentibus.]

At 12^h $3\frac{1}{4}^m$ [H. 12 M. 3¼] the western limb of the Moon crossed the meridian; and the bright or right shoulder of Orion was then exactly 2° 21½′ west on the equator. [Tranſiuit occid. limbus ☾ per Meridianum, fuit autem tunc lucidus ſeu dexter humerus Orionis occid. in æquatore exacte 2 21½]

Meridian altitude at the mean time between the transit of the western and the eastern limb [Altitudo meridiana medio tempore inter tranſitum occ. & orient. limbi]

upper, on the steel instrument [ſuper.inChal.]	61° 57⅓′	lower [infer.]	61° 24¼′
on the revolving quadrant [in Vol.]	61° 58′		61° 25′

The centre of the Moon observed by the shadow on the steel instrument, 61 41 0, with as much care as could be taken. [Centrum lunæ per vmbram obſeruatum in Chalyb. 61 41 0 ea attentione qua fieri poterat.]

At 12^h 5½^m [H. 12 M. 5½] the eastern limb of the Moon crossed the meridian. The right shoulder of Orion was then 2 56 west. [Tranſiuit orient. limbus ☾ per Meridianum. Fuit tunc dexter humerus Orionis 2 56 occid.]

Afterwards the eastern limb of the Moon was taken again from the lower head of ♊. [Poſtea rurſus capiebatur orient. limbus ☾ ab inferiori capite ♊.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of the Moon, upper/lower [Decl. ☾ ſup./inf.]	The right shoulder of Orion, west [Dext. hum. Orion. occ.]
12^h 15^m	21° 1½′		5 25
12^h 16½^m	21° 1′		
12^h 18^m	20° 59⅔′	27° 51⅓′	5 41
		27° 20⅚′	

N.B. For finding the greatest latitude of the Moon you can rely quite safely on this observation, putting the altitude of the centre, when it was on the meridian, at precisely 61° 41′. For the revolving quadrant gave, as to the centre of the Moon, 61 41½; but the steel instrument gave a little less, namely 61 40 47. The mean of these was therefore very nearly 61 41⅙; but since the steel instrument is rather to be trusted, 61 41 exactly. This also agrees with the observation of the centre of the Moon by its shadow on the steel instrument, 61 41. Nor could it be less, but rather ½′ more, if anything. [N.B. In hanc obſeruationem pro Latitudine ☾ maxima inquirenda potes ſatis tuto te fundare, ponendo Altitudinem Centri cum eßet in Merid. 61 41 præciſe Nam Volubilis dabat quoad Centrum ☾ 61 41½ Aſt Chalybæus paulo minus, vtpote 61 40 47 Medium itaque horum fuit proxime 61 41⅙, at quoniam potius Chalybeo fidendum erit, 61 41 exacte. Quod etiam concordat cum obſeruatione centri ☾ ex vmbra eius in Chalybeo 61 41. Nec poterit minus eße, ſed potius ½ minuto plus, ſi quid eßet.]

Calculation for the true place of the Moon. [Calculus pro vero loco ☾.]

At 11^h 52^m, distance of the centre of the Moon [H. 11 M. 52 Diſt. centri ☾]	
from the bright star of ♈ [a luc. ♈]	54° 2½′
Declination of the centre of the Moon [Declin. centri ☾]	27° 35′
Declination of the bright star of ♈ [Declin. luc. ♈]	21° 31½′
Angular difference of ascension [Ang. diff. aſcenſ.]	59° 35⅔′
Right ascension of the bright star of ♈ [Aſc. recta luc. ♈]	26° 8′ 50″
Therefore right ascension of the Moon [Ergo Aſc. recta ☾]	85° 44½′
At the same time, distance of the centre of the Moon [Eodem tempore Diſt. centri ☾]	
from the lower head of ♊ [ab inf. cap. ♊]	21° 31′
Angular difference of ascension [Ang. diff. aſcenſ.]	24° 25′ 40″
Right ascension of the lower head of ♊ [Aſc. R. inf. cap. ♊]	110° 7′ 30″

Therefore right ascension of the Moon [Ergo Aſc. recta ☾]	85° 41′ 50″
At 11^{h} 52^{m}, right ascension of the Moon [H. 11 M. 52 Aſc. R. ☾] limited [limitata]	85° 43′ 10″
Declination, north [Declinatio B.]	27° 35′
Resp. longitude [Reſp. Longitudo]	26° 12′ 0″ ♊
Latitude [Latitudo]	4° 6′ 53″ north [B.]

Observations of Saturn [OBSERUATIONES SATURNI.]

24 January, in the evening [DIE 24 JANUARIJ, VESPERI.]

We observed Saturn acronychal and moving towards opposition with the Sun, near the meridian. [Obſeruabamus ♄ Acronychium & ad ☍ ☉ tendentem circa Meridianum.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Canis min. occid.]
11^{h} 40^{m}	34° 25⅔′		23 58
11^{h} 42^{m} 40^{s}	34° 26′	15° 40½′ with both [vtroq.]	24 35
11^{h} 47^{m} 25^{s}	34° 26′		25 52½
11^{h} 50^{m} 10^{s}	34° 26⅙′	15° 40′ 15° 40¼′	26 31

Vice versa, distance of Saturn from the tail of ☌. [Viceverſa Diſt. ♄ a cauda ☌]

Hours, minutes, seconds [H. M. S.]	Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Canis min. occid.]
11^{h} 57^{m} 30^{s}	26° 19⅙′	28 21
11^{h} 59^{m} 45^{s}	26° 19¼′ 15° 40½′ 15° 40⅔′	28 53
12^{h} 4^{m} 0^{s}	26° 19⅙′	

To correct the armillae, the declination of cor ☌ was taken [Pro corrigendis Armillis ſumta eſt Declinatio Cordis ☌]: 13° 56⅓′; 13° 56⅔′.

12 25 0 Saturn crossed the meridian, having the altitude [12 25 0 Tranſiuit ♄ per Meridianum habens Altitud.]

		The Lesser Dog, west [Can. min. occ.]
by the steel quadrant [per Quadr. Chalyb.]	49° 44⅔′	35 9
by the revolving quadrant [per Volub.]	49° 44½′	

12 33 5 cor ☌ crossed the meridian, having the altitude [12 33 5 Tranſiuit Cor ☌ per Meridianum habens Altitudinem]

by the steel instrument [per Chalyb.]	48° 0¾′
by the revolving quadrant [per Volub.]	48° 0⅔′

The Lesser Dog was west, on the equator, 37° 10′. [Erat Canis minor occid. in Æquat. 37 10]

It was quite clear and calm. [Fuit bene ſerenum & tranquillum.]

Declination of Regulus this year 13° 55¼′, good. [Declin. Reguli hoc anno 13 55¼ bona.]

The declination taken by the armillae in both cases, as much in cor ♌ as in Saturn, is in excess by 1⅓; but the quadrants are rather to be trusted, putting the declination of Saturn at 15° 39⅙′, and the distance from the lower head of ♊ at 34° 26′, from the tail of ♌ at 26° 19⅙′. [Declinatio vtrobique tam in Corde ♌ quam ♄ per armillas ſumta abundat 1⅓, ſed fidendum potius quadrantibus, ponendo ♄ Declinationem 15 39⅙ & diſt. ab infer. Capite ♊ 34 26, a Cauda ♌ 26 19⅙.]

From the transit of the meridian the equatorial difference of the two is found to be 2° 1′ [P. 2 M. 1], and this as nearly as possible both according to the equatorial distance by the transit of the Lesser Dog and according to the clock. Therefore the right ascension of Saturn is ahead of the right ascension of Regulus by 2° 1′ [duobus gradibus & 1 ſcrupulo], but the declina- [Per tranſitum Meridiani reperitur vtriusque differentia æquatoria P. 2 M. 1, idque tam iuxta æquatoriam diſtantiam per tranſitum Canis minoris, quam iuxta horologium quam proxime. Ergo Aſc. R. ♄ eſt anterior quam Aſcenſio Recta Reguli duobus gradibus & 1 ſcrupulo, ſed Declina-] *-tion of it exceeds the declination of Regulus by 1° 44′ [P. 1 M. 44]. From this, from the given right ascension of Regulus for this time, which*

is [eſt]	*146° 40¾′*	*Declination of Regulus [Decl. Reguli]*	*13° 55′ 15″*
Distance from Saturn [Diſt. a ♄]	*2° 1′*	*Excess of Saturn [Exceβus ♄]*	*1 43 55*
Right ascension of Saturn [A. R. ♄]	*144° 39¾′*	*Declination of Saturn [Decl. ♄]*	*15° 39′ 10″*

Saturn's longitude is therefore 21° 47⅔′ ♌, latitude 1° 26⅙′ north [B.]. [Eſt igitur ♄ Longitudo 21 47⅔ ♌ Latitudo 1 26⅙ B.]

	Prutenic calculation [Calculus Prutenicus]	*Alphonsine [Alphonſinus]*
Longitude [Longitudo]	*21° 52½′ ♌*	*24° 1½′ ♌*
Latitude [Latitudo]	*0° 36½′ north [B.]*	*1° 27′ north [B.]*

From this it is clear that the Prutenic numbers correspond here as nearly as possible to the observation, with a difference of only 5′ [5 ſcrupulorum]. But in latitude they fall short by ⅚ of one degree, while in this the Alphonsine nearly agrees; the cause of this comes about by accident, because the place of the apogee and the limits of greatest latitude cancel each other in like manner as to the error falling on each, as you have

it noted elsewhere. As to the longitude, however, the Alphonsine calculation errs by being in excess by 2¼°, just as the Prutenic also exceeded the observation in those 5′ [quinis iſtis ſcrupulis]. [Ex quibus liquet numeros Prutenicos hic quam proxime obſeruationi correſpondere, differentia ſaltem incidente 5 ſcrupulorum. At in latitudine demunt 5/6 vnius gradus, cum in hac Alphonſinus pene concordet, cuius cauſa fit per accidens ob Apogæi locum & terminos maximæ latitudinis ſeſe quoad errorem vtrique incidentem pariformiter elidentes prout alias annotatum habes. Quoad longitudinem vero Alphonſinus calculus gradibus 2¼ abundando aberrat, quemadmodum etiam Prutenicus in quinis iſtis ſcrupulis obſeruationem exceßit.]

But it must also be seen what the distances, vice versa, from the heart and the tail of ☋ give. [Sed videndum etiam quid diſtantiæ viceverſa a corde & cauda ☋ inducant.]

31 January, in the morning [DIE 31 JANUARIJ, MANE.]

Saturn was observed near opposition with the Sun. [Obſeruabatur ♄ prope ☍ ☉$^{l_i^s}$.]

Hours, minutes [H. M.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination of Saturn, north [Decl. ♄ B.]	Altitude [Altit.]	Spica, west [Spica ♍ occid.]
{ 5^h 22^m 45^s	33° 59′	15° 50½′	23° 20′	19 45
{ 4^h 48½^m corrected [corr.]		15° 51′		
{ 5^h 28^m 45^s	33° 58⅔′			21 20
{ 4^h 52^m corrected [corr.]				
{ 5^h 30^m 20^s	33° 58′		22° 15′	21 46
{ 4^h 56¾^m				

Vice versa, from the tail of ☋. [Viceverſa a Cauda ☋]

Hours, minutes [H. M.]	Declination of Saturn, north [Decl. ♄ B.]	Altitude [Altit.]	Spica, west [Spica ♍ occid.]
{ 5^h 35^m 10^s	26° 47⅙′		23 7
{ 4^h 59^m corrected [corr.]			
{ 5^h 37^m 10^s	26° 46⅓ſ5° 50⅓′	21° 15′	23 36
{ 5^h 4^m corrected [corr.]	15° 50′		
{ 5^h 42^m 30^s	26° 47′	20° 25′	25 1
{ 5^h 9⅔^m corrected [corr.]			

To correct the armillae the declination of cor ☋ was taken [Pro Armillis corrigendis ſumebatur Declin. Cordis ☋]: 13° 57′; 13° 57⅙′. It is in excess by 2′ [Abundat 2′.]. Altitude of cor ☋ [Altit. Cordis ☋] 19° 46′.

Put, in the distance [Pone in diſt.]

from the lower head of ♊ [ab inf. cap. ♊]	*33° 58⅔′*
from the tail of ☋ [a cauda ☋]	*26° 47′*
Declination [Declinat.]	*15° 48′*

Afterwards the equatorial distance of Saturn from cor ☋ was observed. [Poſtea obſeruabatur æquatoria diſtantia ♄ a corde ☋.]

	corrected [corr.]		west [occid.]	Spica, west [Spica occ.]
5 49 30	5 17 0	Saturn [♄]	78 45	26 52½
5 50 50	5 18 24	cor ☋ [Cor ☋]	76 32⅓	27 13
5 51 55	5 19 40	Saturn [♄]	79 17¾	27 32
5 52 50	5 20 32	cor ☋ [Cor ☋]	77 0⅚	27 45
5 57 0	5 25 22	Saturn [♄]	80 42	28 58
5 57 50		cor ☋ [Cor ☋]	78 22¾	
5 50 50		Altitude of Saturn [Alt. ♄] 19° 10′		
5 52 50		Declination of Saturn [Decl. ♄] 15° 50′	15° 51′	
5 57 0		Altitude of Saturn [Alt. ♄] 18° 4′		

6 0, nearly. The distance between Saturn and cor ☋, 3° 20′[1], twice with the Radius, but among small clouds. [6 0 quaſi. Diſt. inter ♄ & Cor ☋ 3 20[1] bis per radium, ſed inter nubeculas.]

Around this time Regulus was placed equally with Saturn with respect to the level of the horizon. [Fuit Regulus circa hoc tempus cum ♄ ad æquilibrium Horizontis æque diſpoſitus.]

Computation of the place of Saturn from the observations, for 24 January. [Supputatio loci ♄ ex obſeruationibus ad diem 24 Januarij.]

At 11¾^{h}, distance of Saturn from the lower head of ♊ [H. 11¾ Diſt. ♄ ab infer. cap. ♊]	34° 26′
Declination of the lower head of ♊ [Declin. inf. cap. ♊]	28° 56½′ north [B.]
Declination of Saturn [Declin. ♄]	15° 39⅙′
Angular difference of ascension [Ang. diff. aſcenſ.]	34° 32′ 30″
Right ascension of the lower head of ♊ [Aſc. R. inf. cap. ♊]	110° 6′ 30″
Therefore right ascension of Saturn [Ergo Aſc. R. ♄]	144° 39′ 0″
At 12^{h} 0^{m}, distance of Saturn from the tail of ☋ [H. 12 0 Diſt. ♄ a cauda ☋]	26° 19⅙′
Declination of the tail of ☋ [Declin. caudæ ☋]	16° 51′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſionalis]	27° 24′ 40″
Right ascension of the tail of ☋ [Aſc. R. caudæ ☋]	172° 4′ 45″
Right ascension of Saturn [Aſc. R. ♄]	144° 40′ 5″

Therefore at 12^h complete [Ergo H. 12 completa,]	
right ascension of Saturn [Aſc. R. ♄]	144° 39½′
Declination of Saturn, north [Declin. ♄ B.]	15° 39⅙′
Resp. longitude [Reſp. Longitudo]	21° 47′ 30″ ♌
Latitude [Latitudo]	1° 26′ 15″ north [B.]

Nearly the same place results from the transit through the meridian; see above. [Idem fere locus prouenit ex tranſitu per meridianum, vide ſuperius.]

[1] Uncertain because of an ink blot. [Incerta propter maculam atramenti.]

Investigation of the place of Saturn from the observations of 31 January. [Inveſtigatio loci ♄ ex obſeruationibus diej 31 Januarij.]

At 4^h 50^m, distance of Saturn [H. 4 M. 50 Diſt. ♄]	
from the lower head of ♊ [ab inf. cap. ♊]	33° 58⅔′
Declination of Saturn [Declin. ♄]	15° 48′ north [B.]
Angular difference of ascension [Ang. diff. aſc.]	34° 4¼′
Therefore right ascension of Saturn [Ergo Aſc. R. ♄]	144° 10′ 45″
At 5^h 9^m, distance of Saturn from the tail of ♌ [H. 5. 9 Diſt. ♄ a cauda ♌]	26° 47′
Angle [Angulus]	27° 54¾′
Therefore right ascension of Saturn [Ergo Aſc. R. ♄]	144° 10′ 0″
At 5^h put the right ascension of Saturn [H. 5 pone Aſc. Rectam ♄]	144° 10⅓′
and the declination [et declinationem]	15° 48′ 0″
to which, resp., the longitude [quibus reſp. Longitudo]	21° 18′ 0″ ♌
Latitude [Latitudo]	1° 25⅖′ north [B.]

N.B. That the latitude of Saturn here varies from the earlier and the following observations, falling short by about 1′ [M. 1], comes about without doubt because of the declination, reduced too much by the limitation; and moreover because the observations were made among openings [inter chaſmata]. [N.B. Quod Latitudo ♄ hic a ſuperioribus & ſequentibus obſeruationibus circiter M. 1 deficiendo variet, euenit procul dubio ob declinationem per limitationem nimium attenuatam, inſuper quod obſeruationes factæ ſint inter chaſmata.]

1 February [DIE 1 FEBRUARIJ.]

In the evening Saturn was observed near the meridian in this way. [Veſperi obſeruabatur ♄ circa meridianum in hunc modum.]

N.B. An observation of Saturn on the very day on which it was opposed to the Sun in its mean place. [N.B. Obſeruatio ♄ eo ipſo die quo ☉ medio loco opponebatur.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination of Saturn [Declin. ♄]	The right shoulder of Orion, west [Dext. hum. Orion. occ.]
11^h 25^m 0^s	33° 48⅓′		

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination of Saturn [Declin. ♄]	The right shoulder of Orion, west [Dext. hum. Orion. occ.]
$11^h\ 25^m\ 50^s$	33° 49′	15° 53¼′	
		15° 54′	
$11^h\ 30^m\ 45^s$	33° 48½′		54 35

Vice versa, from the tail of ☋. [Viceverſa a cauda ☋]

Hours, minutes, seconds [H. M. S.]	Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Can. min. occ.]
$11^h\ 38^m\ 0^s$	26° 54½′	
$11^h\ 41⅓^m$	26° 54½′ 15° 53′ with both [vtroq.]	31 3
$11^h\ 45^m\ 5^s$	26° 55′	32 4

11 55 28 Saturn crossed the meridian, having the altitude [11 55 28 Tranſiuit ♄ per Meridianum habens Altitud.]

by the steel instrument [per Chalyb.]	49° 57¾′ good [bona]	
by the revolving quadrant [per Volub.]	49° 57′ 0″	
Put the declination of Saturn [Pone declin. ♄]	15° 52¼′	
The Lesser Dog, west [Canis minor occid.]		34 35

Cor ☋ crossed the meridian, having the altitude [Tranſijt Cor ☋ per merid. habens altit.]

		The Lesser Dog, west [Can. min. occ.]
by the steel instrument [per Chalyb.]	48° 0¾′ good [bona]	
by the revolving quadrant [per Volub.]	47° 59⅔′	37 14

The difference of the transits of cor ☋ and Saturn, from the noting of the Lesser Dog in both observations, 2° 39′ [2^g 39′]. [Differentia tranſitus Cordis ☋ & ♄ ex animaduerſione Canis minoris per vtramque obſeruationem 2^g 39′.]

N.B. These observations were made with the air not clear enough, but with rather sparse little clouds running across now and then while the observation was being made. They were, however, taken very carefully, so that, if the observations are rightly limited on both sides, one may rely on them quite safely for determining the acronychal position of Saturn this year; and this with a comparison made with the earlier ones for the daily motion of Saturn, by which, however, there can be no perceptible straying from the purpose, since these observations were made on the very same day on which Saturn was opposed to the mean motion of the Sun. [N.B. Obſeruationes hæ factæ

ſunt aëre non ſatis defæcato exiſtente, verum rariuſculis nubeculis ſubinde dum obſeruabatur, intercurrentibus. Sunt tamen diligenter admodum acceptæ, adeo vt ſi iuſte vtrinque limitentur obſeruationes, illis ſatis tuto fundari liceat pro Acronychio ſitu ♄ hoc anno terminando, idque collatione pro motu ♄ diurno cum ſuperioribus facta, qua tamen ab intentione ſenſibiliter aberrari nequit, ſiquidem hæ obſeruationes eodem ipſo die quo ♄ medio ☉ motui opponebatur, fiebant.]

The times given are corrected. [Tempora aßignata ſunt correcta.]

Investigation of the motion of Saturn for 1 February from the observations given above. [Inueſtigatio motus ♄ ad diem 1 Februarij ex aßignatis ſuperius obſeruationibus.]

At $11\frac{1}{2}^h$, distance of Saturn from the lower head of ♊ [H. 11½ Diſt. ♄ ab inf. cap. ♊]	33° 48⅔′
Declination of Saturn [Declin. ♄]	15° 52¼′
Angular difference of ascension [Ang. diff. aſc.]	33° 54′ 50″
Therefore right ascension of Saturn [Ergo Aſc. recta ♄]	144° 1′ 26″
At $11\frac{2}{3}^h$, distance of Saturn from the tail of ☋ [H. 11⅔ Diſt. ♄ a cauda ☋]	26° 54⅔′
Angular difference of ascension [Ang. diff. aſcenſ.]	28° 3′ 15″
Therefore right ascension of Saturn [Ergo Aſc. recta ♄]	144° 1′ 30″
Let there therefore be put, without any perceptible [Ponatur itaque absque vllo ſenſibili]	
error, at $11\frac{1}{2}^h$, the right ascension of Saturn [errore H. 11½ ♄ Aſc. R.]	144° 1½′
Declination, north [Declinatio B.]	15° 52¼′
Resp. longitude [Reſp. Longitudo]	21° 8½′ ☋
Latitude [Latitudo]	1° 26⅔′ north [B.]
From the difference of Saturn and cor ☋ in the transit through the meridian there results [Ex differentia ♄ & Cordis ☋ in tranſitu per meridianum prouenit]	
the right ascension of Saturn [Aſc. R. ♄]	144° 1¾′
For the opposition of Saturn with the mean motion of the Sun [Pro ☍ ♄ cum medio motu ☉]	
on 1 February at $11\frac{1}{2}^h$ [Die 1 Feb. H. 11½]	
Our simple Sun [Noſter Simplex ☉]	10^s 21° 24′ 29″
True place of Saturn [Verus Locus ♄]	5 21 8 30
Difference [Differentia]	16 0
From this it is gathered that Saturn was opposed to the [Hinc colligitur ♄ fuiße oppoſitum]	
mean motion on 1 February at $5\frac{1}{2}^h$, in [medio motui Die 1 Feb. H. 5½ in]	
longitude [Longit.]	21° 9¾′ ☋
latitude [Latit.]	1° 26½′ north [B.]
With the parallax of Saturn subtracted, latitude [Subducta Parallaxi ♄ Latit.]	1° 27′ north [B.]
Our precession [Noſtra Præceßio]	
of the equinox [Æquinoctij]	0 28 10 45
From the Prutenic Tables [Ex Tabulis Prutenicis]	
Simplex of the longitude of Saturn [Simplex Longitudinis ♄]	1 48 16 23
Apogee [Apogæus]	4 1 15 16
Arc of inclination, added [Arcus inclinationis add.]	1 50
Therefore the true longitude of Saturn [Ergo vera Long. ♄]	

in its own circle [in proprio circulo]	21° 11′ 35″ ♌

When a trial is made from these according to the correction of the simple motions of Saturn instituted some time ago, the place of Saturn comes out at 21 18 50, so that there is an excess of 7¼′; the greatest cause of this difference lies in the change of the apogee. [Facta ex his experimentatione iuxta correctionem motuum ♄ ſimplicium quondam inſtitutam prouenit Locus ♄ in 21 18 50, ita vt abundent 7¼′, cuius differentiæ cauſa maxima penes Apogæi mutationem incidit.]

N.B.[1] These have been corrected and investigated differently elsewhere. [N.B.[1] hæc alibi aliter ſunt correcta & inquiſita.]

5 February [DIE 5 FEBRUARIJ.]

Observations of Saturn after the opposition with the Sun. [Obſeruationes ♄ poſt ☍ cum ☉.]

Hours, minutes, seconds [H. M. S.]	Equatorial distance of Saturn and cor ♌, east [Æquat. diſt. ♄ & Cordis ♌ orient.]		Declination of Saturn [Declin. ♄]	The Greater Dog, west [Canis mai. occ.]
$8^h\ 42^m\ 35^s$	Saturn, east [♄ or.]	44° 7′	16° 0⅚′ with one [vno]	2 50
$8^h\ 44^m\ 15^s$	cor ♌ [Cor ♌]	46° 38⅓′		3 15
$8^h\ 49^m\ 30^s$	Saturn, east [♄ or.]	42° 20¼′	16° 0⅓′	4 36*
$8^h\ 50^m\ 45^s$	cor ♌ [Cor ♌]	44° 59⅓′	among clouds [*inter nubes]	4 54

Put the equatorial distance between cor ♌ and Saturn at $8¾^h$ 2° 57′ 0″ [H. 8¾ 2° 57′ 0″], as one may gather it from these observations. These, however, were observed among clouds. [Pone diſt. æquatoriam inter Cor ♌ & ♄ H. 8¾ 2° 57′ 0″ prout ex his obſeruationibus eandem colligere liceat. Obſeruabantur autem hæc inter nubes.]

Afterwards, when clear sky had returned, Saturn was observed in distances by the sextant not far from the meridian, as follows. [Poſtea ſerenitate reſtituta obſeruabatur ♄ in diſtantijs per Sextantem non procul a meridiano vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination [Declin.]	The shoulder of Orion, west [Hum. Or. occid.]
$10^h\ 31^m\ 30^s$	33° 29⅚′		
$10^h\ 33^m\ 25^s$	33° 29¾′	16° 0½′ with one [vno]	
$10^h\ 37^m\ 15^s$	33° 30′		44 55

Vice versa, from the tail of ♌. [Viceverſa a Cauda ♌]

Hours, minutes, seconds [H. M. S.]		Declination [Declin.]	The shoulder of Orion, west [Hum. Or. occid.]
$10^h\ 39^m\ 40^s$	27° 13⅔′		
$10^h\ 41^m\ 0^s$	27° 13¾′	16° 0½′	45 48
		16° 0⅔′	

To correct the armillae the declination of cor ♌ was observed [Pro corrigendis Armillis obſeruabatur Declin. cordis ♌]: 13° 56′; 13° 55⅚′.

Because of clouds arising again, it was not possible to observe more of Saturn this evening. [Plura propter nubes denuo exorientes in ♄ obſeruare hac veſpera non licuit.]

6 February [DIE 6 FEBRUARIJ.]

In the evening Saturn was observed in equatorial distance with cor ♌. [Veſperi obſeruabatur ♄ in æquatoria diſtantia cum Corde ♌.]

Hours, minutes, seconds [H. M. S.]	*Equatorial distance [Diſt. æquat.]*	*Declination of Saturn [Decl. ♄]*	*Altitude of Saturn [Alt. ♄]*	*The Lesser Dog, west [Can. min. occ.]*
$9^h\ 53^m\ 10^s$	Saturn, east [♄ or.]	*28° 21¼′*		*5 36*
$9^h\ 56^m\ 28^s$	Saturn, east [♄ or.]	*27° 43′ 16° 1′*		*6 25*
$9^h\ 57^m\ 0^s$	cor ♌ [Cor ♌]	*30° 38½′ 16° 1½′*		*6 34*
$10^h\ 0^m\ 28^s$	Saturn, east [♄ or.]	*26° 44½′ 16° 1⅔′*	*45*	*7 24½*
$10^h\ 1^m\ 10^s$	cor ♌ [Cor ♌]	*29° 36⅔′ 16° 2′*		*7 37½*
$10^h\ 4^m\ 18^s$	Saturn, east [♄ or.]	*25° 44½′ 16° 2′*		*8 24*

Hours, minutes, seconds [H. M. S.]	*Equatorial distance [Diſt. æquat.]*	*Declination of Saturn [Decl. ♄]*	*Altitude of Saturn [Alt. ♄]*	*The Lesser Dog, west [Can. min. occ.]*
$10^h\ 4^m\ 50^s$	cor ♌ [Cor ♌]	*28° 39½′ 16° 2⅙′*		*8 32*
$10^h\ 8^m\ 40^s$	Saturn, east [♄ or.]	*24° 39⅔′*	*46*	*9 29*
$10^h\ 9^m\ 25^s$	cor ♌ [Cor ♌]	*27° 32′*		*9 40*
$10^h\ 13^m\ 4^s$	Saturn, east [♄ or.]	*23° 33′ 16° 2′ with both [vtroq.]*		*10 35*
$10^h\ 14^m\ 0^s$	cor ♌ [Cor ♌]	*26° 22½′*		*10 50*
$10^h\ 17^m\ 24^s$	Saturn, east [♄ or.]	*22° 29½′ 16° 2′*	*46¾*	*11 39*
$10^h\ 18^m\ 18^s$	cor ♌ [Cor ♌]	*25° 20′ 16° 2¼′*		*11 47½*

Immediately afterwards the declination of cor ♌ was taken in a very similar position, so that from this the other declinations of Saturn that had been made might be verified: [Statim poſtea capiebatur Declinatio Cordis ♌ in conſimili ſitu, vt hinc verificari poßint ceteræ declinationes ♄ factæ]

by the armillae outside [*per Armillas extra*]		*13° 57′*	*with one pinnule [vno pinn.]*
the meridian [*meridianum*]		*13° 57⅙′*	*with the other [altero.]*

A second time the declination of cor ♌ was taken [Iterata vice ſumebatur decl. cordis ♌]: 13° 57¼′; 13° 56⅚′.

Afterwards Saturn was observed in distance from the bright foot of ♊ by the sextant. [Poſtea obſeruabatur ♄ in diſtantia a Lucido pede ♊ per Sextantem.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſtantia]	Declination [Declin.]	Cor ♌, east [Cor ♌ or.]
$10^h\ 31^m\ 41^s$	47° 55′		21 52½
$10^h\ 33^m\ 50^s$	47° 55⅓′	16° 2′	
		16° 2⅓′	
$10^h\ 37^m\ 25^s$	47° 55′		20 30
$10^h\ 39^m\ 45^s$	47° 54⅔′		19 50

Next, from the head of ♊. [Deinceps a Capite ♊]

Hours, minutes, seconds [H. M. S.]		Declination [Declin.]	The Lesser Dog, west [Can. min. occ.]
$10^h\ 46^m\ 15^s$	33° 25′	16° 2′ with one [vno]	18 58
$10^h\ 55^m\ 22^s$	33° 25′		21 11
$10^h\ 57^m\ 40^s$	33° 25⅓′	16° 2¼′ with one [vno]	21 47
$11^h\ 16^m\ 20^s$	33° 25⅙′		26 27

Vice versa, from the tail of ♌. [Viceverſa a Cauda ♌]

Hours, minutes, seconds [H. M. S.]		Declination [Declin.]	The Lesser Dog, west [Can. min. occ.]
$11^h\ 18^m\ 45^s$	27° 18′		27 0
$11^h\ 20^m\ 40^s$	27° 17⅚′	16° 2½′	27 36
		16° 2⅓′	
$11^h\ 27^m\ 0^s$	27° 18¼′		29 8
$11^h\ 29^m\ 10^s$	27° 18′	16° 2¼′	29 38
		16° 2⅓′	

11 47 0 Saturn crossed the meridian, having the altitude [11 47 0 Tranſiuit ♄ Meridianum habens Altitudinem]

by the steel instrument [per Chalyb.]	50° 6⅙′	34 10½
by the revolving quadrant [per Volub.]	50° 6′	

11 59 20 cor ♌ crossed the meridian, having the altitude [11 59 20 Tranſiuit Cor ♌ Meridianum habens Altitudinem]

by the steel instrument [per Chalyb.]	48° 0⅔′	37 13½
by the revolving quadrant [per Volub.]	48° 0⅙′	

Put the distance [*Pone diſtantiam*]

from the bright foot of ♊ *[a lucido pede* ♊*]*	*47° 55′*
and from the lower head of ♊ *[& a Capite inf.* ♊*]*	*33° 25′*
and from the tail of ☋ *[& a Cauda* ☋*]*	*27° 18′*
the declination [declinationem]	*16° 0′ 40″*

[1] Written in the margin by Tycho. Cf. T. V p. 252. [In margine a Tychone adſcripta. Cf. T. V p. 252.]

reducing everything to midnight by the daily proper motion of Saturn from the said fixed stars. [redigendo omnia ad mediam noctem per motum proprium ♄ diurnum a dictis fixis.]

From noon of this day to noon of the following day the clock was advanced 16^m [16 Minutis] faster than is right, insofar as it was then possible to observe the Sun through little gaps between the clouds. [Horologium ab huius diej meridie in meridiem ſequentis diej 16 Minutis citius iuſto promotum eſt, quatenus tunc ☉ per rimulas inter nubes obſeruare licuit.]

7 February [DIE 7 FEBRUARIJ.]

In the evening Saturn was observed near the meridian. [Veſperi obſeruabatur ♄ circa Meridianum.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the bright foot of ♊ [Diſt. ♄ a luc. pede ♊]	Declination of Saturn [Declin. ♄]	The bright foot of Orion, west [Luc. pes Orion. occ.]
$10^h\ 12^m\ 50^s$	47° 50⅙′	16° 3½′	
		16° 4′	
$10^h\ 18^m\ 0^s$	47° 50⅙′		50 45
$10^h\ 20^m\ 15^s$	47° 49⅔′		51 16

Vice versa, from the tail of ☋. [Viceverſa a Cauda ☋]

Hours, minutes, seconds [H. M. S.]		Declination of Saturn [Declin. ♄]	The bright foot of Orion, west [Luc. pes Orion. occ.]
$10^h\ 24^m\ 40^s$	27° 21⅚	16° 3¼′	52 26
		16° 3¾′	
$10^h\ 40^m\ 0^s$	27° 22′	16° 3⅔′	56 15
		16° 4⅙′	
$10^h\ 42^m\ 15^s$	27° 21¾′		56 51½

Afterwards, from the lower head of ♊. [Poſtea ab inferiori Capite ♊]

Hours, minutes, seconds [H. M. S.]	Declination of Saturn [Declin. ♄]	The bright foot of Orion, west [Luc. pes Orion. occ.]
$10^h\ 46^m\ 50^s$	33° 20½′16° 4′	
	16° 3¾′	
$10^h\ 50^m\ 30^s$	33° 20⅓′	58 59½
$10^h\ 53^m\ 0^s$	33° 20⅔′	59 37

To correct the armillae the declination of cor ♌ was observed [Pro corrigendis Armillis obſeruabatur Decl. Cordis ♌]: 13° 57′; 13° 57⅙′.

11 33 55 Saturn crossed the meridian at the altitude [11 33 55 Tranſijt ♄ Merid. in Altit.]

by the steel instrument [per Chalyb.]	50° 7⅔′	
by the revolving quadrant [per Volub.]	50° 7½′	
The Lesser Dog, west, was [Erat Canis minor occid.]		34 0⅓

11 46 25 Cor ♌ crossed at the altitude [11 46 25 Tranſijt Cor ♌ in Altit.]

by the steel instrument [per Chalyb.]	48° 0¾′	
by the revolving quadrant [per Volub.]	48° 0¼′	
The Lesser Dog, west [Canis minor occid.]		37 16½

12 February, in the evening [DIE 12 FEBRUARIJ, VESPERI.]

On the transit of Saturn through the meridian. [De tranſitu ♄ per Meridianum.]

At $11^h\ 9^m\ 40^s$, altitude [H. 11 9′ 40″ Altitudo]

by the steel instrument [per Chalyb.]	*50° 16′*	
	better [melior]	
by the revolving quadrant [per Volub.]	*50° 15′*	
Declination by [Declinatio per]	*16° 12¼′*	
the armillae [Armillas]	*16° 12⅔′*	
Cor ♌ was then east [Cor ♌ tunc fuit orientalis]		*3 34*

11 23 35 Cor ♌ crossed the meridian, having the altitude [11 23 35 Cor ♌ tranſijt per Meridianum habens Altitudinem]

by the steel instrument [per Chalyb.]	*48° 0¾′*
by the revolving quadrant [per Volub.]	*47° 59⅔′*
Declination of cor ♌ [Declinatio Cordis ♌]	*13° 57⅙′*
by the armillae [per Armillas]	*13° 57½′*

Cor ☋ was then east [Fuit tunc Cor ☋ orient.]	*0 5*

Trust rather the observations made by the steel instrument, of the Moon as well as of Saturn and cor ☋, which Christiernus took carefully. [Fide potius obſeruationibus per Chalyb. factis tam in ☾ quam ♄ & Corde ☋ quas Chriſtiernus ſedulo accepit.]

At 12^{h} 55^{m}, declination of Saturn [H. 12 55 Declin. ♄]	*16° 12⅙′*	*16° 12⅔′*
12 59, repeated [12 59 repetita]	*16° 12½′*	*16° 12′*

13 February [DIE 13 FEBRUARIJ.]

6 31 20 The declination of Saturn was taken among clouds [6 31 20 Sumebatur declinatio ♄ inter nubes]: 16° 14⅓′; 16° 14′.

11 14 55 Saturn crossed the meridian [11 14 55 Tranſiuit ♄ per Meridianum]

by the steel quadrant [per Q. Chalyb.]	*50 16*	
by the revolving quadrant [per Volub.[1]]	*50 17*	
Declination in [Declinatio in]	*16° 14′*	
the armillae [Armillis]	*16° 14⅓′*	
The Lesser Dog, west [Canis minor occid.]		*33 35*

14 February [DIE 14 FEBRUARIJ.]

In the evening Saturn was observed approaching the meridian. [Veſperi obſeruabatur ♄ appropinquans Meridiano.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. Cap. ♊]	Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Canis min. occ.]
10^{h} 47^{m} 50^{s}	32° 45⅓′		29 23
10^{h} 52^{m} 30^{s}	32° 45⅔′	16° 16′	30 33
		16° 15½′	
10^{h} 54^{m} 35^{s}	32° 45¾′		31 5

11 4 25 Saturn crossed the meridian, having the altitude [11 4 25 Tranſijt ♄ per Meridianum habens Altit.]

by the steel instrument [per Chalyb.]	50° 18½′	33 34
by the revolving quadrant [per Volub.]	50° 18¼′	

Then the distance of Saturn from the tail of ☋ was taken. [Deinde capiebatur diſtantia ♄ a Cauda ☋]

Hours, minutes, seconds [H. M. S.]	Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Canis min. occ.]
$11^h\ 9^m$	27° 51′	34 42
$11^h\ 10^m\ 20^s$	27° 51⅓′	
$11^h\ 12^m\ 5^s$	27° 51⅔′ 16° 15½′ 16° 15⅔′	35 31
$11^h\ 15^m\ 40^s$	27° 51′	36 24

[1] The codex has "Chalyb." [Codex habet »Chalyb.«.]

15 March [DIE 15 MARTIJ.]

Since on the preceding days up to now there had been no steady clear sky, we waited in the evening after the setting of the Sun, and observed Saturn as follows. [Quoniam antecedentibus diebus hucuſque nulla fuit conſtans ſerenitas, attendebamus Veſperi poſt ☉ occaſum & obſeruauimus ♄ vt ſequitur.]

With the clock verified a little before, which had now been set differently, by cor ♌. [Verificato paulo ante horologio, quod iam aliter diſpoſitum erat per Cor ♌.]

At $9^h\ 6⅓^m$ [H. 9 6⅓′] Saturn crossed the meridian, having the altitude 50° 52½′ by the steel instrument. Cor ♌ was then east 5 26. [Tranſijt ♄ per Meridianum habens altitud. 50 52½ per Chalyb. Fuit tunc Cor ♌ orient. 5 26.]

Afterwards Saturn was observed from the bright foot of ♊. [Poſtea obſeruabatur ♄ a luc. pede ♊.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination of Saturn [Declin. ♄]	Cor ♌, east [Cor ♌ orient.]
$9^h\ 13^m\ 30^s$	32° 45′		3 34
$9^h\ 17^m\ 40^s$	32° 46⅙′	16° 51½′ 16° 52⅓′	2 24
$9^h\ 21½^m$	32° 46′		1 23

9 27⅙ Cor ♌ crossed the meridian, having the altitude [9 27⅙ Tranſijt Cor ♌ per Merid. habens Altitudinem]

by the revolving quadrant [per Volub.]	48° 1⅓′
Cor ♌ was then west on the equator [Fuit tunc Cor ♌ in æquatore occid.]	0° 0½′

Vice versa, from the tail of ♌. [Viceverſa a Cauda ♌.]

Hours, minutes, seconds [H. M. S.]	Declination of Saturn [Declin. ♄]	Cor ♌, west [Cor ♌ occid.]
$9^h\ 32^m\ 10^s$	29° 30⅓′ 16° 51⅔′ 16° 52′	1 22
$9^h\ 34^m\ 10^s$	29° 31⅙′	1 51
$9^h\ 36^m\ 0^s$	29° 30′	2 24

19 March, in the evening [DIE 19 MARTIJ, VESPERI.]

Saturn was observed near the meridian, close to its last station. [Obſeruabatur ♄ ſtationi vltimæ propinquus circa Meridianum.]

Hours, minutes [H. M.]	Distance from the lower head of ♊ [Diſt. ab inf. cap. ♊]	Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Canis min. occid.]
8^h $24½^m$	30° 53′	16° 50½′ 16° 50⅔′	22 2
8^h $38⅙^m$	30° 52′		25 17
8^h $41⅙^m$	30° 52⅓′	16° 50′ with both [vtroq.]	25 55
8^h $45⅓^m$	30° 52′		27 1

Vice versa, from the tail of ♌. [Viceverſa a Cauda ♌]

Hours, minutes [H. M.]		Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Canis min. occid.]
8^h 48^m	29° 38½′	16° 50′ 16° 50⅙′	27 43
8^h $50⅔^m$	29° 38⅓′		28 20
8^h $53⅓^m$	29° 38½′	16° 49⅚′ 16° 50¼′	28 57

9 4⅓ Saturn crossed the meridian, having the altitude [9 4⅓ Tranſijt ♄ per Meridianum habens Altit.]

by the steel quadrant [per Q. Chalyb.]	50° 55′	
by the revolving quadrant [per Volub.]	50° 54½′	
Then the Lesser Dog, west, was [Tunc fuit Canis minor occid.]		31 35

From these observations there results: [Prouenit ex hiſce obſeruationibus:]

True longitude of Saturn [Vera Longitudo ♄]	18° 43′ 23″ ♌
Latitude [Latitudo]	1° 27′ 22″ north [Borea.]

6 April [DIE 6 APRILIS.]

In the evening Saturn was observed near the last square of the Sun, and that not far from the meridian. [Veſperi obſeruatus eſt ♄ iuxta □ ☉ vltimam, idque non procul a Meridiano.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from Cor ♌ [Dist. ♄ a Corde ♌]	Declination [Declin.]	Equatorial distance from the Lesser Dog [Dist. æquat. a Cane min.]
$9^h\ 12^m\ 10^s$	6° 28′		52° 51′
$9^h\ 15^m\ 0^s$	6° 28⅔′	16° 55′	
		16° 55′	

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from Cor ♌ [Dist. ♄ a Corde ♌]	Declination [Declin.]	The Lesser Dog, west [Can. min. occid.]
$9^h\ 20^m$	6° 20′ doubtful [dubia]		54 41

We could not manage more because of the clouds. [Plura non potuimus ob nubes.]

11 April [DIE 11 APRILIS.]

In the evening Saturn was observed near the station, when it had passed about 2½° beyond the meridian. [Vesperi obseruabatur ♄ iuxta stationem, cum eßet 2½ᵍ circiter transuectus Meridianum.]

Hours, minutes [H. M.]	Distance of Saturn from the lower head of ♊ [Dist. ♄ ab inf. cap. ♊]	Declination of Saturn [Declin. ♄]	Altitude [Altit.]	Cor ♌, west [Cor ♌ occid.]
$9^h\ 47^m$	*30° 29′*	*16° 52¾′*		*34 54*
		16° 53′		
$9^h\ 50½^m$	*30° 29′*			*35 43*
$9^h\ 53^m$	*30° 29⅓′*	*16° 53⅙′*	*39½*	*36 22*
		16° 53⅔′		

Vice versa, it was taken in distance from Cor ♌. [Viceversa a Corde ♌ in distantia capiebatur.]

Hours, minutes [H. M.]		Declination of Saturn [Declin. ♄]	Altitude [Altit.]	Cor ♌, west [Cor ♌ occid.]
$9^h\ 58⅓^m$	*6° 28′*		*38⅚*	*37 42*
$10^h\ 2^m$	*6° 27⅚′*	*16° 53¼′*		*38 43*
		16° 53½′		
$10^h\ 5^m$	*6° 28½′*	*16° 53′ with both [vtroq.]*		*39 34*
$10^h\ 7^m$	*6° 28¼′*		*37*	

Afterwards the declination of cor ♌ was observed, in an almost exactly similar position to the one in which Saturn was observed: [Postea obseruabatur Declinatio Cordis ♌ in consimili quasi situ quo ♄ obseruabatur]

		13° 53⅓′	*with one [vno]*
$10^h\ 12½^m$ [H. 10 M. 12½]		*13° 52¼′*	*with the other [altero]*

The altitude of Regulus, moreover, was then 37°. [Fuit autem Altitudo Reguli tunc 37ᵍ]

N.B. From this you can verify the declination of Saturn. [N.B. Potes hinc verificare declinationem ♄.]

12 April, in the evening [DIE 12 APRILIS, VESPERI.]

At 7^h 57^m the declination of Saturn was [H. 7 M. 57 Fuit Declinatio ♄]: *16° 55′*; *16° 55½′*.

Saturn was then not far from the meridian, but had passed it a little towards the west. [Fuit tunc ♄ non longe a Meridiano, ſed hunc aliquantulum prætergreſſus verſus occaſum.]

At 8^h 1^m the same declination of Saturn, repeated: [H. 8 M. 1 Eadem ♄ Declinatio repetita]

the better ones [meli-ores]	*16° 55′*
	16° 55′

Hours, minutes, seconds [H. M. S.]	Between Saturn and the lower head of ♊ [Inter ♄ & inf. cap. ♊]	Declination of Saturn [Decl. ♄]	Cor ♌, west [Cor ♌ occid.]
8^h 54^m	*30° 29′*		*16 5*
8^h $56½^m$	*30° 29⅙′*		*16 39*
9^h 7^m 10^s	*30° 29′*		*19 30*

Hours, minutes, seconds [H. M. S.]	From cor ♌ [A corde ♌]	Declination of Saturn [Decl. ♄]	Cor ♌, west [Cor ♌ occid.]
9^h 13^m 0^s	*6° 27⅔′*	*16° 53¼′*	*20 54*
		16° 53½′	
9^h 23^m 20^s	*6° 27′ 35″*	*16° 53⅓′*	*23 38*
		16° 53¼′	

And from this it is clear that Saturn was stationary at this time, since it had the same distance from the lower head of ♊ *and cor* ♌ *as it had* (yesterday). [Atque hinc patet, quod ♄ hoc tempore fuerit ſtationarius, ſiquidem eandem habuerit diſtantiam ab inferiori Capite ♊ & Corde ♌ quam habuit [heri].]

13 April [DIE 13 APRILIS.]

Saturn was observed near the station in the evening, after the setting of the Sun. [Obſeruabatur ♄ iuxta ſtationem veſperi poſt occaſum ☉.]

Hours, minutes, seconds [H. M. S.]	Distance from the lower head of ♊ [Diſt. ab inf. Cap. ♊]	Declination [Declin.]	Cor ♌, west [Cor ♌ occid.]
9^h 6^m 40^s	30° 28′		
9^h 10^m 40^s	30° 29⅓′	16° 52′	21 26

Hours, minutes, seconds [H. M. S.]	Distance from the lower head of ♊ [Diſt. ab inf. Cap. ♊]	Declination [Declin.]	Cor ♌, west [Cor ♌ occid.]
		16° 52½′	
$9^h\ 14^m\ 10^s$	30° 29⅙′		22 23
$9^h\ 17^m\ 10^s$	30° 29′	16° 53′ with both [vtroque]	23 10

Vice versa, from cor ♌. [Viceverſa a Corde ♌.]

Hours, minutes, seconds [H. M. S.]		Declination [Declin.]	Cor ♌, west [Cor ♌ occid.]
$9^h\ 20^m\ 20^s$	6° 27′		23 57
$9^h\ 24^m\ 50^s$	6° 27⅓′	16° 52⅚′	25 2
		16° 53′	
$9^h\ 27^m\ 10^s$	6° 27¼′		

9 31 10 To correct the armillae, cor ♌ was observed, having the declination [9 31 10 Pro Armillis corrigendis obſeruabatur Cor ♌ habens Declinationem]: 13° 53′; 13° 52¾′.

15 April, in the evening [DIE 15 APRILIS, VESPERI.]

Hours, minutes [H. M.]	Saturn from the lower head of ♊ [♄ ab inf. cap. ♊]	Declination [Declin.]	The Lesser Dog, west [Can. min. occid.]
$8^h\ 42⅚^m$	30° 31⅙′	16° 52′	53 41
		16° 52¼′	
$8^h\ 49⅙^m$	30° 31′		55 25
$8^h\ 51⅓^m$	30° 31′		55 58

Vice versa, from cor ♌. [Viceverſa a Corde ♌]

Hours, minutes [H. M.]		Declination [Declin.]	The Lesser Dog, west [Can. min. occid.]
$8^h\ 55^m\ 0^s$	6° 27½′	16° 52′	56 55
		16° 52⅓′	

Hours, minutes [H. M.]		Declination [Declin.]	The Lesser Dog, west [Can. min. occid.]
$8^h\ 59⅓^m$	6° 27⅓′		57 59
$9^h\ 1⅙^m$	6° 27⅓′	16° 52¼′	58 31
		16° 52′	

It was fairly clear, and the Moon, by keeping hidden, was no hindrance. [Erat ſatis bene ſerenum & ☾ latitando non obfuit.]

16 April, in the evening [DIE 16 APRILIS, VESPERI.]

Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination [Declinatio]	The Lesser Dog, west [Can. min. occid.]
30° 33′	16° 53′ 16° 52⅚′	28 0
30° 32⅚′		28 34
30° 33′		29 17

Vice versa, from cor ♌. [Viceverſa a Corde ♌]

	Declination [Declinatio]	The Lesser Dog, west [Can. min. occid.]
6° 29½′	16° 53′ with both [vtroque]	29 49
6° 29′		30 38
6° 28′		31 0

N.B. These distances were observed with the other sextant, which we call new. [N. B. Obſeruatæ ſunt hæ diſtantiæ per alterum Sextantem quem nouum appellamus.]

17 April, in the evening [DIE 17 APRILIS, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Distance of Saturn from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	Declination [Decl.]	The Lesser Dog, west [Can. min. occid.]
9^h 0^m 10^s	30° 32½′		55 35
9^h 4^m 40^s	30° 32⅚′	16° 51⅓′ 16° 51′	56 40
9^h 9^m 30^s	30° 32⅚′		57 52

Distance vice versa from cor ♌ [Diſtantia viceverſa a Corde ♌]

Hours, minutes, seconds [H. M. S.]		Declination [Decl.]	The Lesser Dog, west [Can. min. occid.]
9^h 18^m 30^s	6° 28′		59 52
9^h 21^m 40^s	6° 27⅚′	16° 51¼′ 16° 51⅓′	
9^h 25^m 0^s	6° 27′ 55″		61 35

To test the armillae, the declination of cor ♌ was [Pro examine Armillarum fuit Declinatio Cordis ♌]: 13° 53′; 13° 52½′.

The distances were taken with the new sextant. [Diſtantiæ captæ ſunt per nouum Sextantem.]

11 September, in the morning [DIE 11 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Saturn from the Lesser Dog [Dist. ♄ a Cane min.]	Declination of Saturn [Declin. ♄]	Altitude [Altit.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
4h 38⅙m	*44° 39′*		*11° 53′*	*15 42*

Hours, minutes [H. M.]	Distance of Saturn from the Lesser Dog [Dist. ♄ a Cane min.]	Declination of Saturn [Declin. ♄]	Altitude [Altit.]	The foot of Orion, east [*Pes Orion. or.*]
4h 41m	*44° 37½′*		*12° 10′*	*5 30*
4h 43⅔m	*44° 38′**		*12° 40′*	*4 54*
4h 48½m	*44° 38′**	*12° 15′*		*3 36*
	**the better ones [*meliores]*	*12° 14⅔′*		
4h 54½m	*44° 37⅔′*	*12° 14½′*	*14° 6′*	
		12° 14⅔′		
better, repeated [Melior repetita]		*12° 13½′*		
		12° 14′		

Cor ♌, at an altitude of 13° [13 g.], had a declination of 13° 59′, but in fact it should have had 13° 55′; therefore 4′ are to be taken off, so that the true declination of Saturn at 4⅚h [hora 4⅚] is 12° 16¾′ [p. 12 M. 16¾].[1] [Cor ♌ in altit. 13 g. habuit Declin. 13 59, debuit autem habere re vera 13 55, ergo 4′ auferenda, vt sit vera Decl. ♄ hora 4⅚ p. 12 M. 16¾[1].]

15 September, in the morning [DIE 15 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Saturn from the Lesser Dog [Dist. ♄ a Cane min.]	Declination of Saturn [Declin. ♄]	Altitude of Saturn [Altit. ♄]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
3h 37m	45° 3′	12° 4⅙′	12⅔°	12 30
		12° 4½′		
3h 40⅓m	45° 2⅚′			
3h 51½m	45° 5′		14⅓°	10 26
3h 55m	45° 5⅙′	12° 4′	15° 0′	9 29
		12° 4⅔′		
3h 59m	45° 5½′		15° 15′	8 5

16 September, in the morning [DIE 16 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Saturn from the Lesser Dog [Dist. ♄ a Cane min.]	Declination [Declin.]	Altitude [Altit.]
4h 20m	45° 8′	12° 6′	6° 10′
		12° 6½′	
4h 24m	45° 8¾′	12° 5½′	6° 50′
		12° 5′	
4h 28m	45° 9′	12° 4⅙′	7° 15′
		12° 4⅔′	

20 September, in the morning [DIE 20 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Saturn and the Lesser Dog [Dist. ♄ & Canis min.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Altit. ♄]	The bright foot of Orion, east [Pes Or. lucid. or.]
4h 4m	*45° 32′*	*11° 54′*	*13° 5′*	*3 53*
4h 11½m	*45° 32′*	*11° 53½′*	*14° 45′*	*0 13*
4h 31m corrected [4 31 corr.]	*Put the distance [Pone distantiam]*			*45° 33′*
	the declination [declinationem]			*11° 50½′*

Both freed from refraction. [Vtraque liberata a refractione.]
21 September [DIE 21 SEPTEMBRIS.]
In the morning, before the rising of the Sun. [Mane ante ortum ☉.]
The times are corrected. [Tempora ſunt correcta.]

Hours, minutes [H. M.]	Distance of Saturn from the Lesser Dog [Dist. ♄ a Cane min.]	Declination of Saturn [Decl. ♄]	Altitude of Saturn [Altit. ♄]	The Greater Dog, east [Canis maior. or.]
4h 48m	*45° 40′*	*11° 49⅚′*	*17° 20′*	*18 3*
		11° 49⅚′		
4h 52m	*45° 39⅔′*	*11° 48⅔′*	*17° 55′*	
		11° 48½′		
4h 55m	*45° 40′*		*18° 15′*	*16 18*

Therefore put the distance 45° 40′, the declination 12° 8′1, but attention must be paid to the declination, for it does not agree with yesterday's. [Pone itaque diſtantiam 45 40, declin. 12 8¹, ſed attendendum ad declinationem. Nam non conſentit cum heſterna.]

22 September, in the morning [DIE 22 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Saturn from the Lesser Dog [Dist. ♄ a Cane min.]	Declination of Saturn [Declin. ♄]	Altitude [Altit.]	The Greater Dog, east [Can. maior orient.]
4h 49m	45° 48½′	11° 45½′ with both [vtroque]	17° 38′	17 6
4h 53m	45° 49′	11° 45⅓′	18° 11′	16 0
		11° 45⅙′		
4h 56m	45° 48⅔′	11° 45′	18° 32′	15 22
		11° 45⅙′		
4h 57m	Declination [Declin.]	13° 57′		
	of cor ♌ [Cordis ♌]	13° 57¼′		
4h 58½m	Declination of Saturn [Decl. ♄]	11° 45′		
	repeated [repetita]	11° 44¾′		

10 November, in the morning [DIE 10 NOUEMBRIS, MANE.]

Saturn was observed near the morning square of the Sun [iuxta □ ⊙ matutinam], in this manner, as follows. [Obſeruabatur ♄ iuxta □ ⊙ matutinam in hunc modum vt ſequitur.]

Hours, minutes [H. M.]	Distance of Saturn and Regulus [Diſt. ♄ & Reguli]	Declination, north [Declin. B.]	Arcturus, east [Arcturus or.]
6ʰ 26ᵐ	*13° 8¼′*		*53 21*
6ʰ 28¾ᵐ	*13° 8½′*	*10° 21½′*	*52 48*
		10° 21½′	
6ʰ 32ᵐ	*13° 8⅓′*		*51 45*
6ʰ 40ᵐ	*Saturn crossed [Tranſiuit ♄] through the meridian, having an altitude [per Meridianum habens Altit.] by the steel instrument [per Chalyb.] 44° 27′ or [vel] 26⅚*		
	by the revolving quadrant [per Volub.] 44° 27′		*49 42*
Declination by [Declin. per] the armillae [Armillas]		*10° 21½′ with one [vno]* *10° 21½′ with the other [altero]*	

Then Saturn was observed again, the other way round, from Arcturus. [Deinde ♄ rurſus viceverſa obſeruabatur ab Arcturo.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declin.]	Altitude of Saturn [Alt. ♄]	Arcturus, east [Arct. or.]
6ʰ 45ᵐ	*48° 47′*			*48 15*
6ʰ 48ᵐ	48° 47⅓′			47 34
6ʰ 50ᵐ	*48° 46′ doubtful [dubia]*			46 57
6ʰ 52ᵐ	48° 47⅓′		44° 22′	46 26
6ʰ 55ᵐ		*10° 21⅓′* *10° 21′ doubtful [dub.]*		

Put, at about 6⅔ʰ [circa horam 6⅔], the distance of Saturn from Regulus 13° 8⅓′, from Arcturus 48° 47¼′, and its declination 10° 21½′. [Pone circa horam 6⅔ Diſt. ♄ a Regulo 13 8⅓, ab Arcturo 48 47¼ & declinat. eius 10 21½.]

21 November, in the morning [DIE 21 NOUEMBRIS, MANE.]

Saturn was observed standing almost exactly in the square of the Sun [in □ᵗᵒ ⊙], for examining both the annual orb and its latitude; and this about the meridian, in this manner. [Obſeruabatur ♄ in □ᵗᵒ ⊙ exacte fere exiſtens, tam pro annuo orbe quam latitudine eius examinandis, idque circa meridianum, in hunc modum.]

6^h 5^m [H. 6 M. 5]	Saturn crossed [Tranſiuit ♄]	
	through the meridian, having an altitude [per Meridianum habens Altitud.]	
	on the steel instrument [in Chalyb.]	44° 18¾′
	on the revolving quadrant [in Volub.]	44° 18⅝′
The Lesser Dog, west, was then [Erat tunc Canis minor occid.]		50 40

[1] Thus in the codex [Sic in codice.]

Hours, minutes [H. M.]	Distance of Saturn from cor ♌ [Diſt. ♄ a Corde ♌]	Canicula, west [Canicula occid.]
6^h $19\frac{2}{5}^m$	13° 37′ nearly [fere]	54 1
6^h 22^m	13° 37′	54 38
6^h 24^m	13° 36⅝′	55 11
6^h $27\frac{1}{2}^m$	13° 36⅝′	56 5

Vice versa, from Arcturus. [Viceverſa ab Arcturo]

Hours, minutes [H. M.]		Canicula, west [Canicula occid.]
6^h $32\frac{1}{4}^m$	48° 25¾′	57 13
6^h $34\frac{1}{6}^m$	48° 25⅔′	57 42
6^h 36 1/12^m	48° 25½′	58 13

Afterwards, Saturn from the lower head of ♊. [Poſtea ♄ ab inferiori Capite ♊]

Hours, minutes [H. M.]		Canicula, west [Canicula occid.]
6^h 39^m	50° 14¼′	58 48

Hours, minutes [H. M.]		Spica, east [Spica or.]
6^h $40\frac{2}{3}^m$	50° 14⅙′	27 18
6^h $42\frac{1}{2}^m$	50° 14½′	26 58

Vice versa, from Spica; now free of refraction, the altitude of Spica was 22° [22 g.] and beyond. [Viceverſa a Spica ♍, iam libera a refractione, fuit altitudo Spicæ ♍ 22 g. & vltra.]

Hours, minutes [H. M.]		Spica, east [Spica or.]
6^h $45\frac{2}{3}^m$	40° 32½′	26 2
6^h $47\frac{1}{4}^m$	40° 32½′	25 34
6^h 49^m	40° 32½′	25 6

Hours, minutes [H. M.]	Spica, east [Spica or.]

N.B. This observation of Saturn is very good for investigating its position, both as to longitude and as to latitude [tam quoad longum quam latum], since it is in the square of the Sun in the morning [in □ ☉ Matutinus]. And today it was exceptionally clear. [N. B. Hæc obſeruatio ♄ eſt admodum bona pro eius ſitu inueſtigando, tam quoad longum quam latum, cum eſt in □ ☉ Matutinus. Erat autem hodie apprime ſerenum.]

Put the declination of Saturn [Pone declinationem ♄]	*10° 13′ 18″*
the distance from Regulus [Diſtantiam a Regulo]	*13° 36′ 55″*
the distance from Arcturus [Diſt. ab Arcturo]	*48° 25′ 40″*
the distance from the lower head of ♊ [Diſt. ab inf. cap. ♊]	*50° 14′ 20″*
the distance from Spica [Diſt. a Spica ♍]	*40° 32′ 30″*

For the annual orb of Saturn [Pro Orbe annuo ♄]

Saturn, however, can also be examined in the preceding and following observations, inasmuch as the Sun at the autumnal equinox has the greatest prosthaphaeresis [proſtaphæreſin]. Likewise when, near the tropic of ♑, it has almost no prosthaphaeresis, or the smallest. [poterit autem ♄ examinari etiam in antecedentibus & ſequentibus obſeruationibus, vtpote ☉ in æquinoctio autumnali maximam habente proſtaphæreſin. Item cum iuxta tropicum ♑ fere nullam vel minimam habet proſtaphæreſin.]

The declination could not be had, because the equatorial armillae had been moved off the centre and not yet corrected. It must therefore be sought from the meridian altitude. [Declinatio ob Armillas æquatorias e centro dimotas & nondum correctas haberi non potuit. Itaque ex altit. meridiana petenda eſt.]

Resp. Longitude [Reſp. Longitudo]	7° 46′ 5″ ♍
Latitude [Latitudo]	1° 39′ 25″ north [B.]

22 November, in the morning [DIE 22 NOUEMBRIS, MANE.]

Saturn was observed near the meridian from cor ♌. [Obſeruatus eſt ♄ iuxta Meridianum a Corde ♌.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declinatio]	Canicula, west [Canicula occid.]
5^h $19\frac{3}{4}^m$	13° 38¼′		45 0
5^h $22\frac{1}{3}^m$	13° 38¼′		45 32
5^h $24\frac{1}{6}^m$	13° 38⅓′	10° 13′	46 2
		10° 12⅔′	

Vice versa, Saturn from Vindemiatrix. [Viceverſa ♄ a Vindemiatore ♍]

Hours, minutes [H. M.]		Declination [Declinatio]	Canicula, west [Canicula occid.]
5^h $32\frac{1}{3}^m$	29° 51½′		48 7
5^h $34\frac{1}{6}^m$	29° 51½′		
5^h 36 1/12^m	29° 51⅓′		49 5
5^h $42\frac{1}{4}^m$	Saturn crossed [Tranſiuit ♄]		
	through the meridian, having an altitude [per Meridianum habens Altitud.]		
	by the steel instrument [per Chalyb.]		44° 18⅙′
	by the revolving quadrant [per Volub.]		44° 18⅙′
Declination [Declinatio]	10° 12½′	was then Canicula [Fuit tunc Canicula]	
of Saturn [♄]	10° 12¾′	west [occident.]	50 40

6 December, in the morning [DIE 6 DECEMBRIS, MANE.]

Saturn was observed approaching Merid. [Obſeruabatur ♄ appropinquans Merid.]

Near the first station, when it was about to become retrograde. [Iuxta primam ſtationem cum vellet fieri retrogr.]

Hours, minutes [H. M.]	Distance from cor ♌ [Diſt. a corde ♌]	Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Can. minor occid.]
3^h $22\frac{2}{3}^m$		10° 10⅓′ twice with one [bis vno]	35 19
3^h 25^m 40^s corrected [3 25 40 corr.]		pinnule [pinnac.]	
3^h $26\frac{1}{6}^m$	13° 52⅔′		
3^h 31^m 20^s	13° 53⅚′	10° 10′ with one [vno]	36 50
corrected [corr.]		pinnule [pinn.]	
3^h 37^m 12^s	13° 53½′		39 33
3^h $39\frac{1}{2}^m$	13° 54′		39 47

Vice versa, Saturn from the tail of ♌. [Viceverſa ♄ a Cauda ♌]

Hours, minutes [H. M.]		Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Can. minor occid.]
3^h 50^m 44^s	13° 0⅚′ doubtful [dub.]	10° 10⅙′	41 36
		10° 10¼′	
3^h 55^m 45^s corrected [3 55 45corr.]	13° 0¾′		42 50
4^h 0^m 20^s corrected [4 0 20corr.]	13° 0⅔′		44 14
4^h 6^m 20^s	13° 0⅙′	10° 10½′	45 30

Hours, minutes [H. M.]	Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Can. minor occid.]
	10° 10⅙′	

Afterwards, Saturn from the Lesser Dog. [Poſtea ♄ a Cane minori]

Hours, minutes [H. M.]		Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Can. minor occid.]
4^h 11½^m	50° 25′		48 8
4^h 15⅙^m	50° 24¾′	10° 10½′	49 6
		10° 10¾′	
4^h 17½^m	50° 24⅝′		
4^h 21⅔^m	Saturn crossed [Tranſiuit ♄]		
through the meridian, having an altitude [per Meridianum habens Altitud.]			
by the steel instrument [per Chal.]	44° 16½′	10° 10½′	50 53
by the revolving quadrant [per Vol.]	44° 16⅙′	10° 10¼′	

Then, Saturn from Arcturus. [Deinde ♄ ab Arcturo]

Hours, minutes [H. M.]		Declination of Saturn [Declin. ♄]	The Lesser Dog, west [Can. minor occid.]
4^h 31½^m	48° 8′		53 24
4^h 34^m	48° 8 1/12′		54 3
4^h 36^m	48° 8⅙′	10° 10⅓′	54 33
		10° 10⅔′	

N.B. These observations of Saturn are good for limiting its prosthaphaeresis of the annual orb. For it is near the first station, when it is about to begin to go back. For its station occurs after three days. [N.B. Hæ obſeruationes ♄ ſunt bonæ pro limitanda eius proſtaphæreſi orbis annui. Nam eſt iuxta ſtationem primam, quando vult incipere retrocedere. Nam ſtatio eius poſt triduum contingit.]

17 December, in the morning [DIE 17 DECEMBRIS, MANE.]

Saturn was observed, when it had for some time passed the meridian, from Spica. [Obſeruabatur ♄ cum eßet Meridianum aliquamdiu prætergreßus a Spica ♍.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of Saturn [Declin. ♄]	Altitude of Saturn [Altit. ♄]	Spica, west [Spica ♍ occid.]
7^h 12⅙^m	40° 19′		33° 0′	8 12
7^h 13½^m	40° 18⅔′	10° 15′	32° 48′	8 34
		10° 14⅝′		
7^h 15⅔^m	40° 18¾′		31° 58′	9 4

Vice versa, from cor ♌. [Viceverſa a Corde ♌]

Hours, minutes [H. M.]		Declination of Saturn [Declin. ♄]	Altitude of Saturn [Altit. ♄]	Spica, west [Spica ♍ occid.]
7^h $23\frac{2}{5}^m$	13° 51⅔′ better [melior]			11 5
7^h $26\frac{1}{3}^m$	13° 50⅔′	10° 15′		12 8
	doubtful [dubia]	10° 15⅙′		
7^h $29\frac{1}{2}^m$	13° 51⅔′	10° 15′		
	better [melior]	10° 15⅓′		

To examine the armillae, there was taken [Pro examinandis Armillis capiebatur]	
the declination of the tail of ♌ [Declinatio Caudæ ♌]	16° 50′ with both [vtroque]
Again there was taken the declination [Denuo capiebatur Declin.]	10° 15′
Saturn, most exactly [♄ exactißime]	10° 15½′

It was moderately clear, but the wind was stronger. [Fuit mediocriter ſerenum ſed ventus validior.]

For the position of Saturn, from the immediately preceding observations. [Pro loco ♄ ex præcedentibus proximis obſeruationibus.]

$7\frac{1}{4}^h$ [H. 7¼]	Distance of Saturn from Spica [Diſt. ♄ a Spica ♍]	40° 18′ 50″
	Declination of Saturn [Declin. ♄]	10° 15½′ north [B.]
	Declination of Spica [Declin. Spicæ ♍]	8° 59½′ south [M.]
	Angular difference of ascension [Ang. diff. aſcenſ.]	35° 35′ 31″
	Right ascension of Spica [Aſc. recta Spicæ]	196° 0⅙′
	Therefore the right ascension of Saturn [Ergo Aſc. recta ♄]	160° 24′ 39″
$7\frac{2}{5}^h$ [H. 7⅖]	Distance of Saturn from cor ♌ [Diſt. ♄ a corde ♌]	13° 51′ 40″
	Declination of cor ♌ [Declin. cordis ♌]	13° 55′ 0″
	Angular difference of ascension [Ang. diff. aſcenſ.]	13° 40′ 37″
	Right ascension of cor ♌ [Aſc. recta cordis ♌]	146° 41′ 0″
	Therefore the right ascension of Saturn [Ergo Aſc. recta ♄]	160° 21′ 37″
	Right ascension of Saturn, limited [Aſc. recta ♄ limitata]	160° 22′ 31″

18 December, in the morning [DIE 18 DECEMBRIS, MANE.]

Saturn was observed when it had passed the meridian a little, in the perigee of the Sun. [Obſeruabatur ♄ paululum Meridianum prætergreßus in Perigæo ☉$^{li^s}$]

Altitude of Saturn [Altit. ♄]	on the revolving quadrant [in Volubili]	44° 17⅚′	Azimuth	3¾

	on the steel instrument [in Chalyb.]	44° 16′	4½

Hours, minutes [H. M.]	Distance of Saturn from cor ♌ [Diſt. ♄ a Corde ♌]	Declination of Saturn [Declin. ♄]	Spica, east [Spica ♍ or.]
4^h $27½^m$	13° 47⅙′		24 32
4^h 34^m	13° 48′	10° 14½′	23 2½
		10° 15′	
4^h 46^m	13° 48′		
4^h 53^m	13° 48′		18 46

Vice versa, from Spica. [Viceverſa a Spica ♍]

Hours, minutes [H. M.]		Declination of Saturn [Declin. ♄]	Spica, east [Spica ♍ or.]
4^h 59^m	40° 19⅙′	10° 15′	16 33
		10° 15¼′	
5^h 12^m	40° 19′		12 48
5^h 15^m	40° 19⅙′	10° 15½′	12 15
		10° 15′	

Put the distance from Spica [Pone diſtantiam a Spica]	*40° 19½′*
from cor ♌ [a Corde ♌]	*13° 48′*

The declination is to be limited from the observations of the following days, when Saturn crosses the meridian. [Declinatio limitanda eſt ex obſeruationibus ſequentium dierum, cum per Meridianum tranſit ♄.]

Observations of Jupiter [OBSERUATIONES IOUIS.]

1 January, in the evening [DIE 1 JANUARIJ, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Azimuth of Jupiter [Azim. ♃]	Altitude of Jupiter [Altit. ♃]	Declination [Declin.]
4^h 15^m 40^s	25° 0′	18° 20⅚′	12° 50′
			12° 49¾′
4^h 19^m 30^s	26° 0′	18° 7′	
4^h 23^m 25^s	27° 0′	17° 51⅔′	
4^h 27^m 45^s	28° 0′	17° 25½′	12° 49½′
			12° 49⅓′

Afterwards the equatorial distance of Jupiter and Venus was taken. [Poſtea ſumebatur diſt. æquat. ♃ & ♀.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Altitude [Altitudo]
$4^h\ 32^m\ 30^s$	Jupiter [♃] 28° 32⅚′	17° 15½′
$4^h\ 33^m\ 40^s$	Venus [♀] 22° 15′	22° 54′
$4^h\ 35^m\ 30^s$	Jupiter [♃] 29° 15⅓′	
$4^h\ 35^m\ 55^s$	Venus [♀] 22° 48′	
$4^h\ 37^m\ 40^s$	Jupiter [♃] 29° 47¾′	
$4^h\ 38^m\ 40^s$	Venus [♀] 23° 28⅔′	

This evening the larger equatorial armillae were corrected from the stars, both at the setting and at the rising and around the meridian, as far as it could be done. [Hac veſpera corrigebantur armillæ æquatoriæ maiores a ſtellis tum ad occaſum tum ortum atque circa Meridianum quoad eius fieri potuit.]

2 January, in the evening [DIE 2 JANUARIJ, VESPERI.]

Jupiter was observed in the manner that follows. [Obſeruabatur ♃ in modum vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Azimuth of Jupiter [Azim. ♃]	Altitude of Jupiter [Altit. ♃]	Declination of Jupiter [Decl. ♃]	Venus, west [♀ occid.]
$4^h\ 23^m\ 25^s$	28° 0′	17° 39½′	12° 43½′ 12° 44′	20 15½
$4^h\ 27^m\ 30^s$	29° 0′	17° 25′	12° 43⅔′ with one [vno]	
$4^h\ 31^m\ 40^s$	30° 0′	17° 8′		22 15

Then Jupiter and Venus were taken in equatorial distances. [Deinde capiebantur ♃ & ♀ in diſtantijs æquatorijs.]

Hours, minutes, seconds [H. M. S.]		
$4^h\ 34^m\ 45^s$	Jupiter [♃] 30° 5½′	Jupiter [♃] 12° 43⅓′
$4^h\ 35^m\ 30^s$	Venus [♀] 23° 14⅓′	Venus [♀] 8° 13′
$4^h\ 36^m\ 40^s$	Jupiter [♃] 30° 35⅙′	
$4^h\ 37^m\ 20^s$	Venus [♀] 23° 39¾′	
$4^h\ 38^m\ 40^s$	Jupiter [♃] 31° 3½′	
$4^h\ 39^m\ 32^s$	Venus [♀] 24° 11¾′	

24 January, in the evening [DIE 24 JANUARIJ, VESPERI.]

Venus and Jupiter were observed. [Obſeruabantur ♀ & ♃.]

Hours, minutes, seconds [H. M. S.]	Between Jupiter and Venus [Inter ♃ & ♀]	Declination of Jupiter [Declin. ♃]	Altitude of Jupiter [Altit. ♃]
$5^h\ 30^m$	16° 34¼′		3° 42′
$5^h\ 42^m$	16° 21′	10° 47′ 10° 47⅓′	3° 1′
$5^h\ 47^m\ 0^s$	16° 17½′		
$5^h\ 49^m\ 40^s$	16° 15′	10° 42½′ with one [vno]	2° 5′

N.B. While they were being observed, Venus and Jupiter were almost in one vertical circle, Venus inclining a little towards the rising [ad ortum], and around the middle observations at an altitude of 17° [17 Gr.]. From this one may reason about the refraction that intrudes itself into the distance. [N.B. Fuerunt ♀ & ♃ inter obſeruandum fere in vno circulo verticali, declinante parum ♀ ad ortum & circa medias obſeruationes in Alt. 17 Gr. Vnde de refractione in diſtantiam ſeſe ingerente ratiocinari licet.]

16 May, in the morning [DIE 16 MAIJ, MANE.]

2^h $40\frac{5}{6}^m$ [H. 2 M. 40⅚]	Distance of Jupiter from the Vulture [Diſt. ♃ a Vulture] by the semicircle [per Semicirculum]	66° 54½′
	Declination of Jupiter, with one [Declin. ♃, vno]	1° 32′
	Altitude of Jupiter [Altit. ♃]	7° 12′

Afterwards we saw Venus rising, but because of the clouds it was not granted to observe it either from Jupiter or from any other stars. [Poſtea exorientem videbamus ♀ ſed propter nubes illam nec a ♃ nec vllis alijs ſtellis obſeruare conceßum eſt.]

21 July, in the morning [DIE 21 JULIJ, MANE.]

Jupiter was observed around the station and the trine aspect with the Sun. [Obſeruabatur ♃ circa ſtationem & trigonum aſpectum cum ☉.]

Hours, minutes [H. M.]	Distance of Jupiter from the left shoulder of ♒ [Diſt. ♃ a ſin. hum. ♒]	Declination of Jupiter, north [Declin. ♃ B.]	Altitude of Jupiter [Altit. ♃]	The Vulture, west [Vultur occ.]
12^h 38^m	47° 3¾′	0° 11½′ with one [vno]	23° 40′	
12^h 43^m	47° 3½′			

Hours, minutes [H. M.]	Distance of Jupiter from the left shoulder of ♒ [Diſt. ♃ a ſin. hum. ♒]	Declination of Jupiter, north [Declin. ♃ B.]	Altitude of Jupiter [Altit. ♃]	The Vulture, west [Vultur occ.]
12^h $44\frac{5}{6}^m$	47° 3′	0° 11′ with the other [altero]	24° 21′	28 20

Vice versa, from the bright star of ♈. [Viceverſa a Lucida ♈]

Hours, minutes [H. M.]	Declination of Jupiter, north [Declin. ♃ B.]	Altitude of Jupiter [Altit. ♃]	The Vulture, west [Vultur occ.]
12^h $50\frac{3}{5}^m$	30° 12⅔′		
12^h $54\frac{1}{6}^m$	30° 12⅙° 12′	25° 25′	30 44
12^h $58\frac{1}{2}^m$	30° 12½′		

These were observed between recurring clouds, with a stronger wind blowing from the western quarter of the sky. [Obſeruata ſunt hæc inter recurrentes nubes, flante vento a plaga cœli occidua vehementiori.]

22 July, in the morning [DIE 22 JULIJ, MANE.]

Jupiter was observed as on yesterday morning, having already long since become retrograde after the first station. [Obſeruabatur ♃ quemadmodum heſterno mane factus iam pridem retrogradus poſt primam ſtationem.]

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	Declination [Decl.]	Altitude [Alt.]	The Vulture, west [Vultur occ.]
$2^h\ 18\frac{5}{6}^m$	43° 36¼′			
$2^h\ 20\frac{1}{4}^m$	43° 35⅓′	0° 9¾′	32° 20′	52 53
$2^h\ 24\frac{1}{2}^m$	43° 35′			

Vice versa, Jupiter from the bright star of ♈. [Viceverſa ♃ a Lucida ♈]

Hours, minutes [H. M.]		Declination [Decl.]	Altitude [Alt.]	The Vulture, west [Vultur occ.]
$2^h\ 27^m$	30° 13⅓′		32° 42′	
$2^h\ 29^m$	30° 13½′			
$2^h\ 30\frac{1}{3}^m$	30° 14′			
$3^h\ 29\frac{1}{3}^m$	Jupiter crossed [Tranſijt ♃]			
	through the meridian, having an altitude [per Meridianum habens Altitud.]			
	on the steel instrument [in Chalyb.]		34° 16′ better [melior]	
	on the revolving quadrant [in Volub.]		34° 16½′	

From this the clock can also be verified by the true place of Jupiter. [Hinc etiam poteſt verificari Horologium per verum locum ♃.]

This morning it had been fairly calm and clear, with the west wind [Zephyro] blowing very gently; *therefore good observations.* [Fuerat hoc mane ſatis tranquillum & ſerenum ſpirante leniter admodum Zephyro, ergo bonæ obſeruationes.]

At the following noon the clock was running 31½ slower. [Horologium in meridie ſequente 31½ tardius ibat.]

29 August, in the evening [DIE 29 AUGUSTI, VESPERI.]

Observation of Jupiter. [Obſeruatio ♃.]

Hours, minutes [H. M.]	Distance of Jupiter from the left shoulder of ♒ [Diſt. ♃ a ſin. hum. ♒]	Declination of Jupiter [Decl. ♃]	Altitude by the revolving quadrant [Alt. per Volub.]	The Vulture, west [Vultur occid.]
$10^h\ 29\frac{1}{6}^m$	43° 58⅔′		24° 53′	29 52⅓
$10^h\ 35\frac{2}{3}^m$	44° 2′	1° 13½′		31 25
		1° 14′		

Hours, minutes [H. M.]	Distance of Jupiter from the left shoulder of ♒ [Diſt. ♃ a ſin. hum. ♒]	Declination of Jupiter [Decl. ♃]	Altitude by the revolving quadrant [Alt. per Volub.]	The Vulture, west [Vultur occid.]
10^h $42\frac{1}{2}^m$	44° 0′		26° 2′	32 58
10^h 47^m	43° 59½′	1° 13⅓′		34 0
		1° 13⅚′		
10^h $53\frac{2}{3}^m$	44° 0′			35 31

Vice versa, the distance of Jupiter from the bright star of ♈. [Viceverſa Diſtantia ♃ a Lucida ♈.]

Hours, minutes [H. M.]	Declination of Jupiter [Decl. ♃]	Altitude by the revolving quadrant [Alt. per Volub.]	The Vulture, west [Vultur occid.]
10^h 59^m	33° 13⅓1° 14½′	27° 27′	36 44
	1° 14¾′		
11^h 8^m	33° 13¼′	28° 3′	38 46
11^h 13^m	33° 13½′1° 14⅔′		40 3
	1° 14⅚′		

7 September, in the morning [DIE 7 SEPTEMBRIS, MANE.]
Approaching the opposition of the Sun. [Appropinquans ☍ ☉.]

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	Declination of Jupiter [Decl. ♃]	The Vulture, west [Vultur occid.]
12^h $30\frac{1}{3}^m$	40° 32′1		65 9
12^h $32\frac{1}{2}^m$	40° 21′	1° 40⅓′	
		1° 40¼′	
12^h $34\frac{1}{2}^m$	40° 21⅙′		66 17
12^h $37\frac{1}{6}^m$	40° 21½′		66 54
12^h $39\frac{5}{6}^m$	Jupiter crossed [Tranſiuit ♃]		
	through the meridian, having an altitude [per Meridianum habens Altitud.]		
	by the steel instrument [per Chalyb.]		61 37
	32° 27½′		
	by the revolving quadrant [per Volub.]		
	32° 27⅔′		

Hours, minutes [H. M.]	Vice versa, from the bright star of the jaw of the Whale [Viceverſa a luc. mand. Cete]	Declination [Decl.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occ.]
12^h $57\frac{1}{2}^m$	40° 4⅙′	1° 40⅓′		43 25
		1° 40′		
1^h $1\frac{1}{2}^m$	40° 8⅔′			
1^h $3\frac{1}{3}^m$	40° 8′		32° 15′	44 54
1^h $7\frac{1}{6}^m$	40° 8⅔′			45 49

Hours, minutes [H. M.]	Vice versa, from the bright star of the jaw of the Whale [Viceverſa a luc. mand. Cete]	Declination [Decl.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occ.]
1^h $11\frac{1}{6}^m$	40° 9′	1° 49½′ with one [vno]		46 42

To correct the armillae there was observed [Pro corrigendis Armillis obſeruabatur]	
the declination of the bright star [Declinatio Lucidæ]	2° 26½′ twice [bis]
of the jaw of the Whale [Mandibulæ Cete]	2° 28¼′

N.B. On 9 September [Die 9 Septembris] Jupiter was, on that day, in the very opposition of the simple Sun, near the perigee of the eccentric, and near the greatest southern latitude. [N.B. Die 9 Septembris. ♃ hoc die fuit in ipſa ☍ ſimplicis ☉ iuxta Perigæum Eccentrici, & prope maximam latitudinem auſtrinam.]

10 September, in the morning [DIE 10 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	Declination [Decl.]	The mouth of Pegasus, west [Os Pegaſi occid.]
12^h $6\frac{2}{3}^m$	40° 0½′		
12^h $14\frac{1}{2}^m$	40° 0′	1° 49½′ 1° 50′	35 14
12^h $18\frac{2}{3}^m$	40° 0′		36 26
12^h $23\frac{1}{6}^m$	40° 0¼′	1° 49½′ 1° 50′	37 30
12^h $29\frac{1}{3}^m$	Jupiter crossed through the meridian [Tranſiuit ♃ per Meridi-]		
12^h 14^m corrected [12 14 corr.]	having an altitude [anum habens Altitudinem]		
	by the steel instrument [per Chalyb.] 32° 18⅚′		38 55
	by the revolving quadrant [per Volub.] 32° 18⅓′		

Trust rather the revolving quadrant. Put the altitude of Jupiter 32° 18⅔′ exactly. Put the declination of Jupiter 1° 47′ south. [Fide potius Volubili. Pone Altitudinem ♃ 32 18⅔ exacte. Pone Declinationem ♃ 1 47 auſtrinam.]

Vice versa, from the bright star of the jaw of the Whale. [Viceverſa a Lucida Mandib. Cete.]

Hours, minutes [H. M.]		Declination [Decl.]	The mouth of Pegasus, west [Os Pegaſi occid.]
12^h 37^m	40° 29¼′		41 0
12^h 41^m 50^s	40° 30′	1° 50⅔′	42 6

Hours, minutes [H. M.]		Declination [Decl.]	The mouth of Pegasus, west [Os Pegaſi occid.]
		1° 51′	
12^{h} 47^{m} 0^{s}	40° 30½′		43 22
12^{h} $49\frac{2}{3}^{m}$	40° 30⅓′		44 5

Put at 12½h [Pone H. 12½] the distance of Jupiter from the mouth of Pegasus [diſt. ♃ ab ore Pegaſi]	*40° 0¼′*
From the jaw of the Whale [A Mandib. Cete]	*40° 30′,*
Its declination [Decl. eius]	*1° 47′ south [M.]*

11 September [DIE 11 SEPTEMBRIS.]

In the night preceding noon.[2] [Nocte antecedente Meridiem[2].]

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	Declination Merid. [Declin. Merid.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete orient.]
11^{h} $50\frac{2}{3}^{m}$	39° 57′		43 39
11^{h} $54\frac{2}{3}^{m}$			42 41
11^{h} $58\frac{1}{3}^{m}$	39° 54′	1° 52⅚′	41 51
		1° 53′	

Put the declination of Jupiter 1° 50⅙′ correctly. [Pone declin. ♃ 1 50⅙ correcte]

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	Declination Merid. [Declin. Merid.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete orient.]
12^{h} $4\frac{1}{3}^{m}$	Meridian altitude of Jupiter [Altit. ♃ Merid.]		
	by the steel instrument [per Chalyb.] 32° 14⅚′		40 25
	by the revolving quadrant [per Volub.] 32° 15′ nearly [fere]		
12^{h} $9\frac{1}{3}^{m}$	39° 54′		41 7
12^{h} $12\frac{2}{3}^{m}$	39° 54½′		38 21

Use the declination by the revolving quadrant, or limited by adding ⅓′ [⅓ m.]. [Vtere declin. per Volubilem vel limitata per add. ⅓ m.]

Vice versa, from the bright star of the jaw of the Whale. [Viceverſa a Luc. Mandib. Cete]

Hours, minutes [H. M.]	Declination Merid. [Declin. Merid.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete orient.]
$12^h\ 19½^m$	40° 36⅓′° 53′	36 38
	1° 53⅙′ twice with one pinnule [bis vno pinn.]	
$12^h\ 25^m\ 0^s$	40° 35⅙′	35 12
$12^h\ 27⅓^m$	40° 35⅓′° 53′ twice [bis]	34 30
$12^h\ 30⅙^m$	40° 35⅔′	33 43
$12^h\ 34^m$	40° 35½1° 53′	32 54
	1° 52⅚′	

Declination of the bright star [Declin. Lucidæ]	2° 27⅓′	by the largest [per arm.]
of the jaw of the Whale [Mandib. Cete]	2° 27¼′	armillae [max.]

On how the observations of Jupiter made this year are to be brought into use.[3] [De obſeruationibus ♃ hoc anno habitis quomodo ad vſum producendæ[3].]

Jupiter was observed around the opposition of the simple Sun on 10 and 11 September [die 10 & 11 Septembris] from the mouth of Pegasus and the bright star of the jaw of the Whale, because no others more conspicuous were better placed. But these very ones must first be examined exactly by repeated observations. [Obſeruabatur ♃ circa ☍ ☉ Simplicis die 10 & 11 Septembris ab ore Pegaſi & Lucida Mandibulæ Cete, quia nullæ aliæ inſigniores melius diſpoſitæ erant. Oportet autem has ipſas prius exacte per reiteratas obſeruationes examinari.]

[1] Thus in the codex. Perhaps it should be 22. [Sic in codice. Fortaße debet eße 22.] [2] That is, in the night between the 10th and the 11th. [Id eſt, nocte inter dies 10 et 11.] [3] This investigation was later inserted into the codex. [Hæc inveſtigatio poſtea codici inſerta eſt.]

But on the 10th, in the evening [die 10 Veſperi], the distance of the mouth of Pegasus from the Vulture was observed as 28° 1¼′, observed several times and limited in this way (see below). The meridian altitude of the mouth of Pegasus 42° 9⅙′, of the jaw of the Whale 36° 33′ 0″. The declination of Jupiter, verified from the meridian altitude taken on each of these days, is to be sought without error. [Eſt vero obſeruata die 10 Veſperi diſtantia Oris Pegaſi a Vulture 28 1¼, aliquoties obſeruata & ad hunc modum limitata (vide infra). Altitudo Meridiana Oris Pegaſi 42 9⅙, Mandib. Cete 36 33 0. Declinatio ♃ verificata ex Altitudine Meridiana ſingulis hiſce diebus habita ſine errore petenda eſt.]

For the restoration of the fixed stars from which Jupiter was observed. [Pro reſtitutione fixarum, e quibus ♃ obſeruabatur.]

On 13 November, in the evening [Die 13 Nouembris Veſperi], the distance of the mouth of Pegasus from the Vulture [Diſtantia Oris Pegaſi a Vulture]	28° 3′ 50″ [28ᵍ 3′50″]
The same, from the first of the wing of Pegasus [Eadem a prima alæ Pegaſi]	20° 20′ 55″

From this the right ascension of the mouth of Pegasus was computed, the places of the remaining fixed stars having been reduced to this time: 321° 5′ 30″ [321ᵍ5′30″]; declination 8° 3′ 40″ [8ᵍ3′40″]; resp. longitude 26° 16½′ ♒; latitude 22° 8′ 0″ north [B.]. [Inde Aſcenſio Recta Oris Pegaſi ſupputata eſt, reductis ad hoc tempus reliquarum fixarum locis 321ᵍ5′30″, Declinatio 8ᵍ3′40″, reſp. Longitudo 26 16½ ♒, Latitudo 22 8 0 B.]

N.B. These observations correspond with one another very well, vice versa. [N. B. Hæ obſeruationes optime viceverſa ſibi invicem correſpondent.]

From the Vulture 321 5 34; from the first of the wing of Pegasus 321 5 32. See in the book of the fixed stars. [A Vulture 321 5 34, a prima alæ Pegaſi 321 5 32. Vide in libro fixarum.]

For the bright star of the jaw of the Whale: on the same day, 13 November, in the evening, the bright star of the jaw of the Whale was distant from the first [1] of the wing of Pegasus 59° 25′ 30″, from Aldebaran 26° 5′ 40″. Declination of the jaw of the Whale 2° 27½′. [Pro Lucida Mandibulæ Cete: Eodem die 13 Nouembr. veſperi Lucida Mandib. Cete diſtabat a 1 alæ Pegaſi 59 25 30 / ab Aldeboran 26 5 40. Declin. Mandib. Cete 2 27½.]

Right ascension from the first [1] of the wing of Pegasus 40° 19′ 12″, from Aldebaran 40° 19′ 52″. [Aſc. Recta a 1 Alæ Pegaſi 40 19 12, ab Aldeb. 40 19 52.]

Therefore put the right ascension of the jaw of the Whale, limited, without sensible error, 40° 19⅗′; resp. longitude 8° 41½′ ♉; latitude 12° 38′ 0″ south [M.]. [Pone itaque Aſc. R. Mandib. Cete limitatam ſine ſenſibili errore 40 19⅗, reſp. Longitudo 8 41½ ♉, Latitudo 12 38 0 M.]

And in this way the places of these two stars, from which Jupiter was observed acronychal this year, have been examined by most exact recent observations; these places nevertheless differ little, and scarcely perceptibly, from the designation which is found entered in the Catalogue of the Fixed Stars, as can be seen in its own place. [Atque hoc modo harum binarum ſtellarum loca obſeruationibus recentibus exactißimis ſunt examinata, a quibus ♃ Acronychius hoc anno obſeruatus eſt, quæ tamen parum & vix perceptibiliter diſcrepant ab illa denotatione, quæ Catalogo Fixarum inſerta reperitur, vt ſuo loco videre eſt.]

N.B. The distances of Jupiter from the fixed stars observed on 10 and 11 September are shown on the following days, or by several examinations, to have been shorter than the correct ones on both sides by about 2½′ [2½ᴹ], either because of some fault the sextant incurred on those days, or because of the brightness of the Moon, which was nearer, getting in the way. [N. B. Diſtantiæ ♃ a fixis diebus 10 & 11 Septembris obſeruatæ vel ob aliquod Sextantis illis diebus incommodum contractum vel ſplendorem ☾ vicinioris impedientem

breviores iuſtis vtrinque circiter 2½ᴹ fuiße ſequentibus diebus vel pluribus examinationibus comprobantur.]

I.

10 September, 0¼ʰ A.M. [Die 10 Septembris H. 0¼ A. M.]

Distance of Jupiter from the mouth of Pegasus [Diſtantia ♃ ab ore Pegaſi]	40° 0¼′	observed [obſeruata]
from the jaw of the Whale [a Mandibula Cete]	40° 30¼′	
Declination of Jupiter [Declinatio ♃]	1° 46⅝′	
Angular difference of ascension from the mouth of Pegasus [Angulus differentiæ aſcenſ. ab ore Pegaſi]	38° 52′ 0″	
Right ascension of the mouth of Pegasus [Aſcenſio recta oris Pegaſi]	321° 5′ 30″	
Therefore the right ascension of Jupiter [Ergo Aſcenſio recta ♃]	359° 57′ 30″	
Angular difference of ascension from the bright star of the jaw of the Whale [Angulus differentiæ aſcenſ. a luc. mand. Cete]	40° 17½′	
Right ascension of the bright star of the jaw of the Whale [Aſc. recta lucidæ mandib. Cete]	40° 19′ 35″	
Therefore the right ascension of Jupiter [Ergo Aſcenſio recta ♃]	0° 2′ 5″	

Difference by which the distances are shown to be smaller than the correct ones: 4′ 35″ [4′35″]. [Differentia qua arguuntur diſtantiæ iuſtis minores 4′35″.]

On the following day, 0⅙ʰ A.M. [Die ſequente H. 0⅙ A. M.]

Distance of Jupiter from the mouth of Pegasus [Diſtantia ♃ ab ore Pegaſi]	39° 54¼′	
from the jaw of the Whale [a Mandibula Cete]	40° 35⅔′	
Hence the right ascension from the mouth of Pegasus [Hinc Aſcenſio recta ab ore Pegaſi]		359° 51′ 15″
from the jaw of the Whale [a Mandibula Cete]		359° 57′ 0″
Difference [Differentia]		5 45

II. But if this same operation should be applied for the 10th according to the disposition of the stars with respect to the zodiac, without the declination — namely by the usual application of the practice [Greek: praxεως (praxeōs, "of the practice")] of triangles from the distances alone — there results for the same time a longitude of Jupiter of 29° 23′ ♓ and a latitude of 1° 27′ south [M.]. This exceeds the limited ones above by 6′ [6 M.] in longitude, but falls short of them by 11′ [11 M.] in latitude, so that for this reason, even from these [II. Sin autem hæc eadem operatio fuerit ad 10 diem iuxta diſpoſitionem ſtellarum ad Zodiacum ſine declinatione adhibita, vſitata ſcilicet Triangulorum praxεως inductione ex ſolis diſtantijs, prouenit ad idem tempus ♃ Longitudo 29 23 ♓, Latitudo 1 27 M. Quod ſuperioribus limitatis in longitudine 6 M. abundat, in latitudine vero 11 M. ab ijsdem deficit, vt propterea vel ex his] it is more than sufficiently clear that the sextant supplied distances smaller than the correct ones,

which I detected mechanically on the globe. [ſatis ſuperque liquet diſtantias ſextantem iuſtis minores ſuppeditaße, quod in Globo mechanice deprehendi.]

III. Proof from the star of Mars [♂ti^{s} ſtella], observed on the same day around the triple aspect [trinum] of the Sun. [III. Comprobatio ex ♂ti^{s} ſtella eodem die circa trinum ☉ obſeruata.]

On the 10th [Die 10]	2¾^{h} A.M. [H. 2¾ A. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a lucida ♈]	25° 47′	
	2⅝^{h} A.M. [H. 2⅝ A. M.]	Distance of Mars from Aldebaran [Diſt. ♂ ab Aldebora]	9° 43½′	
		Declination of Mars [Declinatio ♂]	17° 5½′	
		Angular difference of ascension from the bright star of ♈ [Angulus differentiæ aſc. a lucida ♈]		26° 57′ 0″
		Right ascension of the bright star of ♈ [Aſcenſio recta lucidæ ♈]		26° 8′ 50″
		Right ascension of Mars [Aſcenſio recta ♂]		53° 5′ 50″
		Angular difference of ascension of Mars from Aldebaran [Angulus differentiæ ♂ aſc. ab Aldebora]		10° 1′ 5″
		Right ascension of Aldebaran [Aſcenſio recta Aldeb.]		63° 12′ 0″
		Hence the right ascension of Mars [Hinc Aſcenſio recta ♂]		53° 10′ 55″
		Difference of the right ascensions [Differentia Aſcenſionum rectarum]		5′ 5″

From this too it is especially clear that the sextant (from whatever mishap this finally came about) gave distances shorter than the true ones in the case of Mars as well. This will have to be guarded against in the other observations made below with the sextant, until this fault, once revealed, corrects and cancels itself again through other observations taken equally vice versa. For from that time on we did not correct this sextant, knowing this. [Hinc etiam vel maxime patet, Sextantem (quocunque accidente incommodo id tandem euenerit) diſtantias etiam in ♂ breviores veris largitum. Quod in ceteris infra per Sextantem obſeruatis cauendum erit, quoad vitium hoc patefactum per alias obſeruationes æque viceverſa habitas ſeſe denuo emendet atque elidat. Nam ex eo tempore Sextantem hunc ſcientes non correximus.]

IV.

On 10 September [Die 10 Septembris] the distance of the mouth of Pegasus from the Vulture [diſtantia oris Pegaſi a Vulture]	28° 1¼′
On 13 November [Die 13 Nouembris] the same and truer distance [eadem & verior diſtantia]	28° 3′ 50″
Difference [Differentia]	2 35

It is clear, therefore, that on the earlier occasion, when Jupiter was being observed, the sextant was in error by about 2½′, which was what had to be

investigated. [Patet itaque aberratum fuiße in Sextante priori vice cum ♃ obſeruaretur 2½′ proxime, quod fuit inquirendum.]

Accordingly, once the acronychal Jupiter had been examined, the distances have everywhere been increased p. 2½, as follows. [Examinato itaque Achronychio ♃ diſtantiæ vbique auctæ ſunt p. 2½ vt ſequitur.]

10 September, 0¼^{h} A.M. [Die 10 Septembris H. 0¼ A. M.]

Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	40° 2¾′ corrected [corr.]
Declination of Jupiter, as set [Declin. ♃ poſita]	1° 47′ 10″ south [M.]
Hence there results the angular difference [Hinc prouenit ang. diff.] of ascension [aſcenſ.]	38° 55′ 33″
Right ascension of the mouth of Pegasus [Aſc. recta oris Pegaſi]	321° 5′ 30″
Right ascension of Jupiter [Aſc. recta ♃]	0° 1′ 3″

At the same time the distance of Jupiter [Eodem tempore diſt. ♃] from the jaw, corrected [a Mandib. corr.]	40° 32¾′
Angular difference of ascension [Ang. diff. aſcenſ.]	40° 20′ 0″
Right ascension of the jaw of the Whale [Aſc. recta Mandib. Cete]	40° 19′ 35″
Right ascension of Jupiter [Aſc. recta ♃]	359° 59′ 35″

Right ascension of Jupiter, limited [Aſc. R. ♃ limitata]	0° 0⅓′
Resp. longitude of Jupiter [Reſp. ♃ Longitudo]	29° 17′ 33″ ♓
Latitude [Latitudo]	1° 38′ 25″ south [M.]

On the following day, namely 11 September, before M. [Die ſequente videlicet 11 Septembris ante M.]

0⅙^{h} [H. 0⅙]	Distance of Jupiter from the mouth of Pegasus, corrected [Diſt. ♃ ab ore Peg. corr.]	39° 56¾′
	Declination of Jupiter [Declin. ♃]	1° 50½′ south [M.]
	Angular difference of ascension from the mouth of Pegasus [Ang. diff. aſcenſ. ab ore Peg.]	38° 48′ 27″
	Therefore, from this, the right ascension of Jupiter [Ergo hinc Aſc. recta ♃]	359° 53′ 57″

Distance from the bright star of the jaw of the Whale, corrected [Diſt. a luc. mand. Cete corr.]	40° 38⅙′

Angular difference of ascension [Ang. diff. aſcenſ.]	40° 25′ 6″
Therefore, from this, the right [Ergo hinc Aſc.] ascension of Jupiter [recta ♃]	359° 54′ 29″

Hence the limited right ascension of Jupiter [Hinc limitata Aſc. R. ♃]	359° 54¼′
Resp. longitude of Jupiter [Reſp. Longitudo ♃]	29° 10¾′ ♓
Latitude [Latitudo]	1° 39′ 2″ south [M.]

7 September, A.M., 0^h 30^m [Die 7 Septembris A. M. H. 0 M. 30.]

$0½^h$ [H. 0½]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Peg.]	40° 21¼′
	Declination of Jupiter [Declin. ♃]	1° 38′ south [M.]
	Angular difference of ascension of Jupiter from the mouth of Pegasus [Ang. diff. aſc. ♃ ab ore Peg.]	39° 17′ 7″
	Therefore the right ascension of Jupiter [Ergo Aſc. recta ♃]	0° 22′ 37″

1^h 0 [H. 1.0]	Distance of Jupiter [Diſt. ♃]	
	from the jaw of the Whale [a Mand. Cete]	40° 8′ 40″
	Hence the angular difference of ascension [Hinc Ang. diff. aſcenſ.]	39° 56′ 42″
	Therefore the right ascension of Jupiter [Ergo Aſc. recta ♃]	0° 22′ 53″

$0¾^h$ [H. 0¾]	Right ascension of Jupiter, limited [Aſcenſio R. ♃ limitata]	0° 22¾′
	Resp. longitude [Reſp. Longitudo]	29° 41′ 48″ ♓
	Latitude [Latitudo]	1° 39′ 0″ south [M.]

N.B. Since the observations taken vice versa agree so well here, it is clear enough that the fault of the sextant mentioned above happened from this day to the 10th [10^{mum}]. But we use, more safely, the place of Jupiter that results from these observations to investigate its acronychal position, by a reduction from the daily motion that agrees with our correction, in this way. [N.B. Quandoquidem adeo bene obſeruationes conueniant hoc loco viceverſa habitæ, ſatis videre liquet Sextanti incommodum prædictum ab hoc die in 10^{mum} accidiße. Vtimur autem tutius loco ♃ ex hiſce obſeruationibus emanente pro acronychio eius ſitu

inveſtigando per reductionem ex motu diurno noſtræ correctioni competente in hunc modum.]

From the 5th day, 12^h [H. 12] completed, to the 9th day, 12^h [H. 12] completed — namely in an interval of four whole days — the difference in the motion of Jupiter, everything being assumed according to our restoration, was 30⅓′ [30⅓ᴹ]; therefore the daily motion was 7′ 55″. [A die 5 H. 12 completa in 9 diem H. 12 complet. videlicet interſtitio quatuor integrorum dierum fuit differentia in motu ♃ ſuppoſitis omnibus iuxta noſtram reſtitutionem 30⅓ᴹ, ergo motus diurnus fuit 7′ 55″.]

From the observation, however, the daily motion corresponds: [Ex obſeruatione autem reſpondet motus diurnus]

Day 6, 12^h 45 [D. 6 H. 12 45]		29 41 48	
Day 9, 12^h 45 [D. 9 H. 12 45]		29 17 33	
	Difference [Differentia]	24 15	from which the daily motion 8′ 5″ [vnde motus diurnus 8′ 5″.]
Day 10, 12 10 [D. 10 12 10]		29 10 44	
		31 4	corresponds to 7′ 50″, very nearly [reſpondet 7′ 50″ proxime.]

Therefore put the daily motion of Jupiter from 7 September up to the opposition with the Sun 7′ 57″, and you will err imperceptibly. [Pone itaque motum diurnum ♃ a die 7 Septembris vsque ad ☍ cum ☉ 7′ 57″, & inſenſibiliter aberrabis.]

For the true place of Jupiter on 7 September, A.M., 0¾^h [H. 0¾], the parallax in length and breadth being excluded. [Pro vero loco ♃ Die 7 Septembris A. M. H. 0¾, parallaxi in longo & lato excluſa.]

Distance of Jupiter from the Earth 3042 semidiameters of the Earth. Altitude at most 32⅓° [32⅓ g.]. Resp. parallax in the circle of altitude 0′ 56″; resp. in longitude 22″ added, in latitude 51″ subtracted. [Diſt. ♃ a terra 3042 ſemid. terræ. Altitudo in plurimum 32⅓ g. Reſp. parallaxis in circulo altitudinis 0′ 56″, reſp. in Long. 22″ add., Lat. 51″ ſubt.]

Therefore the true longitude of Jupiter 29° 42⅙′ ♓, latitude 1° 38⅙′ south [M.]. [Ergo vera ♃ Longitudo 29 42⅙ ♓, Latitudo 1 38⅙ M.]

6^d 12^h 45^m [6^D 12^H 45^M]	Jupiter [♃]	29° 42′ 10″ ♓	Reduction to the opposition of the Sun [Reductio ad ☍ ☉]
	Sun [☉]	25° 20′ 10″ ♍	(the time is equated for the motion of the Sun) [(tempus æquatum eſt pro ☉ motu)]
		4 22 0	Difference of the motion [Differentia motus]

The daily motion of the Sun and Jupiter, combined: 67′ 5″. [Motus diurnus ☉ & ♃ aggregatus 67′ 5″.]

67′ 5″ give 24; what 4° 22′ 0″? Resp. 3^{d} 21^{h} 44^{m}. [67′ 5″ dant 24, quid 4^{g} 22′ 0″. Reſp. 3^{D} 21^{H} 44^{M}.]

Therefore the opposition of Jupiter with the Sun took place on 10 September at 10½^{h} [H. 10½], very nearly. Apparent time. To which there correspond: [Ergo ☍ ♃ cum ☉ facta eſt Die 10 Septembris H. 10½ proxime. Tempus adparens. Cui reſpondent]

True longitude of Jupiter [♃ vera Longitudo]	29° 11′ 8″ ♓ [29^{g} 11′ 8″ ♓]	
Latitude [Latitudo]	1° 38′ 0″ south [M.]	as nearly as possible [quam proxime.]

From the Prutenic Tables, resp. simple longitude of Jupiter [Ex Tabulis Prutenicis reſp. Simplex Long. ♃]	5^{s} 31° 17′ 26″ [5^{s} 31° 17′ 26″]
Apogee of Jupiter [Apog. ♃]	2 38 43 47
Our precession of the equinox [Noſtra præceßio æquinoctij]	0 28 11 25

The difference here between the observed motion of Jupiter and the one from the corrected tables is 6¾. [Differentia hic inter motum ♃ obſeruatum & ex correctis tabulis eſt 6¾.]

Afterwards, in the year 1596, in another acronychal position, the observed place of Jupiter was found to differ from the same Tables by 10½, both near the perigee. But now the observations were very precise, so they have to be limited as also at a different time (?). [Poſtea anno 1596 in alio acronychio ſitu inuentus eſt locus ♃ obſeruatus differre ab ijsdem Tabulis 10½, vtrumque iuxta perigæum. Fuerunt autem nunc obſeruationes exquiſitæ admodum, quare eæ limitandæ veniunt vt etiam tempore differenti [?].]

14 September, in the evening [DIE 14 SEPTEMBRIS, VESPERI.]

At 11^{h} 27^{m} [H. 11 M. 27] Jupiter crossed the meridian, having an altitude [Tranſiuit ♃ Meridianum habens Altitudinem]

by the steel instrument [per Chalyb.]	32° 2⅓′
by the revolving quadrant [per Volub.]	32° 2′
The outermost of the wing of Pegasus, west [Extrema alæ Pegaſi occid.]	1 7

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	Declination [Declin.]	The outermost of the wing of Pegasus, west [Extrema alæ Pegaſi occ.]
$11^h\ 47^m$	39° 29⅙′		
$11^h\ 50⅔^m$	39° 29⅓′	2° 6′	13 27
		2° 6⅙′	
$11^h\ 56^m$	39° 29¼′		14 50
$12^h\ 0^m$	39° 29′	2° 6⅙′	15 51
		2° 6¼′	

Vice versa, from the bright star of the jaw of the Whale [Viceverſa a Lucida Mandib. Cete]

Hours, minutes [H. M.]		Declination [Declin.]	The outermost of the wing of Pegasus, west [Extrema alæ Pegaſi occ.]
$12^h\ 6⅚^m$	41° 7′		17 29
$12^h\ 11⅚^m$	41° 7¼′	2° 6½′	18 42
		2° 6¼′	
$12^h\ 17^m$	41° 7′		20 7
$12^h\ 20⅙^m$	41° 7½′ good [bona]		20 48

The last day of September, in the evening[1] [DIE VLTIMO SEPTEMBRIS, VESPERI[1].]

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	Declination [Declin.]	Altitude [Altit.]	The Vulture, west [Vultur occid.]
$7^h\ 21½^m$	37° 54′	2° 49½′ } with both [vtroque] }	17° 55′	13 6
$7^h\ 27^m$	37° 54¼′		18° 22′	
$7^h\ 32^m$	37° 53⅔′	2° 50′	18° 36′	
		2° 49⅔′		

Vice versa, from the bright star of ♈ [Viceverſa a Lucida ♈]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude [Altit.]	The Vulture, west [Vultur occid.]
$7^h\ 38^m$	37° 7′		19° 39′	
$7^h\ 41^m$	37° 6½′	2° 50⅙′	19° 57′	17 54
		2° 49⅚′		
$7^h\ 43½^m$	37° 6⅔′		20° 16′	

Hence is gathered the right ascension of Jupiter [*Hinc colligitur ♃ Aſc. R.*]	*357° 30½′*
Declination [*Declinatio*]	*2° 50′ south* [*M.*]
Therefore the longitude [*Ergo Longitudo*]	*26° 35′ ♓*
Latitude [*Latitudo*]	*1° 36¼′ south* [*M.*]

3 October [DIE 3 OCTOBRIS.]

The times are corrected. [Tempora ſunt correcta.]

Hours, minutes [H. M.]	Distance of Jupiter from the left shoulder of ♒ [Diſt. ♃ a ſin. hum. ♒]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The Vulture, west [Vultur occid.]
$7^h\ 19^m$	39° 40′	2° 58½′ 2° 58¼′	18° 34′	

Declination of the outermoſt [Decl. extremæ]	13° 3⅔′
of the wing of Pegaſus [alæ Pegaſi]	13° 4′

Hours, minutes [H. M.]	Distance of Jupiter from the left shoulder of ♒ [Diſt. ♃ a ſin. hum. ♒]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The Vulture, west [Vultur occid.]
$7^h\ 26^m$	39° 40½′		19° 55′	
$7^h\ 31½^m$	39° 40′	2° 58¼′ 2° 58′	20° 10′	18 24
$7^h\ 36^m$	39° 40⅓′	2° 58′ } with both [vtroque] }	20° 52′	19 36

Vice versa, from the bright ſtar of ♈. [Viceverſa a Lucida ♈.]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The Vulture, west [Vultur occid.]
$7^h\ 40^m$	37° 26¼′	21° 10′	20 31
$7^h\ 42^m$	37° 26⅓′2° 58′ 2° 57¾′	21° 37′	21 6
$7^h\ 46^m$	37° 26⅓′	21° 54½′	21 58

Repeated declination of the outermoſt of the wing of Pegaſus 13° 4′, with both [Repetita Decl. extr. alæ Peg. 13 4 vtroque]

Afterwards Jupiter was obſerved from the mouth of Pegaſus. [Poſtea obſeruabatur ♃ ab ore Pegaſi.]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The outermost of the wing of Pegasus, east [Extrema alæ Pegaſi orient.]
$9^h\ 51^m$	37° 40⅓′		
$9^h\ 53^m$	37° 40⅓ 3° 0⅔′ 3° 0⅓′		
$9^h\ 57½^m$	37° 40¼′		10 39

Vice versa, from the bright star of ♈ [Viceverſa a Lucida ♈]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The outermost of the wing of Pegasus, east [Extrema alæ Pegaſi orient.]
$10^h\ 2^m$	37° 26½′		9 35
$10^h\ 6^m$	37° 26½′		8 28
$10^h\ 10^m$	37° 26′ 2° 59⅚′ 3° 0′		7 38

Declination of the outermost of the wing of Pegasus 13° 4′, with both. [Declin. extr. alæ Peg. 13 4 vtroque.]

10 37	Meridian altitude of Jupiter [Altid. Merid. ♃]	
	by the steel instrument [per Chalyb.]	31° 6⅚′
	by the revolving quadrant [per Volub.]	31° 7′
	Declination by [Declin. per]	2° 59⅚′
	the largest armillae [Armill. max.]	3° 0′
10 45^2	The outermost of the wing of Pegasus, east, for [Extrema alæ Pegaſi or. pro] correcting the clock [corrigendo horologio]	1 10

12 October [DIE 12 OCTOBRIS]

At $9^h\ 58⅖^m$ [H. 9 M. 58⅖] the meridian altitude of Jupiter was being taken [Altit. ♃ Merid. capiebatur]

by the steel instrument [per Chalyb.]	30° 46⅓′
by the revolving quadrant [per Volub.]	30° 46⅔′
The mouth of Pegasus, west [Os Pegaſi occid.]	35 13½

The times are corrected [Tempora ſunt correcta]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	The mouth of Pegasus, west [Os Pegaſi occid.]
$10^h\ 6⅖^m$	36° 55⅓′	37 13
$10^h\ 9⅓^m$	36° 55⅓′	37 56½

Next, from the eastern shoulder of ♒ [Deinceps ab orient. humero ♒]

The times are corrected [Tempora ſunt correcta]		The mouth of Pegasus, west [Os Pegaſi occid.]
$10^h\ 12^m$	30° 1′	38 36
$10^h\ 14^m$	30° 1′	
$10^h\ 15\frac{2}{5}^m$	30° 0⅔′	39 29

Vice versa, the distance of Jupiter from the bright star of the jaw of the Whale. [Viceverſa diſt. ♃ a Luc. Mandib. Cete.]

The times are corrected [Tempora ſunt correcta]		The mouth of Pegasus, west [Os Pegaſi occid.]
$10^h\ 19\frac{1}{6}^m$	44° 18′	40 25
$10^h\ 21\frac{1}{4}^m$	44° 18⅙′	40 56
$10^h\ 23\frac{1}{2}^m$	44° 18⅙′	41 30

[1] Compare above, p. 404, among the observations of the Moon [Cf. ſupra p. 404 inter obſervationes lunæ] [2] Corrected time. [Tempus correctum.]

At 10 33 the clock was corrected from the mouth of Pegasus, because it was running faster than it should by $5^m\ 40^s$ [5 M. 40 S.]. The mouth of Pegasus, west, was then 42 5. [10 33 corrigebatur Horologium ab Ore Pegaſi, quod celerius iuſto mouebatur 5 M. 40 S. Fuit tunc Os Pegaſi occid. 42 5]

The weight of one small lead ball was added. [Adiectum eſt pondus vnius globuli plumbei.]

25 October [DIE 25 OCTOBRIS.]

At $9\frac{1}{3}^h$ [H. 9⅓], approximately [ἐν πλάτει]. Altitude of Jupiter, having already passed the meridian [Altit. ♃ Meridianum iam prætergreßi]

by the steel instrument [per Chalyb.]	30° 27′	Azimuth [Azim.]	1¾°
by the revolving quadrant [per Volub.]	30° 25⅔′		2½°

26 October [DIE 26 OCTOBRIS.]

Observations of Jupiter from the right shoulder of ♒. [Obſeruationes ♃ a dextro humero ♒.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of Jupiter [Declin. ♃]	The mouth of Pegasus, west [Os Pegaſi occid.]
$8^h\ 44\frac{1}{6}^m$	29° 12′	3° 38½′	
		3° 38⅙′	
$8^h\ 49\frac{2}{3}^m$	29° 12½′	3° 38⅓′	31 55
		3° 38′	
$8^h\ 53\frac{5}{6}^m$	29° 12½′		32 57

9 0	Transit of Jupiter [Tranſitus ♃]	
	through the meridian. Altitude [per Meridianum. Altitudo]	
	by the steel instrument [per Chalyb.]	30° 26⅝′
	by the revolving quadrant [per Volub.]	30° 26⅓′
9 11 36″	Transit [Tranſitus]	
	through the meridian of the outermost of the wing of Pegasus, [per Merid. extremæ alæ Pegaſi,]	
	by the steel instrument [per Chalyb.]	47 1½
	by the revolving quadrant [per Volub.]	47 1
	The mouth of Pegasus, west [Os Pegaſi occid.]	37 7

Vice versa, Jupiter from the bright star of the jaw of the Whale. [Viceverſa ♃ a Mandib. Cete Lucida.]

Hours, minutes [H. M.]	Declination of Jupiter [Declin. ♃]	The mouth of Pegasus, west [Os Pegaſi occid.]
9^h $14\frac{2}{3}^m$	45° 18½′	37 52
9^h 17^m	45° 15½′	38 25
9^h 19^m	45° 16⅔′ 3° 38¼′ both [vtr.]	38 45

Since the bright star in the side of Perseus could not be taken from Aldebaran for correcting the sextant, the distance of Aldebaran from the bright star of ♈ was taken in its place, when it was near the Merid. [Cum Lucida in Latere Perſei ab Aldebora pro corrigendo Sextante capi non poßet, eius loco capiebatur diſtantia Aldeboræ a Lucida ♈ cum eßet prope Merid.]

At 10^h 32^m, distance [H. 10 M. 32 Diſtantia]	35° 31′
	35° 31⅙′

27 October, in the evening [DIE 27 OCTOBRIS, VESPERI.]

At 5^h 29^m 0^s [H. 5 29′ 0″], altitude of Jupiter [Altit. ♃]	17° 0′,
The Vulture, west [Vultur occid.]	10 42

At 8^h 57^m [H. 8 57] Jupiter crossed through the meridian, having the altitude [Tranſijt ♃ per Meridianum habens Altit.]

by the steel instrument [per Chalyb.]	30° 25¾′
by the revolving quadrant [per Volub.]	30° 25½′
The first of the wing of Pegasus, west [Prima alæ Pegaſi occid.]	14 13

Declination of Jupiter [Declin. ♃]	3° 38′ 3° 38½′

Jupiter from the right shoulder of ♒ [♃ a dextro humero ♒]

Corrected time [Temp. corr.]	Distance [Diſt.]	Declination of Jupiter [Declin. ♃]	Altitude of Jupiter [Alt. ♃]	The bright star of the jaw of the Whale, east [Luc. mand. Cete or.]
9^h 53^m	29° 7½′			30 50
9^h 55^m	29° 7¾′			30 23
9^h 57^m	29° 7¾′			29 52
9^h $58\frac{2}{3}^m$	29° 8′	3° 39′ 3° 39⅙′	28° 55′	29 32

Vice versa, Jupiter from the bright star of the jaw of the Whale. [Viceverſa ♃ a Lucid. Mandib. Cete.]

Corrected time [Temp. corr.]	Declination of Jupiter [Declin. ♃]	Altitude of Jupiter [Alt. ♃]	The bright star of the jaw of the Whale, east [Luc. mand. Cete or.]
10^h $5\frac{1}{3}^m$	45° 18¾′	28° 20′	27 49
10^h $7\frac{1}{4}^m$	45° 19′	28° 15′	27 20
10^h 9^m	45° 18½′3° 39½′ 3° 39′	28° 10′	26 55

11 0	The bright star of ♈ crossed [Tranſiuit Lucida ♈]	
	through the meridian, having the altitude [per Merid. habens Altitudinem]	
	by the steel instrument [per Chalyb.]	55° 35¾′
	by the revolving quadrant [per Volub.]	55° 36⅙′
	Declination of the bright star of ♈ [Declin. Lucidæ ♈]	21° 32½′
	by the armillae [per Armillas]	21° 31⅔′

For the place of Jupiter on 26 October. [Pro loco ♃ ad diem 26 Octobris.]

At 9^h 0^m Jupiter crossed the meridian. Declination [H. 9 M. 0 Tranſiuit merid. ♃. Declin.]	
from the meridian altitude [ex Alt. Merid.]	3° 38¾′ south [M.]
Distance from the right shoulder of ♒ [Diſt. a dextro humero ♒]	29° 12′
Declination of the shoulder of ♒ [Declin. hum. ♒]	2° 24′ south [M.]
Angular difference of ascension [Ang. diff. aſcenſ.]	29° 12⅓′
Right ascension of the shoulder of ♒ [Aſc. R. hum. ♒]	326° 15¾′

Hence the right ascension of Jupiter [Hinc Aſc. R. ♃]	
from the right shoulder of ♒ [a hum. dextro ♒]	355° 28′ 5″
Distance from the bright star of the jaw of the Whale [Diſt. a luc. mand. Cete]	45° 17′
Declination of the jaw of the Whale [Declin. mand. Cete]	2° 28′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	44° 53½′
Right ascension of the jaw of the Whale [Aſc. R. Mandib. Cete]	40° 22′ 0″
Hence the right ascension of Jupiter [Hinc Aſc. R. ♃]	
from the jaw of the Whale [a mandib. Cete]	355° 28½′
Therefore the right ascension of Jupiter, limited [Ergo Aſc. R. ♃ limitata]	355° 28′ 17″
Resp. longitude [Reſp. Longitudo]	24° 23⅔′ ♓
Latitude [Latitudo]	1° 32⅓′ south [M.]

For the place of Jupiter on 27 October. [Pro loco ♃ ad 27 diem Octobris.]

Distance from the right shoulder of ♒ [Diſt. a dext. hum. ♒]	29° 8′
Declination of Jupiter [Declin. ♃]	3° 39¾′ south [M.]
Angular difference of ascension [Ang. diff. aſcenſ.]	29° 8½′
Hence the right ascension of Jupiter [Hinc Aſc. R. ♃]	355° 24¼′
Distance from the bright star of the jaw of the Whale [Diſt. a luc. mand. Cete]	45° 19′
Angular difference of ascension [Ang. differ. aſcenſ.]	44° 55′ 30″
Hence the right ascension of Jupiter [Hinc Aſc. R. ♃]	355° 26½′
Put the right ascension of Jupiter [Pone Aſc. R. ♃]	355° 25⅓′
From which the longitude [Vnde Longitudo]	24° 20′ 35″ ♓
Latitude [Latitudo]	1° 32′ 5″ south [M.]

28 October [DIE 28 OCTOBRIS.]

Jupiter crossed through the meridian, having the altitude [Tranſiuit ♃ per Meridianum habens Altitud.]

by the steel instrument [per Chalyb.]	30° 25′
by the revolving quadrant [per Volub.]	30° 25⅙′

Declination [Declin.]	3° 40′	The bright star was then [Fuit tunc Lucida]	
of Jupiter [♃]	3° 40⅓′	of the jaw of the Whale, east [Mand. Cete or.]	
			44 54

Next Jupiter was taken from the right shoulder of ♒ [Deinde capiebatur ♃ a dextro hum. ♒]

Corrected time [Temp. correct.]	Distance [Diſtantia]	The jaw of the Whale, east [Mandib. Cete or.]
$8^h\ 59^m$	29° 5⅓′	43 13
$9^h\ 1½^m$	29° 5⅓′	42 45
$9^h\ 3^m$	29° 5⅓′	

Next from the bright star of the jaw of the Whale [Deinde a Lucida Mand. Cete]

Corrected time [Temp. correct.]	The jaw of the Whale, east [Mandib. Cete or.]	Declination of Jupiter [Declin. ♃]
$9^h\ 4^m\ 30^s$	45° 19⅙′ 41 54	
$9^h\ 7^m$	45° 21′ 41 16	
$9^h\ 10⅔^m$	45° 21′ 40 26	
$9^h\ 11⅔^m$	45° 19¾′ 39 56	
$9^h\ 13^m$	45° 19¾′ 39 35	
$9^h\ 16¼^m$	45° 19¾′ 38 57	3° 39½′
		3° 40′

3 November [DIE 3 NOUEMBRIS.]

At $8^h\ 25½^m$ Jupiter crossed through the meridian, having the altitude [H. 8 M. 25½ Tranſiuit ♃ per Meridianum habens Altit.]

by the steel instrument [per Chalyb.]	30° 22′
by the revolving quadrant [per Volub.]	30° 22′
Declination [*Declinatio*]	*3° 43′ good* [*3 43 bona*]
	3° 42⅙′
At $8^h\ 31½^m$ the Vulture, west, was [*H. 8 M. 31½ Fuit Vultur occid.*]	*64 2*

Afterwards Jupiter from the right *and more eastern* shoulder of ♒ [Poſtea ♃ a dextro & *orientaliore* humero ♒]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The Vulture, west [Vult. occ.]
{ $8^h\ 38^m$	28° 55⅔′		30° 20′	65 41
{ $8^h\ 40½^m$ corrected [corr.]				
$8^h\ 40⅙^m$	28° 55⅚′			66 18
$8^h\ 42⅓^m$	28° 55⅚′	3° 43′	30° 15′	66 50

Around these times the altitude of the same, more eastern shoulder of ♒ was roughly 26°. [*Fuit circa hæc tempora Altitudo eiusdem humeri ♒ orientalioris quaſi 26 partium.*]

Afterwards, vice versa, Jupiter was taken from the bright star of the jaw of the Whale. [*Poſtea viceverſa capiebatur ♃ a Lucida Mandibulæ Cete.*]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The Vulture, west [Vult. occ.]
$8^h\ 47^m\ 5^s$	45° 31⅔′	30° 11′	68 5
$8^h\ 50⅙^m$	45° 31¾′	30° 8′	68 55
$8^h\ 53⅔^m$	45° 31⅔′ 3° 43′	30° 5′	69 47

The altitude of the bright star of the jaw of the Whale was, around these times, roughly 28°. And therefore without refraction. [*Altitudo Lucidæ Mandibulæ Cete fuit circa hæc tempora partium quasi 28. Ideoque citra refractionem.*]

From these observations of Jupiter made around the meridian you can also verify the place of the Moon observed earlier from Jupiter. [*Ex his obseruationibus ♃ circa Meridianum habitis potes verificare locum etiam ☾ antea a ♃ obseruatum.*]

For the place of Jupiter on 3 November. [Pro loco ♃ Die 3 Nouembris.]

At $8¾^h$, distance of Jupiter from the right shoulder of ♒ [H. 8¾ Dist ♃ a dextro hum. ♒]	28° 55′ 50″
from the bright star of the jaw of the Whale [a luc. mand. Cete]	45° 31′ 40″
Declination of Jupiter from the meridian altitude [Decl. ♃ ex altit. merid.]	3° 43½′
Declination of the right shoulder of ♒ [Decl. dextri hum. ♒]	2° 24′ south [M.]
the bright star of the jaw of the Whale [luc. mand. Cete]	2° 28′ north [B.]
Angular difference of ascension from the shoulder of ♒ [Ang. diff. asc. a hum. ♒]	28° 56′ 36″
from the jaw of the Whale [a mand. Cete]	45° 7′ 47″
Resp. right ascension of Jupiter [Resp. Asc. R. ♃]	355° 12′ 26″
	355° 14′ 13″
Right ascension, limited [Ascensio R. limitata]	355° 13⅓′

7 November, in the evening [DIE 7 NOUEMBRIS, VESPERI.]

Jupiter was observed approaching the meridian, from the right shoulder of ♒. [Obseruabatur ♃ meridiano appropinquans a dextro humero ♒.]

N.B. Jupiter was stationary in the second station. [*N. B. ♃ erat stationarius in statione secunda.*]

Hours, minutes [H. M.]	Distance [Distantia]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Pegasi occid.]
$7^h\ 52^m$	28° 51′		30° 10½′	
$7^h\ 54¼^m$	28° 52½′		30° 14′	28 45
$7^h\ 56¼^m$	28° 51′			29 16
$7^h\ 58^m$	28° 51′		30° 15′	29 40

Vice versa, Jupiter from the bright star of ♈. [Viceversa ♃ a Lucida ♈.]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Pegaſi occid.]
8^h $1\frac{1}{2}^m$	39° 29½′	30° 20′	30 34
8^h $3\frac{1}{2}^m$	39° 29⅓′	30° 22′	31 7
8^h $5\frac{1}{2}^m$	39° 29′	30° 22½′	31 36
8^h $7\frac{2}{3}^m$	39° 29′		32 8

8 15¾	Jupiter crossed [Tranſiuit ♃]	
	through the meridian, having the altitude [per Meridianum habens Altitud.]	
	by the steel instrument [per Chalyb.]	30° 21¼′
	by the revolving quadrant [per Volub.]	30° 20⅔′
	Declination of Jupiter [Declin. ♃]	3° 43½′
		3° 43¼′
	The mouth of Pegasus, west, was then [Fuit tunc Os Pegaſi occid.]	34 1½

13 November, in the evening [DIE 13 NOUEMBRIS, VESPERI.]

Jupiter was observed near the meridian, when it had just recently become direct after its last station. The clock was corrected at 7^h [H. 7]. [Obſeruabatur ♃ prope Meridianum cum iam recens factus eßet directus poſt vltimam ſtationem. Horologium corrigebatur H. 7.]

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab Ore Pegaſi]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
7^h $4\frac{1}{2}^m$	35° 57⅔′			
7^h $7\frac{3}{4}^m$	35° 57¼′	3° 41⅓′		24 55
		3° 40½′		
7^h 14^m	35° 57⅓′	3° 40⅔′	29° 50′	26 40
		3° 41⅔′		

Vice versa, Jupiter from the bright star of ♈ [Viceverſa ♃ a Lucida ♈]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
7^h $18\frac{1}{3}^m$	39° 25⅔′		30° 15′	28 8
7^h $24\frac{1}{3}^m$	39° 27′			29 6
7^h 28^m	39° 27′ twice [bis]		30° 23′	30 15
7^h $32\frac{1}{6}^m$	39° 27¼′ not clear enough [non ſatis ſerenum]			31 21

7 42⅙	Jupiter crossed [Tranſiuit ♃]		
	through the meridian, having the altitude [per Merid. habens Altit.]		
	by the steel instrument [per Chalyb.]	30° 24 1/12′	34 1
		30° 24¼′	
	Declination of Jupiter [Declin. ♃]	3° 41′	
		3° 41′	

For the place of Jupiter from the immediately preceding observations. [Pro loco ♃ ex proxime præcedentibus obſeruationibus.]

Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	35° 57⅓′
Declination of Jupiter [Declin. ♃]	3° 41½′ south [M.]
Declination of the mouth of Pegasus [Declin. oris Pegaſi]	8° 4′
Angular difference of ascension [Ang. diff. aſcenſ.]	34° 3′ 50″
Right ascension of the mouth of Pegasus [Aſc. R. oris Pegaſi]	321° 5′ 40″
Therefore the right ascension of Jupiter [Ergo Aſc. R. ♃]	355° 9′ 30″

Vice versa, from the bright star of ♈ [Vice verſa a lucida ♈]

Distance [Diſtantia]	39° 27′
Declination of the bright star of ♈ [Declin. lucidæ ♈]	21° 31′ 33″
Right ascension of the same [Aſc. R. eiusdem]	26° 9′
Angular difference of ascension [Ang. differ. aſcenſ.]	30° 59′ 30″
Therefore the right ascension of Jupiter [Ergo Aſc. R. ♃]	355° 9′ 30″
Right ascension, limited [Aſcenſio R. limitata]	355° 9′ 30″
Resp. longitude [Reſp. Longitudo]	24° 5′ 23″ ♓
Latitude [Latitudo]	1° 27′ 23″ south [M.]

15 November, in the evening [DIE 15 NOUEMBRIS, VESPERI.]

Jupiter was observed from the mouth of Pegasus. [Obſeruabatur ♃ ab Ore Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
7^h 28⅔^m	35° 57⅔′			
7^h 30⅖^m	35° 57⅔′			32 0

Vice versa, Jupiter from the bright star of the jaw of the Whale. [Viceverſa ♃ a Lucida Mand. Cete.]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
$7^h\ 33^m$	45° 31⅓′		32 32
$7^h\ 35⅓^m$	45° 32′ 3° 41′		33 11
	3° 40⅙′		

7 39⅖	Jupiter crossed [Tranſiuit ♃]			
	through the meridian, having the altitude [per Meridianum habens Altit.]			
	by the steel instrument [per Chalyb.]	30° 24′ 55″		
	by the revolving quadrant [per Volub.]	30° 25′		
	Declination of Jupiter [Declin. ♃]	3° 40¼′	The mouth of Pegasus was then [Fuit tunc Os Pegaſi] west [occid.]	
		3° 40¾′		34 5 precisely [34 5 præciſe]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
$7^h\ 42⅔^m$	45° 31⅔′		34 50

[1] Thus in the codex. [Sic in codice.] [2] The hour angle is missing in the codex [Angulus horarius deeſt in codice]

16 November, in the evening [DIE 16 NOUEMBRIS, VESPERI.]

Jupiter was observed from the mouth of Pegasus as follows. [Obſeruabatur ab Ore Pegaſi ♃ vt ſequitur.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
$7^h\ 24^m$	35° 59′		30° 19′	
$7^h\ 27⅖^m$	35° 59′		30° 21′	6 53
$7^h\ 29¼^m$	35° 58¾′			

Vice versa, Jupiter from the bright star of the jaw of the Whale. [Viceverſa ♃ a Lucida Mand. Cete.]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
$7^h\ 32^m$	45° 31½′		5 50
$7^h\ 34½^m$	45° 3 ⅔′[1]		

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
$7^h\ 36\frac{1}{3}^m$	45° 31½′		4 51

7 44⅓	Jupiter crossed [Tranſiuit ♃]		
	through the meridian, having the altitude [per Meridianum habens Altit.]		
	by the steel instrument [per Chalyb.]	30° 26′	
	by the revolving quadrant [per Volub.]	30° 26′	
	Declination [Declin.]	3° 39¾′	The outermost of the wing [Extrema alæ]
		3° 40′	of Pegasus, east [Peg. orient.] …[2]

21 November, in the evening [DIE 21 NOUEMBRIS, VESPERI.]

After the equatorial armillae had been corrected on both sides to the fixed stars, Jupiter was observed approaching the meridian, between the evening square and trine of the Sun, for examining the parallax of the orb. [Poſtquam Armillæ æquatoriæ ad fixas vtrinque eßent correctæ, obſeruabatur ♃ appropinquans Meridiano, inter □tum & △ ☉ veſpertinum pro parallaxi orbis examinanda.]

The clock corrected. [Horologium correctum.]

Hours, minutes [H. M.]	Distance from the right shoulder of ♒ [Diſt. a dext. hum. ♒]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Pegaſi occid.]
$6^h\ 48\frac{3}{4}^m$	29° 3⅔′		30° 25′	29 16
$6^h\ 51\frac{1}{4}^m$	29° 3′			29 54
$6^h\ 52\frac{5}{6}^m$	29° 4′			30 19
$6^h\ 54\frac{1}{2}^m$	29° 3¾′	3° 34½′	30° 27′	30 38
		3° 35′		

Vice versa, Jupiter from the bright star of the jaw of the Whale. [Viceverſa ♃ a Lucida Mand. Cete.]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Pegaſi occid.]
$7^h\ 0^m$	45° 20⅙′		32 5
$7^h\ 1\frac{3}{4}^m$	45° 21⅚′		32 34

7 8¼	Jupiter crossed [Tranſiuit ♃]		
	through the meridian, having the altitude [per Meridianum habens Altit.]		
	by the steel instrument [per Chalyb.]	30° 31⅓′	
	by the revolving quadrant [per Volub.]	30° 31¾′	
	Declination [Declin.]	3° 35′	{ 34 19
	of Jupiter [♃]	3° 34¾′	{ exactly [exacte]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Pegaſi occid.]
7^h $16½^m$	45° 21½′		36 21
7^h 18^m	45° 21′		36 49
7^h $19⅔^m$	45° 21½′		37 15

23 November, in the evening [DIE 23 NOUEMBRIS, VESPERI]

Jupiter was observed crossing through the meridian, having the altitude [Obſeruabatur ♃ tranſiens per Meridianum habens Altitud.]

by the steel instrument [per Chalyb.]	30° 33⅔′
by the revolving quadrant [per Volub.]	30° 33⅚′
At 7^h $1⅓^m$ the neck of Pegasus was then [H. 7 M. 1⅓ Fuit tunc collum Pegaſi]	
west [occid.]	27 50
Declination of Jupiter [Declin. ♃]	3° 32⅓′
	3° 32¼′

Afterwards Jupiter in distances from the mouth of Pegasus [Poſtea ♃ in diſtantijs ab ore Pegaſi]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of Jupiter [Declin. ♃]	The neck of Pegasus, west [Collum Peg. occid.]
7^h $22½^m$	36° 7′		33 25
7^h $24¼^m$	36° 7⅙′	3° 32½′	33 44
		3° 32⅙′	
7^h $26⅝^m$	36° 8′		

Vice versa, Jupiter from the bright star of the jaw of the Whale [Viceverſa ♃ a Lucida Mandib. Cete]

Hours, minutes [H. M.]	Declination of Jupiter [Declin. ♃]	The neck of Pegasus, west [Collum Peg. occid.]
7^h $29¼^m$	45° 15¼′	35 34

Hours, minutes [H. M.]	Declination of Jupiter [Declin. ♃]	The neck of Pegasus, west [Collum Peg. occid.]
7^h $31¾^m$	45° 15½′	36 4
7^h $33⅚^m$	45° 15⅙′ 3° 32⅔′	36 26
	3° 32½′	

25 November [DIE 25 NOUEMBRIS.]

When the mouth of Pegasus was west on the equator [Cum Os Pegaſi eßet occidentalis in æquatore]	34° 23′
Meridian altitude of Jupiter [Altit. ♃ Merid.]	
by the steel instrument [per Chalyb.]	30° 37′
by the revolving quadrant [per Volub.]	30° 37⅓′

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab ore Pegaſi]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Peg. occid.]
6^h $58½^m$	36° 11′			36 29
7^h $2⅔^m$	36° 11⅙′	3° 28¾′		
		3° 28⅓′		

Vice versa, from the bright star of the jaw of the Whale [Viceverſa a Luc. Mandib. Cete]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Peg. occid.]
7^h 8^m	45° 10′	30° 27′	39 7
7^h $10⅔^m$	45° 10½′		
7^h $12½^m$	45° 10⅓′	30° 24′	40 20

4 December, in the evening [DIE 4 DECEMBRIS, VESPERI.]

Jupiter was observed near the square of the Sun, approaching the meridian. [Obſeruabatur ♃ iuxta □ ☉ Meridianum appropinquans.]

I from the mouth of Pegasus. [I ab Ore Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
5^h $32⅚^m$	36° 35½′	3° 11⅚′	30° 22′	24 59
		3° 12¼′		
5^h 37^m	36° 37′	3° 11⅔′ both [vtroq.]		26 3
5^h 39^m	36° 35½′	3° 12⅙′		26 36
		3° 12′		
5^h 42^m	36°…		30° 35⅔′	27 25

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
$5^h\ 45\frac{2}{3}^m$	36° 37⅔′	3° 12¼′ 3° 12′	30° 40⅙′	

Put the distance of Jupiter around these times at 36° 37′. [*Pone diſt.* ♃ *circa hæc tempora 36 37.*]

Vice versa, from the bright star of the jaw of the Whale [Viceverſa a Luc. Mandib. Cete]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
$5^h\ 52^m$	44° 34⅙′		30 0
$5^h\ 53\frac{5}{6}^m$	44° 34¼′ 3° 12¾′ 3° 12⅙′		30 29
$5^h\ 56^m$	44° 34′		

6 Jupiter crossed [Tranſiuit ♃]
11⅓
through the meridian, having the altitude [per Meridianum habens Altitud.]
by the steel instrument [per Chalyb.] 30° 53⅚′
by the revolving quadrant [per Volub.] 30° 54⅙′
Declination of Jupiter [Declin. ♃] 3° 13′ The mouth of Pegasus was then [Fuit tunc Os Peg.]
3° 13⅙′ west [occid.] 34 57½

Afterwards Jupiter was observed from the bright star of ♈ [Poſtea obſeruabatur ♃ a Lucida ♈]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
$6^h\ 15\frac{1}{3}^m$	38° 25⅔′		
$6^h\ 17^m$	38° 25⅓′		
$6^h\ 19\frac{1}{6}^m$	38° 25⅓′ 3° 12′ 3° 11⅚′		37 0

At $6\frac{3}{4}^h$ [H. 6¾] the clock was corrected by advancing it 10^m [10 M.], by which it had gone slower than it should since the preceding noon. [Corrigebatur horologium promouendo illud 10 M. quibus tardius iuſto a Meridie antecedente iuerat.]

6 December, in the evening [DIE 6 DECEMBRIS, VESPERI.]

Jupiter was observed approaching the meridian, after the clock had been corrected and it was very close to the quadrature of the Sun and Jupiter. [Obſeruabatur ♃ appropinquans Meridiano, poſtquam horologium correctum eßet, & proximus quadraturæ ☉ ♃ exiſteret.]

First from the mouth of Pegasus. The transit of the mouth of Pegasus through the meridian was at $3^h\ 49^m$ [H. 3 M. 49] [Primum ab ore Pegaſi. Tranſitus Oris Pegaſi per Meridianum fuit H. 3 M. 49]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	The mouth of Pegasus, west [Os Peg. occid.]
$5^h\ 41\frac{3}{4}^m$	36° 44⅙′	3° 6½′	28 5
		3° 6′	
$5^h\ 44\frac{3}{4}^m$	36° 44⅙′		28 50
$5^h\ 46\frac{1}{2}^m$	36° 44′		29 17

Vice versa, Jupiter from the bright star of the jaw of the Whale [Viceverſa ♃ a Lucida Mandib. Cete]

Hours, minutes [H. M.]		Declination [Declin.]	The mouth of Pegasus, west [Os Peg. occid.]
$5^h\ 50\frac{1}{6}^m$	44° 24¼′	3° 5⅚′	30 13
		3° 6⅙′	
$5^h\ 52\frac{1}{4}^m$	44° 24½′		30 41
$5^h\ 55\frac{2}{5}^m$	44° 25⅙′	3° 6½′	
		3° 6⅙′	
$5^h\ 56\frac{5}{6}^m$	44° 25⅙′		31 51

Afterwards from the first of the wing of Pegasus [Poſtea a prima alæ Pegaſi]

Hours, minutes [H. M.]		Declination [Declin.]	The mouth of Pegasus, west [Os Peg. occid.]
$6^h\ 1\frac{1}{3}^m$	21° 57⅔′		32 59
$6^h\ 3\frac{5}{6}^m$	21° 57′		33 38
$6^h\ 5\frac{1}{3}^m$	21° 57½′		34 0

6 9⅚ Jupiter crossed [Tranſiuit ♃]
through the meridian, having the altitude [per Merid. habens Altitud.]
by the steel instrument [per Chalyb.] 30° 58¼ *Therefore put* [*Pone igitur*]
by the revolving quadrant [per Volub.] 30° 58¾′ *30 58½*
Declination by the largest armillae [Declin. per] 3° 6⅔′ The mouth of Pegasus was then [Tunc fuit Os Peg.]
[Arm. max.] 3° 6½′ west [occid.] 35 12

exactly
[exacte]

Vice versa, Jupiter from the bright star of ♈. [Viceverſa ♃ a Lucida ♈.]

Hours, minutes [H. M.]		Declination [Declin.]	The mouth of Pegasus, west [Os Peg. occid.]
6^h 16½^m	38° 13⅓′		36 53
6^h 18^m 0^s	38° 14¼′	3° 6⅙′	
		3° 5⅚′	
6^h 20^m 0^s	38° 15′		37 40
6^h 22^m	38° 14¾′		
6^h 23⅓^m	38° 14⅚′	3° 6′	38 37
		3° 5⅔′	

N.B. These observations of Jupiter, compared with one another, are very good for investigating its longitude and latitude near the evening square of the Sun, for examining both the annual orb and its latitude. [*N. B. Hæ obſeruationes in ♃ invicem collatæ ſunt admodum bonæ pro eius Longitudine & Latitudine inquirenda iuxta □ Solis veſpertinum tam pro annuo orbe, quam Latitudine ipſius examinandis.*]

For the place of Jupiter from the preceding observations. [Pro loco ♃ ex antecedentibus obſeruationibus.]

At 5¾^h, distance of Jupiter from the mouth of Pegasus [H. 5¾ Diſt. ♃ ab Ore Pegaſi]	36° 44⅙′
Declination of Jupiter [Decl. ♃]	3° 7′ 0″ south [M.]
Declination of the mouth of Pegasus [Decl. Oris Pegaſi]	8° 3′ 40″ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	35° 5′ 4″
Right ascension of the mouth of Pegasus [Aſc R Oris Pegaſi]	321° 5′ 40″
Right ascension of Jupiter [Aſc. R. ♃]	356° 10′ 44″
At 5⅚^h, distance of Jupiter [H. 5⅚ Diſt. ♃]	
from the bright star of the jaw of the Whale [a luc. mand. Cete]	44° 24¼′
Declination of the bright star of the jaw of the Whale [Decl. luc. mand. Cete]	2° 27½′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	44° 4′ 56″
Right ascension of the bright star of the jaw of the Whale [Aſc. R. luc. mand. Cete]	40° 19′ 40″
Right ascension of Jupiter [Aſc. R. ♃]	356° 14′ 44″
At 6^h 0, distance of Jupiter from I of the wing of Pegasus [H. 6.0 Diſt. ♃ a I alæ Peg.]	21° 57½′
Declination of I of the wing [Declin. I alæ]	13° 4′ 0″
Right ascension of the same [Aſc. R. eiusdem]	341° 10′ 0″
Angular difference of ascension [Ang. diff. aſcenſ.]	14° 56′ 57″
Right ascension of Jupiter [Aſc. R. ♃]	356° 6′ 57″
At 6¼^h, distance of Jupiter from the bright star of ♈ [H. 6¼ Diſt. ♃ a lucida ♈]	38° 14½′
Declination of the bright star of ♈ [Declin. lucidæ ♈]	21° 31½′ north [B.]
Right ascension of the same [Aſc. R. eiusdem]	26° 9′ 0″

Angular difference of ascension [Ang. diff. aſcenſ.]	29° 53′ 7″
Right ascension of Jupiter [Aſc. R. ♃]	356° 15′ 53″

This difference had arisen because of the brightness of the Moon during the observing; see around the opposition of Jupiter with the Sun, above. [Hæc differentia ob ſplendorem ☾ inter obſeruandum contigerat, vide circa ♃ ☍ cum ☉ ſupra.]

At 6^h 0, right ascension of Jupiter [H. 6.0 Aſc. recta ♃]	
limited [limitata]	356° 12½′
Resp. longitude [Reſp. Longitudo]	25° 16′ 48″ ♓
Latitude [Latitudo]	1° 20′ 48″ south [M.]

Another investigation of the place of Jupiter for the day 6 December. [Alia inquiſitio loci ♃ ad diem 6 Decembris.]

Declination of Jupiter [Declinatio ♃]	3° 6½′ south [M.]
Distance of Jupiter from the mouth of Pegasus [Diſtantia ♃ ab ore Pegaſi]	36° 44⅙′
Declination of the mouth of Pegasus [Declinatio oris Pegaſi]	8° 4′
Right ascension of the same [Aſc. R. eiusdem]	321° 5′ 40″
Angular difference of ascension [Angulus diff. aſc.]	35° 5′ 20″
Therefore the right ascension [Ergo Aſc. R.]	356° 11′

14 December, in the evening [DIE 14 DECEMBRIS, VESPERI.]

Jupiter was observed approaching the meridian. I from the mouth of Pegasus. [Obſeruabatur ♃ appropinquans Meridiano. I ab Ore Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declin.]	The Vulture, west [Vult. occ.]
5^h 5^m	{ 37° 20′		55 43
	{ among small clouds [inter nubeculas]		
5^h 6½^m	{ 37° 21⅔′	2° 46⅔′	
	{ better [melior]	2° 47′	
5^h 12½^m	37° 21⅔′	2° 46⅚′	57 28
		2° 46½′	

Jupiter crossed through the meridian, having [Tranſiuit ♃ per Meridianum habens]

the altitude by the revolving quadrant [Altitudinem per Volub.]	31° 22′
Declination by the armillae [Declin. per]	2° 46½′ among clouds [inter nubes]
[Armillas]	2° 46⅓′

From these observations the place of Jupiter is derived. [Ex his obſeruationibus elicitur locus ♃.]

At 5^h 5, right ascension [H. 5.5 Aſcenſio recta]	356° 56′ 40″
Declination of the same [Declin. eiusdem]	2° 46′ south [M.]
Resp. longitude [Reſp. Longitudo]	26° 5′ 38″ ♓
Latitude [Latitudo]	1° 19′ 6″ south [M.]

17 December, in the evening [DIE 17 DECEMBRIS, VESPERI.]

Jupiter was observed approaching the meridian as follows. I from the mouth of Pegasus. [Obſeruabatur ♃ appropinquans Meridiano vt ſequitur. I ab Ore Pegaſi.]

N.B. The Sun was at perigee, so from these observations it will be clearly established whether the eccentric of the Sun introduces some inequality. [N.B. ☉ erat in Perigæo, vnde ex his obſeruationibus liquido conſtabit, an Eccentricus ☉ aliquid ingerat inæqualitatis.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of Jupiter [Declin. ♃]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
4^h 39¼^m	37° 35⅓′		
4^h 41⅓^m	37° 35¼′		9 42
4^h 45^m	37° 36′	2° 36½′	9 16½
		2° 36⅙′	
4^h 46⅔^m	37° 35⅓′		8 1

II. Vice versa, Jupiter from the bright star of the jaw of the Whale. [II. Viceverſa ♃ a Luc. Mand. Cete.]

Hours, minutes [H. M.]		Declination of Jupiter [Declin. ♃]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
4^h 51⅓^m	43° 20′		7 11
4^h 53^m	{ 43° 20½′	2° 36⅙′	6 20
	{ better [melior]	2° 36½′	
4^h 54½^m	43° 20½′		6 6

Then Jupiter from the bright star of ♈ [Deinde ♃ a Lucida ♈]

Hours, minutes [H. M.]	Declination of Jupiter [Declin. ♃]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
4^h $56\frac{1}{2}^m$	37° 9⅙′{ 2° 36½′ { both [vtroque]	5 37
4^h $58\frac{1}{6}^m$	37° 9½′	5 10

6 15	Jupiter crossed [Tranſiuit ♃]		
	through the meridian, having the altitude [per Meridianum habens Altit.]		
	by the steel instrument [per Chalyb.]		31° 28⅔′
	by the revolving quadrant [per Volub.]		31° 27½′
	Declination [Declinatio]	2° 36⅚′	
		2° 36¾′	
	The bright star of the jaw of the Whale, east, was then [Fuit tunc Luc. Mand. Cete or.]		43 23

For the examination of the quadrants, see the meridian altitudes of the fixed stars observed the following morning. [Vide pro examine quadrantum ſtellarum fixarum altitudines meridianas ſequenti mane obſeruatas.]

18 December, in the evening [DIE 18 DECEMBRIS, VESPERI.]

Jupiter was observed approaching the meridian, when the Sun was near the perigee of its eccentric. [Obſeruabatur ♃ appropinquans Meridiano, cum ☉ eßet circa Perigæum ſui Eccentrici.]

I. From the mouth of Pegasus [I. Ab Ore Pegaſi]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Pegaſi occid.]
4^h 58^m	37° 41¼′			30 6
5^h $0\frac{1}{3}^m$	37° 41⅔′	2° 34½′	31° 20′	30 38
		2° 34⅚′		
5^h $2\frac{5}{6}^m$	37° 41⅔′	2° 34½′		31 35
		2° 34⅚′		

Vice versa, Jupiter from the bright star of ♈. [Viceverſa ♃ a Lucida ♈.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of Jupiter [Altit. ♃]	The mouth of Pegasus, west [Os Pegaſi occid.]
5^h $7\frac{1}{2}^m$	37° 2′		31° 28′	32 49
5^h $10\frac{1}{3}^m$	37° 1′	2° 34⅚′ both [vtroq.]		33 21½
5^h $12\frac{1}{3}^m$	37° 1⅓′		31° 31′	34 0
5^h $14\frac{5}{6}^m$	37° 1¼′	2° 34⅚′ both [vtroq.]		34 37½

5 21⅓	Jupiter crossed [Tranſiuit ♃]		
	through the meridian, having the altitude [per Merid. habens Altit.]		
	by the steel instrument [per Chalyb.]	31° 31¼′	
	by the revolving quadrant [per Volub.]	31° 32′	
	Declination of Jupiter [Declin. ♃]	2° 34⅚′ The mouth of Pegasus, west, was then [Fuit tunc Os Pe-]	
		2° 34⅚′ [gaſi occid.]	36 16½

Put the declination of Jupiter at 2° 34′ south. [*Pone Declinationem ♃ 2 34 M.*]

Afterwards, again, Jupiter from the more eastern and right shoulder of ♒. [Poſtea rurſus ♃ ab orientaliore ac dextro humero ♒.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declin.]	The mouth of Pegasus, west [Os Pegaſi occid.]
5^h $28½^m$	31° 2⅔′		38 7
5^h $30½^m$	31° 2¼′		38 39
5^h $33⅙^m$	31° 2⅚′	2° 34⅚′	39 16
		2° 34¾′	
5^h $35¼^m$	31° 3′		39 47

Vice versa, Jupiter from the bright star of the jaw of the Whale. [Viceverſa ♃ a Luc. Mand. Cete.]

Hours, minutes [H. M.]	Declination [Declin.]	The mouth of Pegasus, west [Os Pegaſi occid.]
5^h 38^m	43° 12⅓′	40 31
5^h 40^m	43° 11⅓′	40 58
5^h 42^m	43° 11′	41 20
5^h $44⅙^m$	43° 11¼′	41 58

N.B. This evening it was quite clear and fairly calm, so good observations for Jupiter and Mars. [*N. B. Erat hac veſpera bene ſerenum & ſatis tranquillum, vnde bonæ obſeruationes pro ♃ & ♂.*]

31 December [DIE 31 DECEMBRIS.]

At 3^h 42^m Jupiter crossed [H. 3 M. 42 Tranſiuit ♃]		
through the meridian, having the altitude [per Meridianum habens Altit.]		
on the steel instrument [in Chalyb.]		32° 15⅙′
on the revolving quadrant [in Volub.]		32° 15¼′
Declination of Jupiter by the armillae [Decl. ♃ per]		1° 48⅓′

[Armillas]	1° 48⅔′	among clouds [inter nubes]
At 4^h $25\frac{5}{6}^m$, distance of Jupiter from Mars [H. 4 M. 25⅚ Diſtantia ♃ a ♂]	46° 26½′	

Hours, minutes [H. M.]	Distance of Jupiter from the mouth of Pegasus [Diſt. ♃ ab Ore Pegaſi]	Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Altit. ♃]	Aldebaran, east [Aldeb. or.]
4^h $31\frac{1}{2}^m$	{ 39° 4⅔′	1° 48′		53 36
	{ doubtful [dubia]	1° 48⅓′		
4^h $34\frac{1}{2}^m$	39° 7′			53 0
4^h $36\frac{1}{3}^m$	39° 6¼′	1° 48⅓′		52 35
		1° 48′		
4^h $39\frac{5}{6}^m$	39° 5¾′		31° 28′	51 44

Vice versa, from the bright star of ♈. [Viceverſa a Lucida ♈.]

Hours, minutes [H. M.]		Declination of Jupiter [Decl. ♃]	Altitude of Jupiter [Altit. ♃]	Aldebaran, east [Aldeb. or.]
4^h $44\frac{2}{3}^m$	35° 19¼′	1° 48¼′	31° 20′	50 35
		1° 48⅙′		
4^h 47^m	35° 18′			
4^h $51\frac{1}{3}^m$	35° 18′	1° 48¼′	30° 57′	48 57
		1° 48⅙′		

These were observed among clouds passing across, while, besides, the west wind was blowing in strong weather. [Hæc inter transcurrentes nubes obſeruata ſunt, flante inſuper Zephyro tempeſtate valida.]

Observations of Mars [OBSERUATIONES MARTIS.]

3 January, in the morning [DIE 3 JANUARIJ, MANE.]

Mars was observed from cor ♏. [Obſeruabatur ♂ a Corde ♏.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from cor ♏ [Diſt. ♂ a Corde ♏]	Altitude [Altit.]	Declination [Declin.]	Spica, west [Spica ♍ occ.]
7^h 22^m 20^s	9° 46′	in the dawn [in aurora]		25 4
7^h 26^m 15^s	9° 48′ }	about 8° [8° circiter]	22° 20′ }	26 1
	uncertain [incerta] }		uncertain [incerta] }	

These observations of Mars are not much to be trusted, because it was seen with the greatest difficulty on account of the dawn. During the observing,

however, it was in balance with cor ♏ with respect to the horizon, so that no harmful refraction could be present in the distance. [His obſeruationibus in ♂ non multum eſt fidendum, quod ille propter Auroram difficillime videbatur. Fuit autem inter obſeruandum in æquilibrio Horizontis cum Corde ♏ adeo vt nulla obnoxia refractio in diſtantia eße poßet.]

4 January, in the morning [DIE 4 JANUARIJ, MANE.]

Hours, minutes, seconds [H. M. S.]	Distance of Mars from cor ♏ [Diſt. ♂ a Corde ♏]	Altitude [Altit.]	Declination [Declin.]	Spica, west [Spica ♍ occid.]
$7^h\ 6^m\ 30^s$	10° 28⅓′	8° 10′	22° 27′ 22° 27½′	23 46½
$7^h\ 7^m\ 50^s$	10° 29′			

It was not possible to have more observations, because both Mars and cor ♏ were hidden by a cloud. These, however, are sufficiently settled, and you will be able to trust them, because Mars was sufficiently conspicuous during the observing. [Plures obſeruationes habere non licuit, quod tam ♂ quam Cor ♏ a nube occultabantur. Sunt autem hæ ſatis ratæ, quibus fidere poteris, quia ♂ inter obſeruandum ſatis fuit conſpicuus.]

Investigation of the place of Mars from the observations made on 4 January. [Inquiſitio loci ♂ ex obſeruationibus die 4 Januarij habitis.]

At $7\frac{1}{6}^h$, distance of Mars from cor ♏ [H. 7⅙ Diſt. ♂ a Corde ♏]	10° 28⅔′
Declination of Mars [Declin. ♂]	22° 27′ south [M.]
Declination of cor ♏ [Declin. Cordis ♏]	25° 24′ south [M.]
Angular difference of ascension [Ang. diff. aſcenſ.]	11° 0′ 26″
Right ascension of cor ♏ [Aſc. Recta Cordis ♏]	241° 12′ 55″
Therefore the right ascension of Mars [Ergo Aſc. Recta ♂]	252° 13′ 20″
Resp. longitude [Reſp. Longitudo]	13° 36′ 40″ ♐
Latitude [Latitudo]	0° 3′ 45″ north [B.]

21 July, in the morning [DIE 21 JULIJ, MANE.]

Mars was observed in the square of the Sun, for ascertaining the parallax of the orb in that position. [Obſeruabatur ♂ in □ ☉ pro parallaxi orbis in eo ſitu cognoſcenda.]

Hours, minutes [H. M.]	Distance of Mars and Jupiter [Diſt. ♂ & ♃]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Altit. ♂]	The Vulture, west [Vultur occid.]
$1^h\ 2\frac{2}{3}^m$		10° 23⅔′ 10° 24′	21° 40′	
$1^h\ 9^m$	29° 40′			34 36

Hours, minutes [H. M.]	Distance of Mars and Jupiter [Diſt. ♂ & ♃]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Altit. ♂]	The Vulture, west [Vultur occid.]
1^h 11^m	29° 39½′			
1^h $13\frac{1}{6}^m$	29° 40′			
1^h $15\frac{1}{6}^m$	29° 40′		23° 32′	

Vice versa [Viceverſa]

Hours, minutes [H. M.]		
1^h $21\frac{2}{3}^m$	Distance of Mars [Diſt. ♂] from the southern horn of ♉ [ab auſtrali cornu ♉] Moderate, but among clouds. [Mediocris ſed inter nubes.]	43° 54½′

This star in ♉ was nearly in a straight line with the lower limb of the Moon and Mars. The Moon, however, a little more elevated towards the zenith. [Fuit hæc ſtella in ♉ in recta linea fere cum inferiori limbo ☾ & ♂. ☾ tamen ad Zenith paululum eleuatiori.]

22 July, in the morning [DIE 22 JULIJ, MANE.]

Hours, minutes [H. M.]	Distance of Mars from the mouth of Pegasus [Diſt. ♂ ab ore Peg.]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Altit. ♂]
2^h $32\frac{1}{2}^m$	50° 28′	10° 35½′ 10° 36′	33° 32′
2^h $36\frac{1}{3}^m$	50° 27½′		
2^h $37\frac{3}{5}^m$	50° 28⅔′		

Vice versa, from the eye of ♉ [Viceverſa ab oculo ♉]

Hours, minutes [H. M.]		Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Altit. ♂]
2^h $41\frac{2}{3}^m$	29° 58½′		34° 32′
2^h $43\frac{2}{3}^m$	29° 58½′		

Hours, minutes [H. M.]	Distance of Mars from Jupiter [Diſt. ♂ a ♃]	Declination of Mars, north [Decl. ♂ B.]	Altitude of Mars [Altit. ♂]	The Vulture, west [Vultur occid.]
2^h 46^m	30° 16¾′			
2^h $47\frac{1}{3}^m$	30° 17½′	10° 35′ 10° 35′	35⅙° Reſp. 2^h 50^m [Reſp. H. 2 M. 50]	60 30

For correcting the armillae [Pro corrigendis Armillis]	
Declination of the bright star of ♈ [Declin. Lucidæ ♈]	21° 30′ both [vtroque]

On 22 July, in the morning, Mars near the perigee of the eccentric and in the square of the Sun, for ascertaining its latitude.[1] [Die 22 Julij mane ♂ circa Perigæum Eccentrici & in □ ☉ pro cognoſcenda Latitudine eius[1].]

At 2^h 40^m [H. 2 M. 40]	{ the first of the wing of Pegasus [prima alæ Peg.]	50° 28′
Mars was distant from [Diſtabat ♂ ab]	{ Aldebaran [Aldebora]	29° 58½′

Declination of Mars 10° 36′, corrected. [Declinatio ♂ 10° 36′ correcta.]

	Right ascension [Aſc. R.]	Declination [Declinatio]
Of Aldebaran [Aldeboræ]	63° 12½′	15° 37′
Of the first of the wing of Pegasus [Primæ alæ Peg.]	341° 9¼′	13° 3′ 37″ north [B.]

Angular difference of ascension from [Ang. diff.]	{ the first of the wing of Pegasus [prima alæ Peg.]	51° 35′ 5″
[aſc. ex]	{ the eye of ♉ [oculo ♉]	30° 22′ 23″
Hence the right ascension of Mars, limited [Hinc Aſc. R. ♂ limitata]		32° 47′ 14″
Resp. longitude [Reſp. Longitudo]		4° 11⅙′ ♉
Latitude [Latitudo]		2° 30′ south [M.]
		true [vera]

[1] From codex V. [E codice V.]

7 September, in the morning [DIE 7 SEPTEMBRIS, MANE.]

Observation of Mars in the trine of the Sun, near the greatest prosthaphaeresis. [Obſeruatio ♂ in △ ☉ iuxta maximam Proſtaphæreſin.]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt.♂ a Lucida ♈]	Declination of Mars [Declin.♂]	Altitude [Altit.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
2^h $41\frac{1}{6}^m$		16° 52⅓′		
		16° 53′		
2^h 44^m	25° 18′			
2^h 48^m	25° 18′		47° 54′	8 40
2^h $52\frac{1}{6}^m$	25° 17⅔′	16° 52¼′		7 45
		16° 51′		

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt.♂ a Lucida ♈]	Declination of Mars [Declin.♂]	Altitude [Altit.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
2^h $56½^m$	25° 18⅙′			6 38

Vice versa, from the bright foot of ♊ [Viceverſa a Lucido pede ♊]

Hours, minutes [H. M.]	Declination of Mars [Declin.♂]	Altitude [Altit.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
3^h 3^m	39° 12′	48° 50′	5 9
3^h $6⅓^m$	39° 12⅙′ 16° 52′ 16° 51¾′		4 20
3^h $8⅚^m$	39° 12½′		3 40

Then from the eye of ♉ [Deinde ab oculo ♉]

Hours, minutes [H. M.]	Declination of Mars [Declin.♂]	Altitude [Altit.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
3^h $13½^m$	10° 15½′		2 35
3^h $15⅚^m$	10° 16′		2 0
3^h 19^m	10° 16½′ 16° 52½′ with one pinnule [vno pin.]		1 12 west [occid.]
3^h $22⅚^m$	10° 17′	49° 51′	0 20

For the correction of the armillae there was observed [Pro Armill. correctione obſeruabatur] the declination of Aldebaran [Declinatio Aldeboræ] 15° 36¼′ 15° 36⅔′

It should have been 15 37⅔; therefore 1′ is to be added in the declination of Mars. Put the declination of Mars at 16° 53½′. [*Debuit eſſe 15 37⅔, ergo addendum in Declinatione ♂ 1 Minutum. Pone decl. ♂ 16 53½.*]

On 7 September the clock was corrected at noon, for since the preceding day it had been running more than was right, by 32^m. [Die 7 Septembris corrigebatur horologium in Meridie, mouebatur enim plus iuſto a præcedente die M. 32.]

N.B. At about the third hour, corrected, put the distance of Mars from 3 ♈ at 25° 18′, and at that time also from the bright foot of ♊ at 39° 12¼′. Make its declination 16° 53′, and at the same time you will be able to make a test with the distance from Aldebaran, 10° 16½′. [*N. B. Circa horam tertiam correctam pone diſtantiam ♂ a 3 ♈ 25 18 & tunc etiam a Lucido pede ♊ 39 12¼. Declinationem eius fac P. 16 M. 53 & poteris vna facere periculum in diſtantia ab Aldebora P. 10 M. 16½.*]

N.B. I was then in Copenhagen, when these observations of Mars were being carried out at Uraniborg, and I paid attention in the morning before dawn on 7 September, around the time when the Pleiades were near the meridian, i.e. 50° of the equator. With the Sun standing in 23½° ♍, and therefore having a right ascension of about 174°, it was therefore distant from the meridian 236°, i.e. 15^h 44^m. From this it is gathered that the hour was about 3¾^h, a little before the Moon seemed to set. And I observed Mars at that time in this way. [*N. B. Ego tunc Hafniæ fui, cum hæ obſeruationes in ♂ perficerentur Vraniburgi, & attendi mane ante Auroram Die 7 Septembris circa id temporis, quo Pleiades erant prope Meridianum i. e. 50 gradus æquatoris, Sole verſante in 23½ ♍, ideoque Aſc. Rectam habente 174 graduum quaſi, diſtabat itaque a Meridiano P. 236, i. e. H. 15 M. 44. Vnde colligitur Hora fuiße 3¾ circiter paulo antequam ☾ occidere videbatur. Obſeruaui autem in hunc modum tunc ♂.*]

A straight line drawn from Aldebaran through Mars towards the west passed a little below the bright star of ♈, as if in the middle of the space between it and the star nearest to it in the other horn. Likewise another line, drawn crosswise from the breast of ♉ through Mars, extended into the more western part of the Pleiades, grazing their edge, which faces towards the horns of ♈; and this in the manner the drawing set below shows. [*Linea recta ducta ab Aldebora per ♂ verſus occaſum tranſibat paulo infra Lucidam ♈ quaſi in medio ſpacio inter hanc & ſibi proximam in altero cornu. Item alia linea decuſſatim a pectore ♉ per ♂ ducta in partem occidentaliorem Pleiadum porrigebatur, ſtringens earundem limitem, qui verſus cornua ♈ ſpectatur, idque in hunc modum, vt ſubiecta delineatio oſtendit.*]

Diagram. A reproduced handwritten sketch set below both columns, uncaptioned: two straight lines crossing at a large rayed star marked with the sign of Mars. One line rises gently from the lower left, through a rayed star among small stars by the label for the Hyades, past the crossing, to the upper right, where it passes below a star labelled for the bright star of ♈ and above two stars labelled for the other horn. The other line runs steeply from the upper left, past a small cluster of stars labelled for the Pleiades, through the crossing, down to a rayed star at the bottom labelled for the breast of ♉. A label set vertically at the far left, and another at the far right, mark east and west.

- far left, set vertically, reading upwards: "Ortus" (east; literally "rising")
- upper left, beside a cluster of small stars on the steep line, two lines with a double stroke after them: "Pleia / des" [?] (the Pleiades)
- lower left, beside a rayed star and small stars on the rising line: "Hÿades" (the Hyades)
- centre, beside the rayed star at the crossing: ♂ (Mars)
- bottom, beside the rayed star at the lower end of the steep line: "pect' ♉" [?] (the breast of ♉)
- upper right, above a star over the rising line: "Lucida ♈" (the bright star of ♈)
- right, beside two stars below the rising line: "altero cornu" [?] (in the other horn)
- far right, set vertically: "Occasus" [?] (west; literally "setting")

Hence there is gathered from the small globe [Colligitur hinc]	*{ Longitude of Mars [Longit. ♂]*	*24½° ♉*
[ex globo paruo]	*{ Latitude [Latit.]*	*2° 0′ south [M.]*
From the largest globe [Ex globo max-]	*{ Longitude [Long.]*	*24⅓° ♉*
[imo]	*{ Latitude [Latit.]*	*1° 0′ south [M.]*
The Alphonsine calculation [Calculus Al-]	*{ Longitude [Long.]*	*25⅙° ♉*
[phonſinus]	*{ Latitude [Lat.]*	*2° 0′ decreasing [decreſcens]*

The Alphonsine latitude is decreasing perceptibly. [*Decreſcit ſenſibiliter Latitudo Alphonſina.*]

The Prutenic calculation has [Calculus Pru-]	*{ Longitude [Long.]*	*22⅚° ♉*
[tenicus habet]	*{ Latitude [Latit.]*	*2¾° south [M.]*

And about that time it is stationary in its latitude, and it begins to diminish it, according to Copernicus. [*Eſtque circa id tempus ſtationarius in Latitudine ſua, & incipit eam minuere iuxta Copernicum.*]

9 September, in the evening [*DIE 9 SEPTEMBRIS, VESPERI.*]

When the mouth of Pegasus crossed the meridian, the star Mars seemed to lie exactly on the straight line that is drawn from Aldebaran to the second of ♈ [ſecundam ♈ti^{s}], distant from Aldebaran 9° 45½′, as is clear to gather from the observations made after midnight. [*Quando Os Pegaſi Meridianum tranſiuit, videbatur ♂ ſtella in linea recta, quæ ducitur ab Aldebora in ſecundam ♈ti^{s} exacte, diſtans ab Aldebora P. 9 45½′, vt ex obſeruationibus poſt mediam noctem factis colligere liquet.*]

10 September, in the morning [DIE 10 SEPTEMBRIS, MANE.]

(See the computation [ſupp.] above, and correct the distances)[1]. [(Vide ſuperius ſupp. & corrige diſtantias)[1].]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a Lucida ♈]	Declination [Declin.]	Aldebaran, east [Aldebora orient.]
2^{h} 33^{m} 10^{s}	25° 48′		32 32
2^{h} 36⅓^{m}		17° 4′	31 45
		17° 4½′	
2^{h} 39⅔^{m}	25° 46⅔′		30 54
2^{h} 41⅔^{m}	25° 46′		30 26
2^{h} 44⅙^{m}	25° 47⅔′	17° 4′	29 47
		17° 3⅔′	

Vice versa, from the eye of ♉ [Viceverſa ab oculo ♉]

Hours, minutes [H. M.]		Declination [Declin.]	Aldebaran, east [Aldebora orient.]
2^h $49\frac{5}{6}^m$	9° 43½′		28 28
2^h $54\frac{1}{6}^m$	9° 43′	17° 4′	27 30
		17° 3¾′	
2^h $56\frac{1}{2}^m$	9° 43⅓′		26 52

Mars was near the meridian, at an altitude of nearly 50°. [Erat ♂ propinquus Meridiano in Altitudine 50° fere.]

Hours, minutes [H. M.]		Declination [Declin.]	Aldebaran, east [Aldebora orient.]
2^h $58\frac{5}{6}^m$	9° 43⅓′		26 24

For the correction of the armillae there was taken [Pro Armillarum correctione capieba-]
the declination of Aldebaran [tur Aldeboræ Declinatio] 15° 36¾′
15° 37′

Therefore add ¼′ to the declination of Mars, so that it is 17° 5′. But the meridian altitude gives 17 5½, better. [*Igitur adde ¼ M. ad Declinationem ♂ vt ſit 17 5. Sed Altitudo Meridiana dat 17 5½, melior.*]

[1] Compare above, p. 432. [Cfr. ſupra p. 432.]

Immediately misty clouds rising from the west covered the whole horizon. [Statim nebuloſæ nubes ab occaſu exortæ totum Horizontem occuparunt.]

At last, having passed beyond the clouds, at 3^h 54^m Mars crossed the meridian, having [Tandem nubibus transgreßus, / H. 3 M. 54 tranſiuit ♂ merid. habens]

an altitude on the steel quadrant [Altitud. in Q. Chalyb.] 51° 12¼′
the revolving quadrant [Volub.] 51° 11′
better [melior]
the bright shoulder of Orion, east [Lucido humero Orion. orient.]
30 6½
Put, at $2\frac{3}{4}^h$, the distance of Mars from the bright star of ♈ [Pone H. 2¾ Diſt. ♂ a Lucida ♈] *25° 47′*
from Aldebaran [ab Aldeb.] *9° 43⅓′*

11 September, in the morning [DIE 11 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a Lucida ♈]	Declination [Declin.]	The bright star of the jaw of the Whale, west [Luc. Mand. Cete occ.]
3^h 11^m	25° 58′		5 45
3^h 13^m	25° 58′	17° 8½′	6 25
		17° 8⅓′	

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Dift. ♂ a Lucida ♈]	Declination [Declin.]	The bright star of the jaw of the Whale, west [Luc. Mand. Cete occ.]
$3^h\ 18^m$	25° 58⅓′		7 45
$3^h\ 20^m$	25° 58⅙′		8 10

Vice versa, from the eye of ♉. [Viceverſa ab oculo ♉.]

Hours, minutes [H. M.]		Declination [Declin.]	The bright star of the jaw of the Whale, west [Luc. Mand. Cete occ.]
$3^h\ 25^m$	16° 32½′		9 20
$3^h\ 27⅙^m$	16° 32⅔′	17° 8½′	9 45
$3^h\ 32⅙^m$	16° 32⅔′	both [vtroq.]	10 57
$3^h\ 34^m$	16° 33′		11 33
$3^h\ 40½^m$	Mars crossed [Tranſiuit ♂]		

the meridian, having an altitude [per Meridianum habens Altit.]	
by the steel instrument [per Chalyb.]	51° 14¾′
by the revolving quadrant [per Volub.]	51° 14¾′
The bright star of the jaw of the Whale, west [Lucida Mandib. Cete occid.]	13 5

Use the declination of Mars 17° 9½′ north [borea]. [*Vtere Declinatione ♂ 17 9½ borea*]

The declination [Declinatio]	15° 35½′
of Aldebaran [Aldeboræ]	15° 35⅔′

This declination falls short by 2′. [*Deficit hæc Declinatio 2 Minutis.*]

12 September, in the morning [DIE 12 SEPTEMBRIS, MANE.]

At $3^h\ 53^m$, the meridian altitude of Mars [H. 3 M. 53 Altitudo ♂ Meridiana]	
by the steel quadrant [per Quadr. Chalyb.]	51° 18⅚′
the revolving quadrant [Volub.]	51° 19′
The bright shoulder of Orion, east [Luc. hum. Orion. orient.]	28 48

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a Lucida ♈]	Declination [Declin.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
4^h $13\frac{1}{3}^m$	26° 6½′		24 13⅓
4^h $20\frac{2}{3}^m$	26° 6⅔′	17° 14′	22 30
		17° 13⅔′	
4^h $28\frac{5}{6}^m$	26° 7′	17° 13½′	20 55
		17° 13⅓′	

Vice versa, from Aldebaran [Viceverſa ab Aldebora]

Hours, minutes [H. M.]	Declination [Declin.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
4^h $37\frac{1}{3}^m$	16° 29′	18 21

Suddenly misty clouds from the east covered the whole horizon. [Subito nebuloſæ nubes ab ortu totum Horizontem occuparunt.]

15 September, in the morning [DIE 15 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a Lucida ♈]	Declination, north [Declin. B.]	The bright shoulder of Orion, east [Luc. hum. Orion. orient.]
1^h $59\frac{1}{6}^m$	26° 25′		39 13
2^h $3\frac{1}{6}^m$	26° 25⅔′	17° 22½′	38 15
		17° 23′	
2^h 7^m	26° 25′		37 7
2^h $9\frac{1}{3}^m$	26° 25¼′	17° 22⅔′	36 35
		17° 23′	

Vice versa, from the eye of ♉ [Viceverſa ab oculo ♉]

Hours, minutes [H. M.]		Declination, north [Declin. B.]	The bright shoulder of Orion, east [Luc. hum. Orion. orient.]
2^h $14\frac{1}{3}^m$	9° 1′		35 18
2^h 16^m	9° 1½′	17° 22½′	34 45
		17° 23′	
2^h $20\frac{1}{3}^m$	9° 1⅓′		33 43
2^h 23^m	9° 1½′		33 0
2^h 37^m	Mars crossed the meridian at an altitude [Tranſiuit ♂ Meridianum in Altit.]		
by the steel instrument [per Chalyb.]		51° 29⅙′	29 19
by the revolving quadrant [per Volub.]		51° 29½′	

16 September [*DIE 16 SEPTEMBRIS.*]

In the morning the following were observed, with me present in person. [*Matutino tempore ſequentia obſeruabantur me ipſo præſente.*]

At 4^h 1^m 45^s Mars crossed the meridian [H.4 M.1 45″ Tranſiuit ♂ Meridianum]	
by the steel instrument [per Chalyb.]	*51 32⅙*
by the revolving quadrant [per Volub.]	*51 32*
At 4^h 3^m 50^s the breast [H.4 M.3 50″ Tranſiuit pectus]	*45 22⅖*
of ♉ crossed the meridian [♉ per Merid.]	*45 22⅔*

When Mars crossed the meridian, the breast of ♉ was 0 43½ east. [*Quando ♂ tranſiuit Meridianum fuit pectus ♉ 0 43½ orient.*]

From this you can verify the right ascension of Mars from the transit of that star across the meridian. [*Hinc potes verificare Aſc. Rectam ♂ ex tranſitu eius ſtellæ per Meridianum.*]

At 4^h 3^m 44^s, corrected, the eye of ♉ crossed [H.4 M.3 S. 44corr. Tranſiuit oculus ♉] the meridian, having an altitude [per Meridianum habens Altit.]	
by the steel instrument [per Chalyb.]	*49° 43′* good [bonæ]
by the revolving quadrant [per Volub.]	*49° 43′*
Shortly afterwards the declination of Mars was [Fuit paulo poſt Declinatio ♂]	
by one [vno]	*17° 25½′*
by the other [altero]	*17° 26′*
And soon the declination of Aldebaran [Et mox Aldeboræ Declin.]	*15° 35⅚′*
	15° 36′

Mars was then in a straight line with Aldebaran and the bright star of ♈, and again with the breast of ♉ and the brighter of the two in the foot of Perseus above the Pleiades. [*♂ fuit tunc in linea recta cum Aldebora & Lucida ♈, atque rurſus cum pectore ♉ & Lucidiore duarum in pede Perſej quæ ſupra Pleiades.*]

18 September, in the morning [*DIE 18 SEPTEMBRIS, MANE.*]

Observation of Mars near the Merid. [*Obſeruatio ♂ iuxta Merid.*]

At 3^h 35⅗^m, the altitude of Mars in Meridie [H. 3 M. 35⅗ Altitudo ♂ in Meridie]	
by the steel instrument [per Chalyb.]	*51° 38⅙′*
the revolving quadrant [Volub.]	*51° 38′*
The bright foot of Orion, east [Lucidus pes Orionis orient.]	*19 27*

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Dift. ♂ a Lucida ♈]	*The bright foot of Orion, east [Lucid. pes Orion. orient.]*
3h 40⅙m	*26° 44′*	*12 16*
	26° 43½′	
3h 43⅙m	*26° 43⅔′*	*11 6½*

Vice versa, Mars from the bright foot of ♊ [*Viceverſa* ♂ *a Lucido pede* ♊]

Hours, minutes [H. M.]		*The bright foot of Orion, east [Lucid. pes Orion. orient.]*
3h 46⅖m	37° 30′	10 22½
3h 48½m	37° 30′	9 35
3h 51m	37° 30½′ Declination of Mars [Declin. ♂]	9 4
4h 1m	17° 31½′	
	17° 31⅔′	

The place of Mars comes out: longitude 26° 7′ 13″ ♉, latitude 1° 41′ 51″ south. [Prodit locus ♂, Long. 26 7 13 ♉ / Latit. 1 41 51 M.]

22 September, in the morning [DIE 22 SEPTEMBRIS, MANE.]

Mars was observed *around the meridian*. [Obſeruabatur ♂ *circa Meridianum*.]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Dift. ♂ a Lucida ♈]	Declination of Mars [Declin. ♂]	The Greater Dog, east [Canis maior orient.]
4h 17m	26° 54⅙′	17° 40′	25 1
4h 21m	26° 54′	17° 40′	23 57
		17° 40⅓′	
4h 25m	26° 54⅓′		22 58

Vice versa, from the bright foot of ♊ [Viceverſa a Lucido pede ♊]

Hours, minutes [H. M.]		Declination of Mars [Declin. ♂]	The Greater Dog, east [Canis maior orient.]
4h 29m	37° 15′	17° 40⅔′	21 54
		17° 40⅚′	
4h 33m	37° 15½′	17° 41½′ both [vtroque]	
4h 36m	37° 16′		

N.B. This declination of Mars perhaps has something doubtful about it. For it does not agree with the one taken around the meridian on the following day, which was 17° 44′. Nor could its declination have increased by 3 or 4′ in the meantime, since it is stationary. So it must be seen in which day's observation the error lies: this one's, or rather the following one's. Or whether perhaps a departure from the meridian in the armilla of declinations brought this about by its fault, which the following observations will be able to decide. [N. B.

Hæc declinatio ♂ aliquid fortaßis habet dubij. Nam non conuenit cum ea, quæ ſequenti die circa Meridianum capiebatur, quæ erat 17 44. Neque enim eius declinatio 3 vel 4 Minutis interea augeri poterat, cum ſit ſtationarius. Videndum itaque in cuius diej obſeruatione error lateat: huiusne an vero ſequentis. Aut an forſan digreßio a Meridiano in Armilla declinationum id huius vitio euenerit, quod ſequentes obſeruationes diſcernere poterint.]

23 September, in the morning [DIE 23 SEPTEMBRIS, MANE.]

At 3^h 35^m, the meridian altitude of Mars [H. 3 M. 35 Altit. ♂ Merid.]		
Among [Inter]	by the steel instrument [per Chal.]	51° 50⅙′
clouds [nubes]	by the revolving quadrant [per Volub.]	51° 51½′
The right shoulder of Orion, east [Dexter hum. Orion. or.]		21 15

The declination of Mars [Declinatio ♂]	17° 44′	with one pinnule [vno pinn.]
	17° 43¼′	with the other [altero]

But it must be seen whether some slight error lies in this declination of Mars (first emended by the addition of 2′, so that it agrees with the one that the meridian altitude gives), or rather in the one that was taken on the preceding day near 4½^h by the armillae. [*Sed videndum an in hac Declinatione ♂ (emendata primo per additionem 2 minutorum, vt conueniat cum ea, quam altitudo dat meridiana) lateat aliquantulus error: an vero in ea, quæ die antecedente iuxta Horam 4½ per Armillas capiebatur.*]

The last day of September, in the morning [DIE VLTIMO SEPTEMBRIS, MANE.]

Mars was observed a little above the Merid. [Obſeruatus eſt ♂ paulo ſupra Merid.]

Corrected times [Tempora correcta]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a Luc. ♈]	Declination of Mars [Declin. ♂]	The Greater Dog, east [Canis maior orient.]
3^h 34^m	26° 29⅔′	17° 55⅔′ by one [vno]	28 27
3^h $49⅔^m$	26° 29⅔′	17° 55¾′ both [vtroq.]	24 36
3^h $52½^m$	26° 30′		23 53

Vice versa, from the bright shoulder of Orion [Viceverſa a Luc. humero Orionis]

Corrected times [Tempora correcta]	Declination of Mars [Declin. ♂]	The Greater Dog, east [Canis maior orient.]
3^h $58\frac{1}{6}^m$	30° 19½′ 17° 55⅚′	22 33
	17° 55⅔′	
4^h 1^m	30° 19′	21 49
4^h 4^m	30° 19½′ 17° 55⅔′	21 3
	17° 55¾′	

Afterwards the declination of the bright [Poſtea obſeruabatur Declinatio Lu-]
shoulder of Orion was observed, for correcting [cidi humeri Orionis pro corrigendis]
the armillae [Armillis.] 7° 13′
7° 13¼′

They should be 7 15½. Therefore, of Mars, 17 57. [*Debent eße 7 15½. Ergo Martis 17 57.*]

Examination of the place of Mars [*Examen loci ♂*]

Diagram. A spherical figure drawn in the left column under "Examen loci ♂": two arcs rise from the lower left and lower right corners and meet at the apex A; a straight line runs down from A to the base; a line runs from B on the left arc to C on the vertical line, and from C across to D on the right arc; a base line closes the figure. Beside it, in italic, a key to three of the letters.

- A (apex, top): no key printed
- B (left arc, lower): *the bright shoulder of Orion [B lucidus hum. / Orion.]*
- C (on the vertical line from A, where the line from B meets it): *Mars [C ♂]*
- D (right arc, where the line from C meets it): *the bright star of ♈ [D Lucida ♈]*

Triangle BAC [Triangulus BAC]

AC	*72 2½*
AB	*82 45*
BC	*30 19½*
Therefore BAC [Ergo BAC]	*29 8*
Right ascension [Aſc. R.]	
of the shoulder of Orion [hum. Or.]	*83° 22′*
Right ascension of Mars [Aſc. R. ♂]	*54° 14′*

Triangle CAD [Triangulus CAD]

AD	*68 29*

AC	*72 2½*
CD	*26 30*
Therefore CAD [Ergo CAD]	*27 56⅙*
Right ascension [Aſc. R.]	
of the bright star of ♈ [luc. ♈]	*26° 9′*
	54 5

But rather approach the right ascension that comes out from the bright star of ♈, making it 54° 8′; and Mars comes out in longitude 26° 6½′ ♉, latitude 1° 26′ south. [*Sed potius accede ad AR quæ prouenit a lucida ♈, faciendo illam 54 8 & prouenit ♂ in Long. 26 6½ ♉, Lat. 1 26 M.*]

Therefore on 30 September at 4^h A.M. [*Ergo Die 30 Septemb. H. 4 A.M.*]

	Longitude [Longitudo]	*Latitude [Latitudo]*
Our observation [Obſeruatio noſtra]	*26° 6½′ ♉*	*1° 26′ south [M.]*
The Alphonsine calculation [Calculus Alphonſ.]	*26° 16′*	*1° 18′*
The Copernican calculation [Calculus Copern.]	*24° 20′*	*2° 31′*

It is clear, therefore, that the Alphonsine calculation comes closer here, in longitude as well as in latitude. [*Patet itaque quod Alphonſinus Calculus hic propius accedit tam in Longitudine quam Latitudine.*]

12 October, in the evening [DIE 12 OCTOBRIS, VESPERI.]

The times are corrected. [Tempora ſunt correcta.]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a Lucida ♈]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegaſi occid.]
8^h 23⅙^m	24° 14′	17° 59⅓′	18°, approximately [quaſi]	11 24
		18° 0′		
8^h 28⅙^m	24° 15′		21° 2′	12 39
8^h 31¼^m	24° 15⅓′	17° 59′	21° 2′1	the Vulture, west [Vult. occ.]
		17° 59⅚′		41 46
8^h 35⅙^m	24° 15½′	17° 59′	22° 23′	42 45
		17° 59⅚′		
8^h 46⅚^m	24° 15½′	17° 59′	23° 50′	45 39
		18° 0′		

For examining the armillae the declination of Aldebaran was taken. [Pro examine Armillarum accipiebatur Declinatio Aldeboræ.]

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Dist. ♂ a Lucida ♈]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, west [Os Pegasi occid.]
8^h 52⅓^m		its altitude [Altit. eius]	16° 20′	46 42

Vice versa, the distance of Mars from Aldebaran [Viceversa Dist. ♂ ab Aldebora]

Hours, minutes [H. M.]	Distance [Dist.]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The bright star of the Vulture, west [Luc. Vult. occid.]
8^h 57^m	11° 11′	17° 59′ 17° 59½′	25° 48½′	48 11½

Hours, minutes [H. M.]	Distance [Dist.]	Declination of Aldebaran [Decl. Aldeb.]	Altitude of Aldebaran [Alt. Aldeb.]	The bright star of the Vulture, west [Luc. Vult. occid.]
9^h 1¾^m	11° 11⅙′	15° 41′ 15° 41⅓′	17° 50′	49 22

Hours, minutes [H. M.]	Distance [Dist.]	Declination [Decl.] of Mars [♂]	Altitude [Alt.] of Mars [♂]	The bright star of the Vulture, west [Luc. Vult. occid.]
9^h 5½^m	11° 11¼′	17° 59′ both [vtroque]	26° 18′	50 18

Hours, minutes [H. M.]	Distance [Dist.]	Declination [Decl.] of Aldebaran [Aldeb.]	Altitude [Alt.] of Aldebaran [Aldeb.]	The bright star of the Vulture, west [Luc. Vult. occid.]
9^h 8½^m	11° 11′	15° 41′ 15° 41½′	18° 18½′	51 3

Hours, minutes [H. M.]	Distance [Dist.]	Declination [Decl.] of Mars [♂]	Altitude [Alt.] of Aldebaran [Aldeb.]	The mouth of Pegasus [Os Pegasi]
9^h 41^m	11° 12′	17° 59⅙′ both [vtroque]	23° 2½′	30 52

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Decl.] of Aldebaran [Aldeb.]	Altitude [Alt.] of Aldebaran [Aldeb.]	The mouth of Pegasus [Os Pegaſi]
9^h 44½^m	11° 11⅔′	15° 40½′ 15° 41′	23° 20′	31 44

N.B. From these, examined on both sides by triangles, there is gathered for Mars [*N. B. Ex his vtrinque per Triangulos examinatis colligitur* ♂]

[1] Thus in the codex. [Sic in codice.]

	Longitude [Longitudo]	*Latitude [Latitudo]*
	23° 52½′ ♉	*0° 54′ south [M.]*
The Alphonsine calculation [Calculus Alphonſ.]	*23° 51′*	*0° 45′*
Copernican [Copern.]	*21° 56′*	*2° 9′*

Afterwards Mars was observed as it crossed [Poſtea obſeruabatur ♂ cum tranſiret] the meridian, having an altitude [per Merid. habens Altitudinem]

by the steel instrument [per Chalyb.]	52° 0⅔′
by the revolving quadrant [per Volub.]	52° 1⅔′
{ At 1^h 42⅓^m the bright star of the jaw [H. 1 M. 42⅓ Luc. Mand.]	
{ of the Whale, west [Cete occid.]	12 0

{ The time is corrected. The transit of the jaw [Temp. correct. eſt. Tranſitus Mandib.]
{ of the Whale was at 12^h 54⅓^m. [Cete erat H. 12 M. 54⅓.]

16 October, in the morning [DIE 16 OCTOBRIS, MANE.]

Mars was observed from the bright star of ♈ and Aldebaran. [Obſeruabatur ♂ a Lucida ♈ & Aldeb.]

The times are corrected. [Tempora ſunt correcta.]

At 3^h 27^m the declination of Mars [H.3M.27Decl.♂]	17° 52′
	17° 52⅓′
The distance of the bright star of ♈ and Aldebaran by the sextant [Diſt. luc. ♈ & Aldeb. per Sext.]	35° 32⅓′

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]	Declination [Declin.]	Altitude [Altit.]	Aldebaran, west [Aldeb. occid.]
3^h 27¾^m	23° 22¼′	17° 53½′ 17° 54′ better [melior]	45° 15′	18 35
3^h 31⅔^m	23° 22½′	17° 53½′ 17° 54′	45° 0′	19 34

Hours, minutes [H. M.]	Distance of Mars from the bright star of ♈ [Diſt. ♂ a luc. ♈]	Declination [Declin.]	Altitude [Altit.]	Aldebaran, west [Aldeb. occid.]
5^h $35\frac{1}{6}^m$	23° 22⅓′	17° 54⅙′ both [vtroque]	44° 44′	20 17
3^h 37^m	The declination of Aldebaran was taken [Accipiebatur Declinatio Alde-]			
	for verifying [boræ pro verifi-]		15° 40′	
	the armillae [candis armillis]		15° 40⅙′	
	Repeated [Repetita]		15° 40′ both [vtroque]	
	The altitude of Aldebaran [Altitudo Aldeb.]		47° 5′	

Vice versa, Mars from Aldebaran [Viceverſa ♂ ab Aldebora]

Hours, minutes [H. M.]	Distance from Aldebaran [Diſt. ab Aldeb.]	Declination [Declin.]	Altitude [Altit.]	Aldebaran, west [Aldeb. occid.]
3^h $40\frac{2}{3}^m$	12° 9⅚′	17° 54′ both [vtroq.]		21 46
3^h 43^m	12° 9⅔′		43° 50′	
3^h 45^m	12° 9⅔′	17° 54′		23 4
		17° 53⅚′		
3^h 48^m	12° 9½′	17° 54′ both [vtroque]	43° 4′	23 50
4^h 0^m	The declination of Aldebaran was repeated, [Repetebatur Declinatio Alde-]			
	which was nearly in the same [boræ, quæ erat quaſi in eodem]			
	position as Mars before [ſitu quo ♂ antea]			15° 40′
				15° 39⅚′
4^h $6\frac{1}{6}^m$	The same declination [Eadem Declinatio]			15° 39⅚′
				15° 40′
4^h 20^m	The repeated declination [Repetita Declin.]			15° 39⅔′
	of Aldebaran [Aldeb.]			15° 40′

About 2′ must be taken away everywhere from the declination of Mars, because Aldebaran exceeded by that much in the same position, through the fault of the armillae. [Auferenda ſunt vbique quaſi 2 Minuta de ♂ Declinatione, quia Aldebora tantum abundauit in pari ſitu, vitio Armillarum.]

Put, therefore, at 3^h 45^m [Pone itaque H. 3 M. 45]

the distance of Mars from Aldebaran [♂ Diſtantiam ab Aldeb.]	12° 9¾′
from the bright star of ♈ [a Lucida ♈]	23° 22¼′

the declination [Declinationem]	17° 52′

And at this time there is [Eſt autem hoc tempore]

	Right ascension [Aſc. Recta]	Declination [Declin.]	Ascensional difference [Diff. aſc.]
Of Aldebaran [Aldeboræ]	63° 12′	15° 38′	12° 29⅓′
Of the bright star of ♈ [Lucidæ ♈]	26° 9′	21° 31′	24° 33′ 0″
Right ascension of Mars [Aſc. R. ♂]	50° 42′ 40″		
	50° 42′ 0″		

Therefore at 3^h 35^m the right ascension, limited [Ergo H. 3 M. 35 Aſc. R. limit.]	50° 42⅓′
Resp. longitude [Reſp. Longitudo]	22° 55¾′ ♉
latitude [Latitudo]	0° 43⅔′ south [M.]

	Longitude [Longitudo]	Latitude [Latitudo]
The Alphonsine calculation [Calculus Alphonſ.]	22° 50′	0° 33′
Of Copernicus [Copernici]	21° 0′	1° 55′

It is clear, therefore, that the observed longitude exceeds both calculations, and so much so that it surpasses the Alphonsine, which is the farther on, by nearly 6′, and that of Copernicus by 1 56. In latitude the Alphonsine reckoning does indeed come closer, yet it falls short by nearly 11′. [Patet itaque, quod Longitudo obſeruata excedit vtrumque calculum, adeoque Alphonſinum qui vlterior eſt ſuperet pene 6 Minutis, Copernici 1 56. In Latitudine propius quidem accedit Alphonſi numeratio, attamen deficit pene 11 minutis.]

25 October, in the morning [DIE 25 OCTOBRIS, MANE.]

Observations of Mars from Aldebaran [Obſeruationes ♂ ab Aldebora]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Mars [Altit. ♂]	Canicula, west [Canicula occid.]
6^h $32\frac{1}{6}^m$		17° 36′	15½°	26 20
		17° 35½′		
6^h 36^m	15° 11½′	17° 34½′	15° 0′	27 19
		17° 35⅚′		
6^h 39^m	15° 11½′	17° 35½′	14° 30′	
		17° 34⅔′		
6^h 41^m	15° 11′	17° 35⅓′	14° 10′	28 31

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Mars [Altit. ♂]	Canicula, west [Canicula occid.]
		17° 34⅔′		
6h 43⅚m		17° 34¾′	13° 50′	29 12
		17° 35⅔′		

Vice versa, the distance of Mars from the head of Medusa [Viceverſa ♂ Diſtantia a Cap. Meduſæ]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of Mars [Altit. ♂]	Canicula, west [Canicula occid.]
6h 49¼m	22° 33′	17° 35½′ } both [vtroque] }	13° 10′	30 37

Afterwards from the bright side of Perseus [Poſtea a Lucido Latere Perſei]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of Mars [Altit. ♂]	Canicula, west [Canicula occid.]
6h 51⅓m	30° 55′	17° 35½′	12° 40′	31 10
		17° 35⅔′		
6h 53⅔m	30° 55′	17° 36′	12° 30′	31 45
		17° 36½′		

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of Mars [Altit. ♂]	Canicula, west [Canicula occid.]
6h 56m		17° 35⅚′	12° 10′	32 16
		17° 36⅔′		
6h 58½m	30° 56′	17° 36⅙′	11° 50′	32 54
		17° 36⅔′		

Afterwards the declination of Aldebaran was taken for examining the armillae. [Poſtea capiebatur Declin. Aldeboræ pro examine Armillarum.]

		Declination [Decl.]	Altitude of Aldebaran [Alt. Aldeb.]	The Lesser Dog, west [Canis minor occid.]
7 0¾	good [bonæ] {	15° 40⅔′	18° 50′	
	{	15° 40⅙′		33 30
		15° 40½′	18° 0′	the Greater Dog, west [Can. mai. occ.]
		15° 40′		47 5

Therefore the emended declination of Aldebaran, which is 15° 37′ 45″, subtracts 2½′, and just as much from the observed declination of Mars. [Ergo

declinatio emendata Aldeboræ quæ eſt 15 37 45 ſubtrahit minuta 2½ & tantundem a ♂ Declinatione obſeruata.]

At 6^h 36^m the distance of Mars from Aldebaran [H.6 M.36 Diſt. ♂ ab Aldeb.]	15° 11′ 30″

Put its observed declination at 17° 35′; these being emended, the one made by Aldebaran takes away 2½′, so that the true declination of Mars is 17° 33½′. The declination of Aldebaran 15° 37¾′. [Pone eius decl. obſeruatam 17 35, quibus emendatis per Aldeboram facta aufert 2½′, vt ſit vera decl. ♂ 17 33½. Decl. Aldeb. 15 37¾.]

Angular difference of ascension [Ang. diff. aſcenſ.]	15° 43′ 43″
Right ascension of Aldebaran [Aſc. recta Aldeboræ]	63° 12′ 8″
Therefore the right ascension of Mars [Ergo Aſc. Recta ♂]	47° 28′ 25″
Resp. longitude [Reſp. Longitudo]	19° 52′ 0″ ♉
latitude [Latitudo]	0° 13′ 0″ south [M.]

Investigation of the place of Mars in a triangle from Aldebaran and the bright side of Perseus, at $6\frac{3}{4}^h$. [Inquiſitio loci ♂ in triangulo ex Aldebora & Lucido Latere Perſei H. 6¾.]

At 6^h 45^m the distance from Aldebaran [*H. 6 M. 45* Diſt. ab Aldeb.]	15° 11′
from Perseus [a Perſeo]	30° 55′

The altitude of Mars about 14°. [Altitudo ♂$^{ti^s}$ quaſi 14 g.]

Diagram. A spherical figure drawn in the left column under "Altitudo ♂$^{ti^s}$ quaſi 14 g.", beside the lines from "Lat. Perſei Aldeb." to "per VI Sphæricorum.". Three arcs run down from the apex A: the left one to D at the lower left, the right one to B at the lower right, and a middle one down through C to a straight line that runs from D up to the right arc near B; straight lines join D to C and C to B, a short line runs from the line D–(right arc) to the right arc, and an arc closes the base from D to B. Four letters are printed; there is no key on the figure itself.

- A (apex, top right of the point): A
- C (on the middle arc, above the junction of the lines from D and B; an italic capital): C
- D (lower left corner): D
- B (lower right corner; an italic capital, set on the line of "per VI Sphæricorum."): B

	The side of Perseus [Lat. Perſei]	Aldebaran [Aldeb.]
Longitude [Long.]		
	26° 12⅝′ ♉	4° 8′ 20″ ♊
Latitude [Lat.]		
	30° 5′ 30″ north [B.]	5° 31′ 0″ south [A.]

In triangle CAB.[1] I. [In triangulo CAB[1]. I.]

CA	59 34 30
BA	95 31 0
CAB	7 55 30
Therefore BC [Ergo BC]	36 24 35
by VI of the Sphaerics [per VI Sphæricorum.]	

II.

BC	36 24 35
BD	15 11
DC	30 55
Therefore DBC [Ergo DBC]	58 30⅓
by IX of the Sphaerics [per IX Sphær.]	

III.

BC	36 24 35
BA	95 31
CA	59 54 30
Therefore CBA [Ergo CBA]	11 35⅓
by IX [per IX.]	

Now, with the angle DBC added to CBA, the triangle DBA is formed, in which are given: [Addito iam Angulo DBC ad CBA conflatur triangulus DBA, in quo dantur:]

	DB	15 11
	BA	95 31
	ABD	70 5⅔
Therefore by VI of the Sphaerics [Ergo per VI Sphær.]	DA	90 13⅝
by IX of the Sphaerics [per IX Sphær.]	DAB	14 15⅖

	Longitude [Longitudo]	Latitude [Latitudo.]
Therefore Mars [Ergo ♂]	19° 53′ 0″ ♉	0° 13′ 50″ south [M.]
The Alphonsine calculation [Calculus Alphonſ.]	19° 46′	0° 7′ south [M.]
Copernican [Copern.]	17° 54′	1° 8′ south [M.]

25 October, in the evening [DIE 25 OCTOBRIS, VESPERI.] Mars from the bright star of ♈ [♂ a Lucida ♈]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, east [Os Pegaſi or.]
6^h $10½^m$	20° 17⅙′	17° 32⅓′	14° 17′	9 15
		17° 34½′		
	The declination [Declinatio]	15° 41′	Altitude of Aldebaran [Altit. Aldeb.]	
	of Aldebaran [Aldeboræ]	15° 40⅓′	15° 30′	the Vulture, west [Vult. occ.]
7^h $54½^m$	20° 16′	17° 30½′	Altitude of Mars [Altit. ♂]	45 7
		17° 31′		
7^h $57½^m$	20° 15½′	17° 31½′ } both [vtroque] }	26° 40′	45 44
8^h 1^m	20° 16′	17° 30½′ } both [vtroque] }	27° 15′	46 44

Vice versa, Mars from the bright side of Perseus [Viceverſa ♂ a Lucido Latere Perſei]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, east [Os Pegaſi or.]
8^h $4⅖^m$	30° 57½′	17° 30⅙′	27° 42′	48 35
		17° 30′		
8^h $7½^m$	30° 57½′	17° 30′ } both [vtroque] }	28° 18′	
8^h 10^m	30° 57⅓′		28° 45′	50 0

Next, Mars from the eye of ♉ [Deinceps ♂ ab oculo ♉]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, east [Os Pegaſi or.]
8^h $15⅔^m$	15° 23⅚′	17° 30′	Altitude of Aldebaran [Alt. Aldeb.]	
		17° 30⅓′	19° 5′	51 25

Hours, minutes [H. M.]		Declination [Declin.]	Altitude [Altit.]	The mouth of Pegasus, east [Os Pegaſi or.]
$8^h\ 18^m$	The declination [Decl.]	15° 40⅓′		
	of Aldebaran [Aldeb.]	15° 40½′		
$8^h\ 23⅔^m$	15° 23½′	17° 30⅙′		
		17° 30¼′	19° 55′	52 24
$8^h\ 26⅓^m$	15° 24′	17° 30⅓′	20° 25′	53 4
		17° 30½′		

For examining the sextant, Aldebaran from the bright star of ♈ [Pro Sextante examinando Aldebora a Lucida ♈]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of Aldebaran [Decl. Aldeb.]	Altitude of Aldebaran [Altit. Aldeb.]	The Vulture, west [Vultur occid.]
$8^h\ 46^m$	35° 32′	15° 39⅔′	22° 37′	57 57
	35° 32⅙′	15° 39¾′		

[1] A is the pole of the ecliptic, B Aldebaran, C the side of Perseus, D Mars. [A eſt polus eclipticæ, B Aldebaran, C Latus Perſei, D Mars.]

At $8⅙^h$, the disposition of Mars with certain fixed stars, as far as sight goes. [H. 8⅙ Dispoſitio ♂ cum quibuſdam fixis quantum ad viſum.]

Diagram. A reproduced drawing in the manuscript hand, set full width under the line "H. 8⅙ Dispoſitio ♂ …". A horizontal base line runs across the foot, labelled below. Three straight lines cross at one star near the centre, marked with the Mars sign: a vertical line from a star at the top down to a star on the base line; a diagonal from a star at the upper left down to a star at the lower right on the base line; and a diagonal from a star at the lower left up to a star at the upper right. Words are written along the arms of the lines. Further stars stand at the top without lines: one under the words "Lucida ♈", and a second, small star under the star at the upper right. Labels as drawn, in the hand (read on the 1× crops p2fig_p1–p2 and at 3× on p2figTop, p2figSeq, p2figMid, p2figDiag, p2figDiagR (rotated 52° to level the writing), p2figLB (2.5×) and p2figRB (2.4×)):

- Top, slanting up to the right, two lines: the bright unformed star above the back of ♈ [Lucida informis / supra dorsum ♈]
- Under it, slanting, with a stroke at its start pointing down to the star below: the bright star of ♈ [Lucida ♈]
- Top of the vertical line, at its star: [?]
- Upper right, beside the star at the end of the rising diagonal and a second small star under it: the following horn of ♈ [Sequens cornu ♈]
- Along the upper arm of the vertical line: straight [recta]

- Along the upper right arm of the rising diagonal: line [linea]
- At the crossing star: Mars [♂]
- Along the lower left arm of the rising diagonal: straight [recta]
- Along the lower arm of the vertical line: line [linea]
- Along the lower right arm of the falling diagonal, three lines: slightly lowered [?], to the diameter [paululum depress[?] / ad diametrum / [?]]
- On the base line, under that writing: ♉
- At the star at the lower left end of the rising diagonal: Aldebaran [Aldebora]
- At the star at the foot of the vertical line: [?]
- At the star at the lower right end of the falling diagonal: the bright star of the jaw of the Whale [Lucida Mandibula Ce[?].]
- Under the base line: Horizon

26 October, in the evening [DIE 26 OCTOBRIS, VESPERI.]

Mars was observed I from the bright star of ♈. [Obſeruabatur ♂ I a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Mars [Altit. ♂]	The Vulture, west [Vultur. occid.]
$6^h\ 31^m$		17° 30′ 17° 30⅙′	15° 7′	25 11
$6^h\ 35¾^m$	19° 56′		16° 0′	26 23
$6^h\ 39⅙^m$	19° 56⅙′	17° 29½′ 17° 30′	16° 5′	27 16
$6^h\ 42^m$	19° 56½′		16° 30′	28 2
$6^h\ 45^m$	19° 56⅔′	17° 29⅔′ 17° 29¾′	17° 55′	30 43
$6^h\ 47½^m$	19° 56¾′		18° 22′	31 20
$7^h\ 12¾^m$	19° 56½′	17° 29⅝′ } both [vtroque] }	21° 5′	35 40
$7^h\ 16¼^m$	19° 56½′		21° 25′	36 33

Vice versa, from Aldebaran [Viceverſa ab Aldebora]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of Mars [Altit. ♂]	The Vulture, west [Vultur. occid.]
$7^h\ 25^m$	15° 38½′	17° 29½′ 17° 29¾′	22° 51′	38 36
$7^h\ 32⅓^m$			23° 32′	40 34

Then from the bright star of the side of Perseus. [Deinde a Lucida Lateris Perſei.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of Mars [Altit. ♂]	The Vulture, west [Vultur. occid.]
7^h $35\frac{5}{6}^m$	30° 57½′	17° 29¾′ } both [vtroque] }	22° 51′[1]	42 26
7^h $39\frac{3}{4}^m$	30° 58′			43 24

[1] Thus in the codex. [Sic in codice.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of Mars [Altit. ♂]	The Vulture, west [Vultur. occid.]
7^h $43\frac{2}{3}^m$	30° 57⅔′	17° 29⅔′ 17° 29¾′	25° 45′	44 16

Afterwards Aldebaran was observed in declination, for examining the declination of Mars at a like altitude. [Poſtea obſeruabatur Aldebora in Declinatione pro examine Declinationis ♂ in conſimili altitudine.]

Hours, minutes [H. M.]		Declination of Aldebaran [Declin. Aldeboræ]	Altitude of Aldebaran [Altit. Aldeboræ]	The Vulture, west [Vultur occid.]
7^h $50\frac{1}{3}^m$		15° 40′ 15° 40⅙′	15° 30′	45 4
7^h $54\frac{1}{2}^m$		15° 40⅙′ 15° 40¼′	16° 10′	46 8
7^h 58^m	both [vtroque]	15° 40⅙′	16° 45′	
…		15° 40¼′ 15° 40⅙′	17° 3′	

Afterwards again from Aldebaran, Mars. [Poſtea rurſus ab Aldebora ♂.]

Hours, minutes [H M.]	Distance [Diſt.]	Declination of Mars [Decl. ♂]	Altitude of Aldebaran [Altit. Aldeb.]	The bright star of ♈, east [Luc. ♈ or.]
8^h $18\frac{2}{5}^m$	15° 42½′		18° 49′	42 19
8^h $22\frac{2}{5}^m$	15° 43′	17° 29⅓′ 17° 29½′	19° 10′	41 9
8^h 28^m	15° 43′		20° 0′	
8^h $33\frac{2}{3}^m$	15° 43⅓′	17° 29¼′ 17° 29½′	20° 30′	38 29
	The declination [Declin.] of Aldebaran [Aldeb.]	15° 40′ 15° 40¼′	21° 0′	

Afterwards Mars was observed approaching the meridian, from the bright star of ♈. [Poſtea obſeruabatur ♂ appropinquans Meridiano a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The outermost of the wing of Pegasus, west [Extr. alæ Peg. occ.]
$10^h\ 53^m$	19° 52⅓′	17° 29½′	both [vtroq.]	
$10^h\ 57^m$	19° 52½′			26 25
$11^h\ 0^m$	19° 52½′			27 7
$11^h\ 3⅝^m$	Meridian altitude of the bright star of ♈ [Altitudo Meridiana Lucidæ ♈]			
	by the steel instrument [per Chalyb.]		55° 35⅔′	28 7
	by the revolving quadrant [per Volub.]		55° 35½′	

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Hours, minutes [H. M.]		Declination of Mars [Decl. ♂]	Altitude of Mars [Alt. ♂]	The outermost of the wing of Pegasus, west [Extr. alæ Peg. occ.]
$11^h\ 9^m$	15° 50½′			29 20
$11^h\ 13^m$	15° 50⅔′	17° 29⅙′		30 2
		17° 29⅓′		
$11^h\ 14⅓^m$	15° 51′			30 40
$11^h\ 17^m$	15° 51⅓′	17° 29¼′		31 20
		17° 29′		
$11^h\ 26⅔^m$	Altitude of Mars as it crossed [Altitudo ♂ cum tranſiret]			
	through the meridian [per Meridianum]			
	by the steel instrument [per Chalyb.]		51° 31½′	among [inter]
	by the revolving quadrant [per Volub.]		51° 31⅔′	clouds [nubes]
	The bright shoulder of Orion [Luc. hum. Orion.]			
	as it appeared, east [vti videbatur or.]			36 25

More could not be taken because of the frequent clouds coming up. [Plura ob ſuborientes crebras nubes capi non potuerunt.]

At $11⅙^h$, Mars [H. 11⅙ ♂]	15° 50¾′	from Aldebaran [ab Aldeb.]
	19° 52⅓′	from the bright star of ♈ [a Luc. ♈]

Limited declination of Mars [Declin. ♂ limit.]	17° 27¾′
Declination of Aldebaran [Declin. Aldeboræ]	15° 37½′
the bright star of ♈ [Luc. ♈]	21° 31½′
Angular difference of ascension from Aldebaran [Ang. diff. aſc. ab Aldeb.]	16° 25⅖′
Right ascension of Aldebaran [Aſc. R. Aldeb.]	63° 12′
Right ascension of Mars [Aſc. R. ♂]	46° 46′ 35″
Angular difference of ascension from the bright star of ♈ [Ang. diff. aſc. a Luc. ♈]	20° 39′ 15″
Right ascension of the bright star of ♈ [Aſc. R. Luc. ♈]	26° 9′ 0″
Right ascension of Mars [Aſc. R. ♂]	46° 48′ 15″
Therefore the limited right ascension resp. [Ergo limit. aſc. recta reſp.]	46° 47′ 25″
Resp. longitude [Reſp. Longitudo]	19° 13′ 23″ ♉
latitude [Latitudo]	0° 8′ 6″ south [M.]

27 October, in the morning [DIE 27 OCTOBRIS, MANE.]

Corrected times [Tempora correcta]	Distance of Mars and Aldebaran [Diſt. ♂ & Aldeb.]	Declination [Declin.]	Altitude of Mars [Altit. ♂]	Canicula, west [Canicula occid.]
6^h 49^m	15° 54′	17° 23⅔′ 17° 23½′	11½	
6^h $53\frac{1}{6}^m$	15° 52½′	17° 30′ } both [vtroque] }	10½	34 33
6^h $56\frac{2}{3}^m$	15° 53⅓′		10	35 20

27 October, in the evening [DIE 27 OCTOBRIS, VESPERI.]

Mars was observed in this way by the new sextant. [Obſeruabatur ♂ in hunc modum per Sextantem nouum.]

Corrected times [Tempora correcta]	Distance from the bright star of ♈ [Diſt. a Lucida ♈]	Declination of Mars [Declinatio ♂]	Altitude of Mars [Altit. ♂]	Azimuth	The mouth of Pegasus, east [Os Pegaſi or.]
6^h $14\frac{1}{4}^m$	19° 31⅚′	17° 28⅔′	17° 28⅚′	4° 0′	6 19
6^h 17^m	19° 33⅓′	17° 28½′	17° 28¾′	4° 10′	101° 10′ 5 26
6^h $20\frac{1}{2}^m$		17° 28′	17° 28½′	4° 21′	100° 30′ 4 33
6^h $24\frac{1}{2}^m$	19° 33¾′	17° 28¼′	17° 28⅓′	5° 5′	99° 35′ 3 27
6^h 29^m	19° 35′ doubtful [dubia]		15° 24′		98° 22′ 2 39
6^h 33^m	19° 34′		15° 55′		97° 35′ 1 38
6^h 36^m	19° 34′		16° 22′		96° 26′ 0 51
6^h $39\frac{1}{2}^m$	The mouth of Pegasus crossed the meridian, having the altitude [Tranſijt Os Pegaſi per Meridianum habens Altitudinem]				
	by the steel instrument [per Chalyb.]		42° 9½′		
	by the revolving quadrant [per Volub.]		42° 9⅚′		

Corrected times [Tempora correcta]	Distance from the bright star of ♈ [Diſt. a Lucida ♈]	Declination of Mars [Declinatio ♂]	Altitude of Mars [Altit. ♂]	Azimuth	The mouth of Pegasus, east [Os Pegaſi or.]
	It was on the equatorial armilla 2 minutes beyond Merid. [Fuit in Armilla æquatoria 2 Minutis vltra Merid.]				
$6^h\ 44\frac{1}{2}^m$	19° 34⅙′	17° 27½′	17° 28′ 17° 35′		1 16 west [occ.]
$6^h\ 48^m$	19° 35′	17° 28′	both 18° 0′ [vtroque]		2 8
$6^h\ 50^m$	19° 34¾′	17° 27⅚′	17° 28′ 18° 20′	93° 50′	2 45
$6^h\ 52\frac{2}{3}^m$	19° 34¾′	17° 27½′	17° 27⅚ 18° 30′	93° 10′	3 21

Mars, distance from the bright side of Perseus. [♂ Diſt. a Lucido Latere Perſei.]

Corrected times [Tempora correcta]	Declination of Mars [Declinatio ♂]	Altitude of Mars [Altit. ♂]	Azimuth	The mouth of Pegasus, east [Os Pegaſi or.]
$6^h\ 56^m$	30° 58¾ 17° 27¾′	17° 27⅚ 19° 11′	92° 30′	4 13
$6^h\ 59\frac{5}{6}^m$	30° 59⅙ 17° 27⅔′	17° 27¾ 19° 43′	92° 0′	5 3
$7^h\ 2^m$	30° 59′	20° 10′	91° 35′	5 44

Next, from Capella. [Deinceps a Capella.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declinatio]	Altitude of Mars [Altit. ♂]	Azimuth	The mouth of Pegasus, west [Os Peg. occid.]
$7^h\ 5\frac{1}{3}^m$		17° 27½′	17° 27¾ 20° 55′	90° 30′	6 35
$7^h\ 7\frac{1}{3}^m$	35° 3¼′	17° 27½′	17° 27⅚ 21° 5′	90° 15′	7 6
$7^h\ 11^m$	35° 3½′	17° 27½′	17° 27⅚ 21° 35′	89° 30′	8 1½
$7^h\ 13\frac{2}{3}^m$	35° 3′	17° 27⅙′	17° 27⅓ 22° 0′	89° 0′	8 40
$7^h\ 18^m$	35° 4′	17° 27⅓′	17° 27½ 22° 20′	88° 0′	9 44
$7^h\ 21^m$	35° 4′		23° 5′	87° 25′	10 33
$7^h\ 24^m$	35° 4⅙′	17° 27⅙′	17° 27⅓ 23° 20′	86° 40′	11 15
$7^h\ 26^m$	35° 3⅓′	17° 27⅙′	17° 27⅓ 23° 45′	86° 20′	11 46
$7^h\ 28\frac{1}{2}^m$	35° 4′	17° 27¼′	17° 27′ 24° 10′	85° 50′	12 24

Meanwhile the declination of the bright star of the foot of Perseus was taken, 30° 39½′, 30° 39⅔′. Mars was toward the pole, so that the armillae might be examined. [Interim accipiebatur Declinatio Lucidæ pedis Perſei 30 39½, 30 39⅔. ♂ erat verſus polum, vt Armillæ examinarentur.]

Afterwards Mars was observed again from the bright star of ♈, now free of refraction. [Poſtea denuo ♂ obſeruabatur a Lucida ♈, iam liber a refractione.]

Corrected time [Temp. corr.]	Distance [Diſt.]	Declination of Mars [Declinatio ♂]	Declination of Aldebaran [Declinatio Aldeb.]	Altitude of Mars [Altit. ♂]	Azimuth of Mars [Azim. ♂]	The first of the wing of Pegasus, east [Prima alæ Peg. orient]
$7^h\ 33^m$		17° 27¼′	17° 27⅙′	24° 40′	85° 0′	6 42
$7^h\ 38^m$				25° 15′		5 31
				Altitude of Aldebaran [Alt. Aldeb.]		
$7^h\ 40^m$			15° 40′	15° 40⅓ 44° 40′	84° 0′	5 0
$7^h\ 43^m$	19° 33⅔′		15° 40⅙′	15° 40′ 15° 13′		4 16
$7^h\ 45^m$	19° 33½′	17° 27′	17° 27⅔′	15° 30′		3 47
$7^h\ 50^m$	19° 33⅓′		15° 40⅙′	15° 40¼′ 5° 55′		2 30
	Christiernus[1] took the declination of Aldebaran [Chriſtiernus[1] Declinationem Aldeb. accepit]					
			15° 39⅙′	15° 39′ 16° 30′		
$8^h\ 0^m$	The first of the wing of Pegasus crossed the meridian [Prima alæ Pegaſi per Meridianum tranſijt]			by the steel instrument [per Chalyb.]	47° 8⅔′	
	having the altitude [habens Altitudinem]			by the revolving quadrant [per Volub.]	47° 8½′	
	Also repeated then was [Fuit etiam tunc repetita]				Declination of the first of the wing of Pegasus [Declin. primæ alæ Peg.]	
	the declination of Aldebaran [Declin. Aldeboræ]		15° 39′	15° 39′ 17½°	13° 9⅓′	13° 10′

Afterwards again Mars from Aldebaran. [Poſtea iterum ♂ ab Aldebora.]

Corrected time [Temp. corr.]	Distance [Diſt.]	Declination of Mars [Declinatio ♂]	Declination of Aldebaran [Decl. Aldeb.]		Altitude of Aldebaran [Altit. Aldeb.]	I of the wing of Pegasus, west [I alæ Pegaſi occ.]
$8^h\ 9^m$	16° 7½′	17° 26⅔′	17° 26⅚′		18° 38′	2 14
$8^h\ 11⅓^m$	16° 7¼′		15° 39⅚′	15° 39⅔′	18° 47′	2 51
$8^h\ 14½^m$	16° 7′	17° 26⅔′	17° 26¾′		19° 5′	3 38
$8^h\ 18^m$	16° 7′		15° 39¾′	15° 40′	19° 40′	4 30
$8^h\ 20^m$	16° 7′				20° 5′	

There follow observations of Mars from the first of ♈ about Merid. [Sequuntur ♂ obſeruationes a prima ♈ circa Merid.]

Verified times [Tempora verificata]	Distance [Diſtantia]	Declination [Decl.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
$11^h\ 29^m$	22° 27½′		
$11^h\ 31^m$	22° 26¾′		6 25
$11^h\ 34^m$	22° 26¾′		

Verified times [Tempora verificata]	Mars from the bright star of ♈ [♂ a Lucida ♈]	Declination [Decl.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
$11^h\ 36½^m$	19° 30¾′	17° 27¼′ with one [vno]	4 48
$11^h\ 46^m$	19° 31⅔′		
$11^h\ 49^m$	19° 31⅔′		1 49
$11^h\ 50⅔^m$	19° 32′		1 16
$11^h\ 55⅔^m$	Meridian altitude [Altit. Merid.] of the bright star of the jaw of the Whale [Lucidæ Mandibulæ Cete]		

[1] Longomontanus.

Verified times [Tempora verificata]	Mars from the bright star of ♈ [♂ a Lucida ♈]	Declination [Decl.]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
	by the steel instrument [per Chalyb.]	36° 33¼′	
	by the revolving quadrant [per Volub.]	36° 33′	the bright star [Luc.]

Afterwards Mars from the bright star of the jaw of the Whale. [Poſtea ♂ a Luc. Mand. Cete.]

Verified times [Tempora verificata]		Declination [Decl.]	of the jaw, west [Mand. occ.]
$12^h\ 2^m$	16° 3′ doubtful [dubia]		1 36
$12^h\ 4^m$	16° 5′		
$12^h\ 6^m$	16° 5¼′		
$12^h\ 20^m$	Mars crossed [♂ tranſiuit]		
	through the meridian, having the altitude [per Meridianum habens Altitud.]		
	by the steel instrument [per Chalyb.]	51° 29⅓′	
	by the revolving quadrant [per Volub.]	51° 28¾′	
	Declination of Mars [Declin. ♂]	17° 25⅙′	
		17° 24½′	
	The bright star of the jaw of the Whale, west, was then [Fuit tunc Luc. Mand. Cete occ.]		6 24

The mean declination is 17° 24′ 50″. But because the declination was found to exceed by one minute, let it be set at 17° 23′ 50″. The mean altitude, however, is 51° 29′ 5″. Therefore set down here the declination of Mars, 17° 23¾′ north [B.]. [*Medium Declinat. eſt 17 24 50. Verum quia deprehenſa eſt Declin. vno minuto abundare, ponatur illa 17 23 50. Medium vero Altit. eſt 51 29 5. Pone itaque hic Declinationem ♂ 17 23¾ B.*]

Then Mars from Aldebaran. [Deinde ♂ ab Aldebora.]

Hours, minutes [H. M.]	Distance [Diſtantia]	The bright star of the jaw of the Whale, west [Luc. Mand. Cete occ.]
$12^h\ 36½^m$	16° 10′	10 16
$12^h\ 39^m$	16° 10¼′	
$12^h\ 41^m$	16° 10′	11 36
$12^h\ 44½^m$	16° 10½′	12 22

Then Mars from the bright foot of ♊. [Deinde ♂ a Lucido pede ♊.]

Hours, minutes [H. M.]		The bright star of the jaw of the Whale, west [Luc. Mand. Cete occ.]
$12^h\ 51^m$	44° 59⅔′	14 5
$12^h\ 55^m$	45° 0′	14 53

Hours, minutes [H. M.]		The bright star of the jaw of the Whale, west [Luc. Mand. Cete occ.]
$12^h\ 57^m$	44° 59¾′	15 27
$1^h\ 0^m$	44° 59¾′	16 13

N.B. You can apply the declination of Mars from the altitude both of yesterday and of today, each limited. [N. B. Declinationem ♂ potes applicare ex Altitudine vtraque heſterna & hodierna, vtraque limitata.]

To test the newly repaired sextant, the distance of Aldebaran and the bright star of ♈ was taken, 35° 32′ twice [bis]. [Pro examine Sextantis nouiter reparati capiebatur diſtantia Aldeboræ & Lucidæ ♈ 35 32bis]

Distance of the bright side of Perseus and Aldebaran, 36° 20′ twice [bis]. [Diſt. Luc. Lateris Perſei & Aldeb. 36 20bis]

1h 27m } [H. 1 M. 27]	The eye of ♉ crossed the meridian [Tranſiuit oculus ♉ per Meridianum]		
corrected } [correcte]	having the altitude [habens Altitud.]		
	by the steel instrument [per Chalyb.]		49° 43⅙′
	by the revolving quadrant [per Volub.]		49° 42¾′
	Declination of Aldebaran [Declin. Aldeb.]	15° 38¾′	
		15° 38½′	

28 October [DIE 28 OCTOBRIS.]

Mars was observed from the bright star of ♈. Verified times. [♂ obſeruabatur a Lucida ♈. Tempora verificata.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination of Mars [Declinatio ♂]	Altitude of Mars [Altit. ♂]	Az-imuth [Azim.]	The mouth of Pegasus, west [Os Pegaſi occ.]
6h 53m	19° 12⅝′	17° 24′	17° 23⅝ 20° 10′	92° 0′	4 37
7h 0½m	19° 13′	17° 23⅝′	17° 24⅙′		6 17
7h 3½m	19° 13′		20° 57′	90° 10′	7 4
7h 6m	19° 13½′	17° 23⅓′	17° 23½′		7 43
7h 8m			21° 35′	89° 10′	
7h 11⅓m	19° 13′				8 34

Afterwards from the bright side of Perseus. [Poſtea a Lucido Latere Perſei.]

Hours, minutes [H. M.]		Declination of Mars [Declinatio ♂]	Altitude of Mars [Altit. ♂]	Az-imuth [Azim.]	The mouth of Pegasus, west [Os Pegaſi occ.]
7h 16½m	31° 0½′	17° 23⅝′	17° 23½ 22° 55′	87° 20′	10 18
7h 19⅔m	31° 0′				11 2
7h 23½m	31° 0′	17° 23¼′	17° 23⅔ 23° 47′		12 0

Hours, minutes [H. M.]	Distance [Diſtan-tia]	Declination of Mars [Declinatio ♂]	Altitude of Mars [Altit. ♂]	Az-imuth [Azim.]	The first of the wing of Pegasus, east [Prima alæ Peg. or.]
7h 31m	31° 0¼′	17° 23½′	17° 23⅓ 24° 45′		6 24

Afterwards the declination of Aldebaran, to be limited by the armillae, and at a similar altitude of Mars elsewhere. [Poſtea Aldeboræ Declinatio per Armillas limitanda & in ſimili ♂ alibi Altitudine.]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Aldebaran [Altit. Aldeb.]	The first of the wing of Pegasus, east [Prima alæ Pegaſi or.]
$7^h\ 40^m$	15° 39⅝′	15° 8′	4 16
	15° 39⅓′		
$7^h\ 47⅓^m$	15° 39⅔′	16° 5′	2 11
	15° 39⅓′		west [occ.]
$8^h\ 0^m$	15° 39¾′	17° 49′	0 52
	15° 39⅓′		
$8^h\ 6^m$	15° 39⅔′		
	15° 40′		

Afterwards Mars was observed from Capella. [Poſtmodum ♂ obſeruabatur a Capella.]

Hours, minutes [H. M.]		Altitude of Aldebaran [Altit. Aldeb.]	The first of the wing of Pegasus, east [Prima alæ Pegaſi or.]
$8^h\ 23⅓^m$	35° 18′		6 50
$8^h\ 26^m$	35° 18′	For the latitude [Pro latitudine]	
$8^h\ 29^m$	35° 18′	of Mars, to be examined [♂ examinanda.]	

Next, from the bright star of the jaw of the Whale. [Deinceps a Lucida Mand. Cete.]

Hours, minutes [H. M.]	Altitude of Aldebaran [Altit. Aldeb.]	The bright star of the jaw of the Whale, east [Luc. mand. Cete or.]
$8^h\ 42^m$	15° 54⅔′	47 20
$8^h\ 45¾^m$	15° 54′	46 29

Mars was observed again approaching the meridian. [Rurſus obſeruabatur ♂ Meridiano appropinquans.]

Hours, minutes [H. M.]	Distance from the first of ♈ [Diſt. a prima ♈]	Declination [Declin.]	The bright star of the jaw, east [Luc. Mand. or.]
$10^h\ 35½^m$	22° 7⅝′		
$10^h\ 39¾^m$	22° 7′		17 56
$10^h\ 40⅝^m$	22° 7⅛′	17° 21′	17 40
		17° 20½′	
$10^h\ 45⅓^m$	Meridian altitude of the first of ♈ [Altit. Merid. primæ ♈]		
	by the steel instrument [per Chalyb.]	51° 22⅙′	16 32
	by the revolving quadrant [per Volub.]	51° 22′	
$10^h\ 53^m$	22° 5½′		

Hours, minutes [H. M.]	Distance from the first of ♈ [Diſt. a prima ♈]	Declination [Declin.]	The bright star of the jaw, east [Luc. Mand. or.]
10^h $54\frac{2}{3}^m$	Meridian altitude of the bright star of ♈ [Altit. Merid. Lucidæ ♈]		
	by the steel instrument [per Chalyb.]	55° 36¼′	Aldebaran, east [Aldeb. or.]
	by the revolving quadrant [per Volub.]	55° 35¾′	37 18
	Declination of the same [Declin. eiusdem]	21° 31½′ both [vtroque]	

Mars, vice versa, from the bright foot of ♊. [♂ viceverſa a Lucido pede ♊.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Aldebaran, east [Aldeb. or.]
11^h $7\frac{3}{5}^m$	45° 19⅔′		34 0
11^h $11\frac{1}{2}^m$	45° 19⅔′	17° 20½′	33 20
		17° 20⅔′	
11^h $14\frac{2}{5}^m$	45° 20⅙′		32 19
11^h $20\frac{1}{3}^m$	45° 20′		30 50

Mars, vice versa, from the bright star of ♈. [♂ viceverſa a Lucida ♈.]

Hours, minutes [H. M.]		Declination [Declin.]	Aldebaran, east [Aldeb. or.]
11^h $31\frac{1}{4}^m$	19° 11¼′		28 6
11^h 36^m	19° 10½′		26 54
11^h $39\frac{1}{6}^m$	19° 10⅔′	17° 20⅖′	26 7
		17° 20½′	
11^h $55\frac{1}{2}^m$	19° 10¾′		22 1
12^h 1^m	19° 10½′		20 35

Meridian altitude of the bright side of Perseus on the steel instrument, 82° 25⅙′. [Altitudo Meridiana Lucidi Lateris Perſei in Chalyb. 82 25⅙]

Hours, minutes [H. M.]		Declination [Declin.]	Aldebaran, east [Aldeb. or.]
12^h 14^m	Mars crossed [Tranſijt ♂] the meridian, having the altitude [per Merid. habens Altitud.]		
	by the steel instrument [per Chalyb.]	51° 25⅚′	Aldebaran, east [Aldeb. or.]
	by the revolving quadrant [per Volub.]	51° 26¼′	17 0
	Declination of Mars [Declinatio ♂]	17° 20⅙′	
		17° 20½′	

Vice versa, from Aldebaran. [Viceverſa ab Aldebora.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of Mars [Decl. ♂]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
12^h $30½^m$	16° 34⅙′		33 21
12^h 38^m	16° 34′		31 28
12^h 42^m	16° 33⅖′		30 43
12^h 45^m	16° 33⅚′	17° 20½′	29 46
		17° 21′	
1^h $23½^m$	Aldebaran crossed [Tranſiuit Aldebora]		
	the meridian, having the altitude [per Meridianum habens Altitud.]		
	by the steel instrument [per Chalyb.]	49° 43¼′	
	by the revolving quadrant [per Volub.]	49° 43′	
	Declination of Aldebaran [Declinatio Aldeb.]	15° 38½′	
		15° 39⅙′	
	The bright shoulder of Orion, east [Lucidus humerus Orionis orient.]		19 38

30 October, evening [DIE 30 OCTOBRIS, VESPERI.]

Mars was observed from the bright star of ♈. [♂ obſeruabatur a Lucida ♈.]

Hours, minutes [*H. M.*]	Distance [*Diſtantia*]	Declination of Mars [*Declinatio* ♂]	Altitude of Mars [*Altit.* ♂]	The Vulture, west [*Vultur occid.*]
7^h 26^m corrected [corr.]	*18° 32⅔′*	*17° 17′*	*17° 17⅙′ 25° 40′*	*43 0*
7^h $32½^m$	18° 32⅔′	17° 17¼′	17° 17⅓′ 26° 45′	45 7
7^h $36⅙^m$	18° 32½′	17° 17½′	17° 17¼′ 27° 18′	46 7

Afterwards Mars from Capella. [♂ poſtea a Capella.]

Hours, minutes [*H. M.*]	Declination of Mars [*Declinatio* ♂]	Altitude of Mars [*Altit.* ♂]	The Vulture, west [*Vultur occid.*]	Declination of Aldebaran [Declin. Aldeb.]	
7^h 43^m	35° 48⅓′ 7° 17⅔′	17° 17½′ 28° 16′	47 50		
7^h $46½^m$	35° 47′		48 45	15° 39⅚′	15° 39¾′
7^h $50⅚^m$ }	} 17° 17½′ both	29° 27′	49 53		
	35° 47½′ [vtroque]				
7^h 53^m corrected [corr.] }	}				

Hours, minutes [*H. M.*]	Distance [*Diſtantia*]	Declination of Mars [*Declinatio* ♂]	Altitude of Mars [*Altit.* ♂]	1 of the wing of Pegasus, west [1 alæ Peg. occ.]	Declination of Aldebaran [Declin. Aldeb.]
7^h 56½^m corrected [corr.]	35° 45¾′		30° 0′	2 30	15° 39⅔′ with one [vno]

Vice versa, afterwards Mars from Aldebaran. [Viceverſa poſtea ♂ ab Aldebora.]

Hours, minutes [*H. M.*]		Declination of Mars [*Declinatio* ♂]		Altitude of Mars [*Altit.* ♂]	1 of the wing of Pegasus, west [1 alæ Peg. occ.]	Declination of Aldebaran [Declin. Aldeb.]	Altitude of Aldebaran [Alt. Aldeb.]
7^h 59⅔^m		17° 17½′	17° 17⅔′		3 53		19° 25′
8^h 1¾^m					4 24	15° 39½′	15° 39¾′
8^h 4⅔^m	17° 12⅔′ twice [bis]			31½°	5 14		20° 13′
8^h 8½^m }	} 17° 12½′				6 16		20° 58′
8^h 12½^m corrected [corr.] }	}						
8^h 18⅙^m }	} 17° 12⅔′	17° 17⅔′	17°…	33° 30′			22° 16′
8^h 22^m corrected [corr.] }	}						

Again Mars from the bright star of ♈. [*Rurſus* ♂ *a Lucida* ♈.]

Hours, minutes [*H. M.*]		Declination of Mars [*Declinatio* ♂]		Altitude of Mars [*Altit.* ♂]	*The outermost of the wing of Pegasus, east* [*Extr. alæ Peg. or.*]	Declination of Aldebaran [Declin. Aldeb.]	Altitude of Aldebaran [Alt. Aldeb.]
8^h 21⅚^m }	} *18° 32⅓′*	*17° 17⅙′*	*17° 17′*	*34° 0′*	*7 0*		*22¾°*
8^h 26⅔^m corrected [corr.] }	}						
8^h 24^m }	} *18° 31⅚′*			*34° 10′*	*6 40*	*15° 39⅚′*	*15° 39⅔ 31⅓°*

Hours, minutes [*H. M.*]	Declination of Mars [*Declinatio* ♂]	Altitude of Mars [*Altit.* ♂]	*The outermost of the wing of Pegasus, east* [*Extr. alæ Peg. or.*]	Declination of Aldebaran [Declin. Aldeb.]	Altitude of Aldebaran [Alt. Aldeb.]
$8^h\ 28\frac{1}{3}^m$ } corrected [corr.] }					
$8^h\ 27\frac{1}{4}^m$	18° 32′ 17° 16⅚′ *with one pinnule* [*vno pinn.*]	*34° 45′*			*23° 50′*

Then, vice versa, Mars was taken from Aldebaran, but among rather sparse clouds running across. [*Deinde viceverſa capiebatur* ♂ *ab Aldebora, ſed inter rariuſculas nubes discurrentes.*]

Hours, minutes [*H. M.*]	Declination of Mars [*Declinatio* ♂]	Altitude of Mars [*Altit.* ♂]	*The outermost of the wing of Pegasus, east* [*Extr. alæ Peg. or.*]	Declination of Aldebaran [Declin. Aldeb.]	Altitude of Aldebaran [Alt. Aldeb.]
$8^h\ 38\frac{5}{6}^m$	*17° 17′ with one* [*vno*]	*36° 25′*			*25° 37′*

Computation of the place of Mars from the observations of 27 and 28 October, made before the opposition with the Sun, when Mars was moving on this side and on the far side of the meridian. [Supputatio loci ♂ ex obſeruationibus dierum 27 & 28 Octobris, habitis ante ☍ cum ☉, cum ♂ citra vltraque Meridianum verſaretur.]

27 October [Die 27 VIIIbris.]

The places of the four fixed stars from which it was observed. [Fixarum 4tuor loca a quibus obſeruabatur.]

	Right ascension [Aſc. r.]	Declination, north [Decl. B.]
I ♈	22° 52′ 15″	17° 17′
The bright star of ♈ [Lucida ♈]	26° 8′ 50″	21° 31′ 30″
Aldebaran [Aldeb.]	63° 12′ 10″	15° 37½′
The bright foot of ♊ [Luc. pes ♊]	93° 33′ 20″	16° 40½′

At $12\frac{1}{3}^h$, when Mars was crossing the meridian [H. 12⅓ cum ♂ tranſiret per Merid.]

Its distance from [Diſt. eius a] { ♈ 22° 26′ 0″

{	the bright star of ♈ [luc. ♈]	19° 31½′
{	Aldebaran [Aldeb.]	16° 10′ 15″
{	the bright foot of ♊ [luc. p. ♊]	44° 59½′
Declination of Mars [Declinatio ♂]		17° 24′
Angular difference of ascension from [Ang. diff. aſcenſ. a] {	1 ♈	23° 30′ 40″
{	the bright star of ♈ [luc. ♈]	20° 15′ 24″
{	Aldebaran [Aldeb.]	16° 47′ 0″
{	the bright foot of ♊ [luc. p. ♊]	47° 10′ 20″
Therefore the right ascension of Mars [Ergo ♂ Aſc. Recta]		46° 22′ 55″
		46° 24′ 14″
		46° 25′ 10″
		46° 23′ 0″
At 12⅓^{h}, the right ascension, limited [H. 12⅓ Aſc. R. limitata]		46° 24¼′
Resp. longitude [Reſp. Longitudo]		18° 51¼′ ♉
Latitude [Latitudo]		0° 5⅗′ south [M.]
Parallax of longitude 1′ 0″, [Parallax Long. 1′ 0″,]		
	true longitude [vera Long.]	18° 52′ 15″ ♉
Latitude 3 15 [Latit. 3 15]	latitude [Latit.]	0° 2′ 20″ south [M.]

28 October [DIE 28 OCTOBRIS.]

At 11 1/12^{h}, distance of Mars from I ♈ [H. 11 1/12 Diſt. ♂ a I ♈]		22° 6′
	from the bright foot of ♊ [a luc. pede ♊]	45° 20′
Declination of Mars [Declin. ♂]		17° 20′ 30″
Angular difference of ascension [Ang. diff. aſcenſ.]		23° 9′ 45″
		47° 31′ 35″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]		46° 2′ 0″
		1′ 45″
Right ascension, limited [Aſc. R. limitata]		46° 1′ 50″
Resp. longitude [Reſp. Longitudo]		18° 29⅗′ ♉
Latitude [Latitudo]		0° 2′ 52″ south [M.]

The same night, at 12¼^{h}, at the transit of Mars across the meridian. [Eadem nocte H. 12¼ ad tranſitum ♂ per Meridianum.]

Distance from the bright star of ♈ [Diſt. a luc. ♈]		19° 10′ 30″
	from Aldebaran [ab Aldeb.]	16° 34′ 0″
Declination of Mars [Declin. ♂]		17° 20½′
Angular difference of ascension [Ang. diff. aſcenſ.]		19° 51′ 40″
		17° 11′ 23″

Therefore the right ascension of Mars [Ergo ♂ Aſc. R.]		46° 0′ 30″
		46° 0′ 47″
Right ascension, limited [Aſc. R. limitata]		46° 0′ 40″
Resp. longitude [Reſp. Longitudo]		18° 28′ 25″ ♉
Latitude [Latitudo]		0° 2′ 45″ south [M.]
Therefore from the computation [Ergo ex ſupput.] {	longitude [Longitudo]	18° 28′ 22″ ♉
{	latitude [Latitudo]	0° 2′ 50″ south [M.]
Parallax of longitude 1′ 0″ added [Parallaxis Long. 1′ 0″ add.]		
	latitude 3 15 subtracted [Latit. 3 15 ſubt.]	
True longitude [Vera Longitudo]		18° 29′ 20″ ♉
Latitude [Latitudo]		0° 0′ 25″ north [B.]

30 October [DIE 30 OCTOBRIS.]

At 8^h 20^m, distance of Mars from the bright star of ♈ [H. 8 M. 20 Diſt. ♂ a luc. ♈]		18° 32′
	from Aldebaran [ab Aldeb.]	17° 12′ 40″
Declination of Mars [Declin. ♂]		17° 16′
Angular difference of ascension [Ang. diff. aſcenſ.]		19° 8′ 33″
		17° 52′ 38″
Right ascension of Mars [Aſc. R. ♂]		45° 17′ 23″
		45° 19′ 22″
Right ascension, limited [Aſc. R. limitata]		45° 18½′
Resp. longitude [Reſp. Longitudo]		17° 48½′ ♉
Latitude [Latitudo]		0° 3⅔′ north [B.]
Parallax of altitude of Mars [Parallaxis Altit. ♂]		3 10
	in longitude [in Long.]	1 15 subtracted [ſubt.]
	in latitude [in Lat.]	3 30 added [add.]
Therefore the true longitude of Mars [Igitur vera ♂ Longit.]		17° 47¼′

	latitude [Latit.]	0° 7⅙′ north [B.]

From these and the preceding it is gathered that Mars was, according to its true place in the ecliptic, in opposition with the simple Sun on October 29^{d} 21^{h} 50^{m}, in 17° 56½′ ♉, with true latitude 5½′ north. [Ex his & præcedentibus colligitur ♂ fuiße ſecundum verum locum ſuum in Ecliptica in ☍ cum ſimplici ☉ Octob. 29^{D}21^{H}50^{M}in 17 56½ ♉ cum Latitudine vera 5½ B.]

Diagram. A small line figure in the right column, left of three italic lines. From a vertex at the left two lines run to the right, close together and diverging slowly, the upper one rising in a gentle curve; near the left a short vertical stroke joins them, with a letter above it and a letter below it; at the right end a longer vertical line closes the figure, with figures set beside it on its right. The letters are small, in a script-like form.

- c (left vertex): c
- a (above the short vertical stroke): a
- b (below the short vertical stroke): b
- 4 33 (to the right of the right-hand vertical line): 4 33

CBA right [*CBA rectus*]

ACB 4° 33′ [*ACB 4^{g}33′*]

Latitude AB 5′ 30″ [*Lat. AB 5′ 30″*]

Let CB be sought, 1° 4′. Therefore the intersection in 16° 52½′ ♉. [*Inquiratur CB, 1^{g} 4′. Ergo interſectio in 16 52½* ♉.]

Examination of the distance of Mars from two other stars, above and below, for exploring its latitude. [Exploratio diſtantiæ ♂ ab alijs duabus ſtellis ſupra & infra pro Latitudine eius exploranda.]

	Longitude [Longitudo]	Latitude [Latitudo]
The side of Perseus [Lateris Perſei]	26° 12⅝′ ♉	30° 5½′ north [B.]
Capella [Capellæ]	16° 11′ 35″ ♊	22° 51′ north [B.]
The jaw of the Whale [Mand. Cete]	8° 42′ 25″ ♉	12° 37′ 10″ south [M.]

28 October, at 8½^{h}, Mars by computation [Die 28 Oct. H. 8½ ♂ ſupput.]		
Longitude [Long.]		18° 32′
Latitude [Latit.]		0° 3′ south [M.]
Resp. distance of Capella and Mars [Reſp. Diſtantia Capellæ & ♂] {	computed [ſupput.]	35° 18′ 46″
{	observed [obſeruat.]	35° 18′ 0″
At 9^{h}, longitude of Mars [H. 9 Longitudo ♂]		18° 31½′ ♉

Latitude as before [Latitudo vt prius]		
Resp. distance from the jaw of the Whale [Reſp. Diſtantia a Mandib. Cete] {	computed [ſupput.]	15° 53′ 53″
{	observed [obſ.]	15° 54⅓′ limited [lim.]
30 October, at about 8^h, Mars observed [Die 30 Oct. H. 8 quaſi, ♂ obſeruat.] {	longitude [Long.]	17° 48⅔′ ♉
{	latitude [Latit.]	0° 3½′ north [B.]
Resp. distance of Mars from Capella [Reſp. Diſt. ♂ a Capella] {	computed [ſupput.]	35° 47⅗′
{	observed [obſeruat.]	35° 47½′ limited [lim.]

3 November [*DIE 3 NOUEMBRIS.*]

To examine the declination of Mars made four days earlier, Aldebaran was observed at a closely similar altitude, as it were, to that at which Mars then was. [*Pro examinanda Declinatione ♂ ante quatriduum facta obſeruabatur Aldebora in conſimili quaſi altitudine qua tunc ♂ erat.*]

Hours, minutes [*H. M.*]	*Declination of Aldebaran* [*Decl. Aldeb.*]	*Altitude of Aldebaran* [*Altit. Aldeb.*]	*Aldebaran, east* [*Aldeb. orient.*]
9^h 5^m	*15° 39¾′*	*31¼*	
	15° 38⅝′		
9^h 13^m	*15° 39¾′*	*31¾*	*55 34*
	15° 38½′		

Hours, minutes [*H. M.*]	*Declination of Aldebaran* [*Decl. Aldeb.*]	*Altitude of Aldebaran* [*Altit. Aldeb.*]	*The bright foot of Orion, east* [*Luc. pes Orion. or.*]
10^h 38^m	*15° 39⅝′*	*42½*	*43 32⅓*
	15° 38⅝′		

Resp. declination [*Reſp.Decl.*]	*15° 39′ 15″*
Should be [*Debet eße*]	*15° 37′ 45″*
Difference [*Differentia*]	*1′ 30″, to be subtracted from the declination of Mars at a closely similar altitude* [*auferenda a declinatione ♂ in conſimili altitudine.*]

Mars was observed approaching the meridian, I° from the bright star of ♈. [Obſeruabatur ♂ appropinquans meridiano, I° a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Mars [Altit. ♂]	The bright foot of Orion, east [Luc. pes Orion. or.]
11h 4½m	17° 10⅚′	17° 4½′ 17° 2⅚′ doubtful [dubia]	50° 46′	36 58
11h 7⅙m	17° 11′		50° 50′	36 15
11h 9½m	17° 10⅚′	17° 3′ with one [vno]	50° 55′	35 41

Conversely, Mars from the eye of ♉. [Viceverſa ♂ ab oculo ♉.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude of Mars [Altit. ♂]	The bright shoulder of Orion, east [Luc.hum. Orion. or.]
11h 13¼m	18° 40⅔′		51° 0′	44 15
11h 16½m	18° 42′ among clouds [inter nubes]			43 17
11h 19m	18° 42⅙′ } better [melior] }	17° 3⅚′ 17° 4′		42 32
11h 25½m	18° 41¾′			41 9

Put here 18 42, and in the preceding 17 10⅚. [Pone hic 18 42 & in anteced. 17 10⅚.]

11 30⅚ Mars crossed the meridian, having the altitude [11 30⅚ Tranſiuit ♂ per Meridianum habens Altitud.]

	by the steel instrument [per Chalyb.]	51° 7½′ or ⅗ rather [vel ⅗ potius]
	by the revolving quadrant [per Volub.]	51° 7⅔′
Declination of Mars [Declin. ♂]		17° 3¼′ exactly [exacte]
		17° 3′
The bright shoulder of Orion, east, was then [Fuit tunc Luc. hum. Orion. or.]		35 9

Put the declination of Mars as 17° 2¼′, the altitude as 51° 7¾′. [Pone Declin. ♂ 17 2¼, Altitudinem 51 7¾.]

Afterwards Mars was taken from the bright foot of ♊. [Poſtea capiebatur ♂ a Lucido pede ♊.]

Hours, minutes [H. M.]	Distance [Diſtantia]	The bright shoulder of Orion, east [Luc. hum. Or. or.]
11^h $49\frac{5}{6}^m$	47° 35′	34 32
11^h $52\frac{1}{2}^m$	47° 32½′	33 46
11^h 55^m	47° 33¼′	33 10
11^h $57\frac{1}{2}^m$	47° 33⅙′	32 30

Around these times put the distance as 47° 33′. [*Pone circa hæc tempora diſtantiam 47 33.*]

12 45 1/12 Aldebaran crossed the meridian, having the altitude [12 45 1/12 Tranſiuit Aldebora per Meridianum habens Altitud.]

	by the steel instrument [per Chalyb.]	49° 43′
	by the revolving quadrant [per Volub.]	49° 42½′
Declination of Aldebaran [Declin.Aldeboræ]		15° 38½′
		15° 38¾′
The bright shoulder of Orion, east, was then [Fuit tunc Luc. hum. Orion. orient.]		20 1½

N.B. Here Aldebaran exceeds in declination by 1′ and falls short in altitude by ¼ on the steel instrument; for that reason I limited both of these above in Mars by so much. [*N. B. Hic in Declinatione Aldebora abundat 1 Minut. & in Altitudine deficit ¼ in Chalybeo, propterea tantum ſupra limitaui hæc vtraque in* ♂.]

For the place of Mars on 3 November, from the preceding observations. [Pro ♂ loco die 3 Nouembris ex obſeruationibus præcedentibus.]

At $11\frac{1}{3}^h$, distance of Mars from the bright star of ♈ [H. 11⅓ Diſt. ♂ a Luc. ♈]		17° 10′ 50″
	from Aldebaran [ab Aldeb.]	18° 42′ 0″
Declination of Mars, precisely, from the meridian altitude [Decl. ♂ præciſe ex alt. mer.]		17° 2′ 15″ north [B]
Angular difference of ascension of Mars from the bright star of ♈ [Ang. diff. aſc. ♂ a Luc. ♈]		17° 35′ 0″
Therefore the ascension of Mars from this [Ergo Aſc. ♂ hinc]		43° 44′ 0″
Angular difference of ascension from Aldebaran [Ang.diff.aſc.ab Aldeb.]		19° 26′ 20″
Therefore the right ascension of Mars from this [Ergo Aſc. R. ♂ hinc]		43° 45′ 40″
Right ascension, limited [Aſc. Recta limitata]		43° 44′ 50″
Resp. longitude [Reſp. Longitudo]		16° 19′ 4″ ♉
Latitude [Latitudo]		0° 16′ 26″ north [B.]

On the same day, at 12^h. [Eodem die H. 12]

Distance of Mars from the bright foot of ♊ [Diſt. ♂ a luc. pede ♊]		47° 33′
Declination of Mars as above [Declin. ♂ vt ſupra]		
Angular difference of ascension [Ang. diff. aſcenſ.]		49° 49′ 30″
Therefore the right ascension of Mars [Ergo Aſc. R. ♂]		43° 43′ 50″
Resp. longitude [Reſp. Longitudo]		16° 18′ 12″ ♉
Latitude [Latitudo]		0° 16′ 40″ north [B.]

Put, at 12^h, the longitude [Pone H. 12 Longit.]		16° 18⅓′ ♉ limited [limitata]
	latitude [Latitud.]	0° 16½′ north [B.]
Distance of Mars from the Earth in semidiameters of the Earth [Diſtantia ♂ a terra in ſemid. terræ]		600
Altitude *in meridie*, approximately [ἐν πλάτει] [Altit. in meridie ἐν πλάτει]		51° [51 g.]
Resp. parallax in the circle of altitude [Reſp. Parallaxis in circulo altit.]		3½′ [M. 3½]
From this the parallax of longitude [Inde Parallaxis Longit.]		1′ 0″ added [add.]
	latitude [Latit.]	3 15 added [add.]

Collection of the φαινομένων [Greek: phainomenōn, "appearances"] of Mars, from which its acronychal position was sought. [Collectio φαινομένων ♂ ex quibus Acronychius eius ſitus quærebatur.]

Month [Men-ſis]	Day [Dies]	Hours, minutes [H. M.]	Longitude [Longitudo]	Latitude [Latitudo]
October [Oct.]	27	$12^h\ 20^m$	18° 52¼′ ♉	0° 2⅓′ south [M.]
	28	$12^h\ 15^m$	18° 29′ 20″	0° 0′ 25″ north [B.]
	30	$8^h\ 20^m$	17° 47¼′	0° 7⅙′ north [B.]
November [Nou.]	3	$12^h\ 0^m$	16° 18⅓′	0° 19′ 45″ north [B.]

To inquire into the same more precisely from the comparison of the days 28 and 30 October. [Idem inquirere enucleatius ex collatione dierum 28 & 30 Oct.]

	Days, hours, minutes [D. H. M.]	Longitude [Longitudo]	Latitude [Latitudo]
	$28^d\ 12^h\ 15^m$	18° 29′ 20″	0° 0′ 25″ north [B.]
	$30^d\ 8^h\ 20^m$	17° 47′ 15″	0° 7′ 10″
Difference [diff.]	$1^d\ 20^h\ 5^m$	42′ 5″	6′ 45″

Resp. daily motion in longitude [Reſp. Motus diurnus Longit.]		22′ 54″
	latitude [Latit.]	3′ 40″

For inquiring into the true observed daily motion of Mars from day 28½ up to the opposition with the Sun, from a comparison of the preceding. [Pro vero motu diurno ♂ obſeruato a die 28½ vsque ad ☍ ☉ inquirendo ex collatione antecedentium.]

$5^{d}\ 3^{h}$ [D. 5 H. 3] slacken in the daily motion 1′ 0″ [M. 1 0]. What for $1^{d}\ 10^{h}$ [D. 1 H. 10]? 16″. [D. 5 H. 3 remittunt in motu diurno M. 1 0. Quid D. 1 H. 10? 16″.]

Therefore put the daily motion of Mars [Pone itaque motum diurnum ♂]	longitude [Longit.]	23′ 10″
{		
{	latitude [Latit.]	3′ 30″

Equation of time 24^{m} [Æquatio temporis M. 24.]

From these suppositions, with only our simple Sun applied, Mars is found to have been in opposition with the simple Sun on day 29 at $21^{h}\ 46^{m}$, and that in 17° 56′ 5″ ♉, with latitude 0° 5¼′ north [B.], similar to the former. [Ex his ſuppoſitis applicato vno noſtro ſimplici ☉ inuenitur ♂ fuiße in ☍ cum ſimplici ☉ Die 29 H. 21 M. 46, idque in 17 56 5 ♉ cum Latitudine 0 5¼ B. ſimili cum priori.]

For the intersection of the orbit of Mars through the ecliptic. [Pro interſectione orbitæ ♂ per Eclipticam.]

Diagram. A small line figure in the left column, left of three lines of text. A long, thin triangle: from a vertex at the left one line runs nearly level to the lower right corner, and a second line rises slowly to the upper right corner; a short vertical line joins the two right-hand corners. A letter stands at each vertex.

- A (left vertex): A (a script capital)
- B (upper right corner): B
- C (lower right corner): C (a script capital)

BAC 4° 34′ [BAC 4°34′]

BC 5′ 15″

ACB right [ACB Rectus]

Therefore CA 1° 5′. The intersection therefore falls in 16° 51′ or 16⅚° ♉. Everything having been finely weighed for the parallaxes of Mars. [Ergo CA 1° 5′. Cadit itaque interſectio in 16 51 vel 16⅚ ♉. Omnibus ſubtiliter pro Parallaxibus ♂ trutinatis.]

7 November, evening [DIE 7 NOUEMBRIS, VESPERI.]

Mars was observed from the bright star of ♈. [Obſeruabatur ♂ a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Decl.]	Altitude of Mars [Altit. ♂]	The mouth of Pegasus, west [Os Peg. occ.]
8^h 23⅙^m	15° 59¾′		38° 6½′	35 55
8^h 25¼^m	15° 59⅓′	16° 51½′	38° 15′	

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Decl.]	Altitude of Mars [Altit. ♂]	The mouth of Pegasus, west [Os Peg. occ.]
		16° 50½′		
8^h 31½^m	16° 0′		39° 11′	38 16
8^h 33⅙^m	15° 59½′	16° 50⅙′	39° 28½′	38 53
		16° 51′		

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Hours, minutes [H. M.]		Declination [Decl.]	Altitude of Mars [Altit. ♂]	The mouth of Pegasus, west [Os Peg. occ.]
8^h 43⅚^m	20° nearly [20 fere]		40° 31′	41 6
8^h 46¼^m	20° 0½′		40° 46′	41 41
8^h 48⅙^m	20° 1⅙′	16° 51′	40° 57′	
		16° 51½′		
8^h 51⅔^m	20° 0′		41° 16′	43 1

The Moon obscured Aldebaran, so that it could not be seen conveniently. [☾ obſcurauit Aldeboram, vt commode videri non poßet.]

For testing the armillae, the declination of Aldebaran was taken [Pro examine Armillarum capiebatur Declinatio Aldeboræ]	15° 58½′
	15° 38⅔′
Altitude of Aldebaran [Altit. Aldeb.]	30° 22′

13 November, evening [DIE 13 NOUEMBRIS, VESPERI.]
Mars was observed from the bright star of ♈. [Obſeruabatur ♂ a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Mars [Altit. ♂]	The first of the wing of Pegasus, west [1 alæ Peg. occid.]
7^h 50^m	14° 24½′		38° 47′	15 59
7^h 53⅙^m	14° 22½′ }	16° 35⅓′	39° 37′	16 47
	among clouds [inter nubes] }	16° 34½′		
8^h 6⅔^m	14° 24′			20 16
8^h 8⅚^m	14° 24′		40° 47′	

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Hours, minutes [H. M.]	Declination [Declin.]	Altitude of Mars [Altit. ♂]	The first of the wing of Pegasus, west [1 alæ Peg. occid.]
$8^h\ 15\frac{5}{6}^m$	21° 48¾′16° 36½′ 16° 36⅓′		22 37
$8^h\ 18^m$	21° 49′		23 11

15 November, evening [DIE 15 NOUEMBRIS, VESPERI.]

Mars was observed, when it was near the meridian, from the bright star of ♈. [Obſeruabatur ♂ cum eßet circa Meridianum, a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	Aldebaran, east [Aldeb. or.]
$9^h\ 59\frac{1}{2}^m$	13° 58½′	16° 31′ 16° 30½′		32 33
$10^h\ 2\frac{3}{4}^m$	13° 59¼′			31 45
$10^h\ 5\frac{1}{3}^m$	13° 58⅓′			31 2
$10^h\ 8\frac{1}{2}^m$	13° 58⅓′			30 19

Vice versa, Mars from the eye of ♉. [Viceverſa ♂ ab oculo ♉.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude [Altit.]	Aldebaran, east [Aldeb. or.]
$10^h\ 13^m$	22° 20½′			29 5
$10^h\ 15\frac{3}{4}^m$	22° 20⅔′ } good [bona] }	16° 30⅙′ 16° 30¾′		28 28
$10^h\ 22^m$	22° 20⅓′			26 47

10 35⅔ Mars crossed the meridian, having the altitude [10 35⅔ Tranſiuit ♂ per Meridianum habens Altit.]

by the steel instrument [per Chalyb.]	50° 34⅔′
by the revolving quadrant [per Volub.]	50° 34⅔′

Declination of Mars [Declin. ♂] 16° 29⅚′.
16° 30⅙′ Aldebaran, east, was then [Fuit tunc Aldeb. or.] 23 16

21 November, evening [DIE 21 NOUEMBRIS, VESPERI.]

Mars was observed approaching the meridian, from the bright star of ♈. [Obſeruabatur ♂ appropinquans Merid., a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	The eye of ♉, east [Oculus ♉ or.]
9^h $38\frac{5}{6}^m$	12° 51⅔′	16° 20′ with both [vtroque]	28 40
9^h $41\frac{5}{6}^m$	12° 51¾′		27 54
9^h $44\frac{1}{3}^m$	12° 51¾′	16° 20′	27 21
		16° 19¾′	

9 54⅚ Mars crossed the meridian, having the altitude [9 54⅚ Tranſiuit ♂ per Meridianum habens Altit.]

by the steel instrument [per Chalyb.]	50° 25	1/12′
by the revolving quadrant [per Volub.]	50° 24¾′	

Declination by the largest armillae [Declin. per Armill. max.]	16° 19⅔′		
	16° 19½′	Aldebaran, east, was then [Tunc fuit Aldeb. or.]	24 32

Vice versa, distance of Mars from the eye of ♉. [Viceverſa Diſt. ♂ ab oculo ♉.]

Hours, minutes [H. M.]		Declination [Declin.]	The eye of ♉, east [Oculus ♉ or.]
10^h $5\frac{1}{3}^m$	23° 37⅙′		21 50
10^h $6\frac{2}{3}^m$	23° 37′ nearly [fere]		21 30
10^h 9^m	23° 37½′		20 53

23 November, evening [DIE 23 NOUEMBRIS, VESPERI.]

Mars was observed approaching the meridian, I from the bright star of ♈. [Obſeruabatur ♂ appropinquans Meridiano, I a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of Mars [Decl. ♂]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
9^h $13\frac{1}{6}^m$	12° 35′		10 37
{ 9^h $15\frac{5}{6}^m$	12° 34⅔′		9 56
{ 9^h 23^m 40^s corrected [correct.]			

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of Mars [Decl. ♂]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
9^h 18⅙^m	12° 34⅔′	16° 18′ 16° 18⅙′	

Vice versa, from Aldebaran. [Viceverſa ab Aldebora.]

Hours, minutes [H. M.]	Declination of Mars [Decl. ♂]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
9^h 21⅔^m	23° 54′	
{ 9^h 23½^m	23° 54⅓ſ16° 18′ with both [vtroq.]	7 58
{ 9^h 31^m corrected [corr.]		
9^h 25⅚^m	23° 54½′	

9 46⅓ Mars crossed the meridian, having the altitude [9 46⅓ Tranſiuit ♂ Meridianum habens Altitud.]

	by the steel instrument [per Chalyb.]	50° 22⅔′
	by the revolving quadrant [per Volub.]	50° 23¼′
The bright star of the jaw of the Whale, east, was then [Fuit tunc Luc. Mand. Cete or.]		1 56½

Calculation for the place of Mars for the day 23 November. [Calculus pro loco ♂ ad diem 23 Nouembris.]

At 9½^h, distance of Mars from the bright star of ♈ [H. 9½ Diſt. ♂ a Lucida ♈]		12° 34′ 45″
	Aldebaran [Aldebora]	23° 54′ 20″
Declination of Mars [Declin. ♂]		16° 17½′ north [B.]
Right ascension of Mars, limited [Aſc. R. ♂ limitata]		38° 18′
Resp. longitude [Reſp. Longitudo]		11° 6¾′ ♉
Latitude [Latitudo]		1° 40¼′ north [B.]

4 December, evening [DIE 4 DECEMBRIS, VESPERI.]

Mars was observed *near its station*, approaching, near its direction, the trine of the Sun, for examining the semidiameter of the orb. I. from the first of the wing of Pegasus. [Obſeruabatur ♂ *prope ſtationem*, iuxta directionem appropinquans △ ☉, pro ſemidiametro orbis examinanda. I. a prima alæ Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	Aldebaran, east [Aldeb. or.]
8^h $19\frac{1}{3}^m$	54° 23½′	16° 21¼′	49° 50′	
		16° 21′		
8^h $21\frac{2}{3}^m$	54° 22⅔′			
8^h $24\frac{1}{6}^m$	54° 22½′	16° 21½′		34 55
		16° 21′		
8^h 26^m	54° 22¾′			34 25

Vice versa, from Aldebaran. [Viceverſa ab Aldebora.]

Hours, minutes [H. M.]		Declination [Declin.]	Altitude [Altit.]	Aldebaran, east [Aldeb. or.]
8^h 29^m	24° 40⅔′			33 40
8^h $31\frac{1}{3}^m$	24° 40½′			33 0
8^h $33\frac{2}{3}^m$	24° 41′	16° 21⅓′		32 24
		16° 21′		

8 59 Mars crossed the meridian, having the altitude [8 59 Tranſiuit ♂ per Meridianum habens Altit.]

by the steel instrument [per Chalyb.]	50° 26⅚′
by the revolving quadrant [per Volub.]	50° 27′
the eye of ♉, east, was then [Fuit tunc oculus ♉ or.]	25 28

5 December, evening [DIE 5 DECEMBRIS, VESPERI.]

Mars was observed approaching the meridian, I. from the bright star of ♈. [Obſeruabatur ♂ appropinquans Meridiano, I. a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declinatio]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
7^h 55^m	11° 50½′		
8^h 1^m	11° 51′ twice [bis]		
8^h $4\frac{1}{4}^m$	11° 51′	16° 23′ with both [vtroq.]	11 5

N.B. These distances were taken while Mars was among clouds, the same shining through them at least at times. [N. B. Hæ diſtantiæ inter nubes ♂ exiſtente captæ ſunt, interdum ſaltem per illas eodem reſplendente.]

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Hours, minutes [H. M.]		Declination [Declinatio]	The bright star of the jaw of the Whale, east [Luc. Mand. Cete or.]
8^h $11¼^m$	24° 40¼′		9 16⅔
8^h 14^m	24° 40¼′		8 35
8^h $16⅚^m$	24° 40⅓′ }	16° 22¾′	
	among clouds [inter nubes] }	16° 23′	

8 41 Mars crossed the meridian, having the altitude [8 41 Tranſiuit ♂ per Meridianum habens altitud.]

by the steel instrument [per Chalyb.] 50° 27¾′

Mars had then passed the meridian by about one degree. For *in ipſo Meridie* it was not clear. [Fuit tunc ♂ transgreßus Meridianum circiter unum gradum. Nam in ipſo Meridie non fuit ſerenum.]

N.B. One third of one minute is to be added, as appeared on the following day. [*N.B. Addenda eſt tertia pars vnius minuti, vt patuit die ſequenti.*]

Therefore the true altitude of Mars was 50° 28⅙′. [*Ergo vera Altitudo ♂ fuit 50 28⅙.*]

N.B. From this distance of Mars from Aldebaran, 24° 40¼′, which anticipates yesterday's, 24° 40¾′, by at least half a minute, it is gathered that Mars was not far from the second station, being scarcely beyond ½ day from it, whereas the Prutenic calculation makes it stationary three days before, namely before day 1 December. But the Alphonsine fits better, placing its station on 3 December. Mars, moreover, should have advanced 4 minutes from the day before according to both calculations, whereas in the sky itself it did not complete even one. [*N. B. Ex hac diſtantia ♂ ab Aldebora 24 40¼, quæ heſternam 24 40¾ ſaltem dimidio minuto anticipat, colligitur ♂ non longe a ſtatione ſecunda abfuiße, vtpote vix vltra ½ diem, cum tamen Calculus Prutenicus ipſum faciat triduo ante ſtationarium, vtpote ante diem 1 Decembris: At Alphonſinus rectius quadrat, ponens ſtationem eius Die 3 Decembris. Debuit autem ♂ ab heſterna die iuxta vtrumque Calculum proceßiße 4 minutis, cum ne vnum quidem in ipſo cœlo abſoluerit.*]

N.B. These observations of Mars can be examined for its place both by triangles from the pole of the ecliptic and by ascensional differences with respect to the equator; but the former method is superior for (weighing?). [*N. B. Hæ obſeruationes ♂ poßunt examinari pro loco eius, tam per triangulos a polo Eclipticæ quam per differentias aſcenſionales ratione Æquatoris, præſtat vero prior modus ad [trutinam?].*]

6 December, evening [DIE 6 DECEMBRIS, VESPERI.]

Mars was observed approaching the meridian, I. from the first of the wing of Pegasus. [Obſeruabatur ♂ appropinquans Meridiano, I. a prima alæ Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declin.]	The left shoulder of Orion, east [Sin. hum. Orion. or.]
8^h $25\frac{2}{3}^m$	54° 25′		46 2
8^h $27\frac{3}{4}^m$	54° 24½′		45 27
8^h $29\frac{1}{2}^m$	54° 25′	16° 24⅚′	
		16° 25′	
8^h $31\frac{1}{6}^m$	54° 24⅔′		44 41

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Hours, minutes [H. M.]	Declination [Declin.]	The left shoulder of Orion, east [Sin. hum. Orion. or.]
8^h 35^m	24° 39¼′	43 36
8^h 37^m	24° 39½′ 16° 25⅙′	43 9
	16° 25′	
8^h 39^m	24° 39⅓′	

Afterwards, Mars from the bright star of ♈. [Poſtea ♂ a Lucida ♈.]

Hours, minutes [H. M.]	Declination [Declin.]	The left shoulder of Orion, east [Sin. hum. Orion. or.]
8^h $44\frac{1}{3}^m$	11° 51′	41 11
8^h $46\frac{5}{6}^m$	11° 51′	40 26

8^h 55^m Mars crossed the meridian, having the altitude [8 55 Tranſiuit ♂ per Meridianum habens Altitud.]

by the steel instrument [per Chalyb.]	50° 30′
by the revolving quadrant [per Volub.]	50° 29⅚′

Declination of Mars by the armillae [Declin. ♂ per Armillas]	16° 25⅙′		
	16° 25′	the left shoulder of Orion, east, was then [Fuit tunc ſiniſter humer. Orionis or.]	38 24

Then the altitude of Mars was repeated, when it had passed the meridian by about one degree, in order to derive from the interval of time the altitude of the same yesterday *in Meridie*. [Deinde ♂ altitudo iterata eſt, cum circiter vnum gradum Meridianum eßet transgreßus, ad heſternam in Meridie eiusdem altitudinem ex temporis interuallo eliciendam.]

8 57⅔ Altitude of Mars 50° 29⅔′. [8 57⅔ Altit. ♂ 50 29⅔.]

It is therefore established that at least a third part of one minute must be added to yesterday's meridian altitude, observed by the steel instrument in both cases; see above. [Conſtat igitur addendam eße Altitudini Meridianæ heſternæ ſaltem tertiam vnius minuti partem, per Chalybeum vtrobique obſeruatæ, vide ſupra.]

For the place of Mars from the observations of day 6. [Pro loco ♂ ex obſeruationibus Diej 6.]

$8^h\ 25^m$, distance of Mars from the first of the wing of Pegasus [H. 8 M. 25 Diſt. ♂ a prima alæ Peg.]		54° 25′
Declination of Mars [Declin. ♂]		16° 25′ north [B.]
Declination of the first of the wing [Declin. primæ alæ]		13° 3′ 42″
Right ascension of the same [Aſc. R. eiusdem]		341° 10′
Angular difference of ascension [Ang. diff. aſcenſ.]		56° 19′ 55″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]		37° 29′ 55″

Vice versa, from Aldebaran. [Vice verſa ab Aldebora.]

8 35 Distance of Mars from Aldebaran [8 35 Diſt. ♂ ab Aldeb.]		24° 39¼′
Declination of Aldebaran [Declin. Aldeb.]		15° 37′ 30″
Right ascension of the same [Aſc. R. eiusdem]		63° 12′
Angular difference of ascension [Ang. diff. aſcenſ.]		25° 39′ 30″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]		37° 32′ 30″
Right ascension, limited [Aſc. Recta limitata]		37° 30′ 13″[1]
Resp. longitude [Reſp. Longitudo]		10° 25′ 35″ ♉
	latitude [Latitudo]	1° 29′ 55″
$8\frac{1}{2}^h$, distance of Mars from the jaw [H. 8½ Diſt. ♂ a Mandib.]		54° 25′
Declination of Mars [Declin. ♂]		16° 24½′
Angular difference of ascension [Ang. diff. aſcenſ.]		56° 19′ 58″
Right ascension of Mars [Aſc. R. ♂]		37° 29′ 58″
$8\frac{3}{5}^h$, distance of Mars from Aldebaran [H. 8⅗ Diſt. ♂ ab Aldeb.]		24° 39⅓′
Angular difference of ascension [Ang. diff. aſcenſ.]		25° 39⅓′
Right ascension of Mars [Aſc. R. ♂]		37° 32′ 40″
Right ascension, limited [Aſc. Recta limitata]		37° 31⅓′
Resp. longitude [Reſp. Longitudo]		10° 26′ 16″ ♉
	latitude [Latitudo]	1° 29′ 4″ north [B.]

14 December, evening [DIE 14 DECEMBRIS, VESPERI.]

8^h $37\frac{2}{3}^m$ Mars crossed the meridian, having the altitude [H. 8 M. 37⅔ Tranſiuit ♂ per Meridianum habens Altitud.]			
	by the steel instrument [per Chalyb.]	50° 50⅚′	
	by the revolving quadrant [per Volub.]	50° 51¼′	
	Declination of Mars [Declinatio ♂]	16° 45′	among rather sparse clouds [Inter nubes rariuſculas]
		16° 44⅚′	
The outermost of the wing of Pegasus, west [Extrema alæ Pegaſi occid.]		40 0	
		exactly [exacte]	

[1] It should be 37° 31′ 13″, which agrees perfectly with the other right ascension for $8\frac{1}{2}^h$. [Debet eße 37° 31′ 13″, quæ cum altera Aſc. R. pro hora 8½ exquiſite conſentit.]

17 December, evening [DIE 17 DECEMBRIS, VESPERI.]

Mars was observed, I. from the first of the wing of Pegasus. [Obſeruabatur ♂ I. a prima alæ Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
6^h $0\frac{2}{3}^m$	55° 19¾′ doubtful [dubia]		4 38
6^h $2\frac{5}{6}^m$	{ 55° 20¾′ twice [bis]	16° 56⅓′	4 7
	{ better [melior]	16° 56½′	*Mars was high enough, lacking all refraction.* [*Mars fuit ſatis altus carens omni refractione.*]
6^h $6\frac{1}{6}^m$	55° 20½′		
6^h $8\frac{5}{6}^m$		16° 56½′	
		16° 56½′	

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Hours, minutes [H. M.]		Declination [Declin.]	The outermost of the wing of Pegasus, east [Extr. alæ Peg. or.]
6^h 11^m	23° 40¾′	16° 56⅔′	2 0
		16° 56½′	
6^h 13^m	23° 40⅚′		

Again, Mars from Aldebaran. [Rurſus ♂ ab Aldeb.]

Hours, minutes [H. M.]	Declination [Declin.]	The bright star of the jaw of the Whale, east [Luc. mand. Cete or.]
6^h $21\frac{1}{2}^m$	23° 41¼′ 16° 56½′	41 28
	16° 56¾′	

The two earlier observations on Mars are the better ones. For after Jupiter had been observed, clouds arose and hindered the observation of Mars. [Duæ priores obſeruationes in ♂ ſunt meliores. Poſtquam enim ♃ obſeruatus fuit, nubes exortæ ſunt & ♂ obſeruationem impediuerunt.]

For correcting the armillae, the declination of Aldebaran was taken, 15° 37⅝′ / 15° 38′, in nearly the position in which Mars was observed before, at 7^h $56\frac{2}{3}^m$. [Pro corrigendis Armillis capiebatur Declin. Aldeboræ 15 37⅝ / 15 38 eo fere ſitu quo antea ♂ obſeruatus eſt, H. 7 M. 56⅔.]

Afterwards Mars was observed approaching the meridian, from the bright star of ♈. [Poſtea obſeruabatur ♂ appropinquans Meridiano a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declin.]	Altitude of Mars [Altit. ♂]
7^h $5\frac{1}{2}^m$	12° 40′		49° 47′
7^h $10\frac{1}{4}^m$		16° 55⅔′ with one pinnule [vno pinn.]	

Afterwards, some clearness having been restored, when Mars had passed the meridian, its altitude at 8^h 26^m was [Poſtea reſtituta aliqua ſerenitate, vbi ♂ Meridianum erat transgreßus, H. 8 M. 26 fuit eius Altitudo]

	by the revolving quadrant [per Volubilem]	50° 34′
	Azimuth of Mars from the Mer. to the west [Azimuth ♂ a Mer. ad occ.]	12° 0′
	The bright star of the jaw of the Whale, west [Lucida Mand. Cete occ.]	6 10
	Declination of Mars [Declin. ♂]	16° 56⅓′
		16° 56½′
8 37 Altitude of Mars by the revolving quadrant [8 37 Altitudo ♂ in Volubili]		50° 10′
	Azimuth	16° 18′

The declination of Mars around the middle of these observations can be taken as 16° 56¼′ north, from the correction by Aldebaran. [*Declinatio ♂ circa medium harum obſeruationum aßumi poterit 16 56¼ B. ex correctione per Aldeboram.*]

Distance from the first of the wing of Pegasus [*Diſtantia a prima alæ Peg.*]	*55° 20½′*
from Aldebaran [*ab Aldebora*]	*23° 40⅝′*

For the place of Mars on 17 December. [Pro loco ♂ die 17 Decembris.]

6^h $6\frac{1}{6}^m$, distance from the first of the wing of Pegasus [H. 6 M. 6⅙ Diſt. a prima alæ Peg.]		55° 20′ 30″
Right ascension of the first of the wing [Aſc. R. primæ alæ]		341° 10′
Declination of the same [Declin. eiusdem]		13° 3′ 42″
Angular difference of ascension [Ang. diff. aſcenſ.]		57° 20′ 56″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]		38° 30′ 56″
Distance of Mars from Aldebaran [Diſt. ♂ ab Aldeb.]		23° 40⅝′
Right ascension [Aſc. R.]		63° 12′
Declination of the same [Declin. eiusdem]		15° 37′ 20″
Angular difference of ascension [Ang. diff. aſcenſ.]		24° 38′ 52″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]		38° 33′ 8″
Right ascension, limited [Aſcenſio Recta limitata]		38° 32′ 2″
Resp. longitude [Reſp. Longitudo]		11° 31′ 27″ good [bona]
	latitude [Latitudo]	1° 40′ 44″ north [B.]

18 December, evening [DIE 18 DECEMBRIS, VESPERI.]

Mars was observed from the first of the wing of Pegasus. [Obſeruabatur ♂ a prima alæ Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declinatio]	The mouth of Pegasus, west [Os Pegaſi occid.]
5^h $49\frac{1}{4}^m$	55° 29⅝′		43 7
5^h $51\frac{1}{6}^m$	55° 29¾′		43 38
5^h $52\frac{1}{2}^m$	55° 29⅝′	16° 59⅝′	44 0
Put [*Pone*]	*55° 29⅝′*	16° 59⅔′	

Vice versa, Mars from the eye of ♉. [Viceverſa ♂ ab oculo ♉.]

Hours, minutes [H. M.]		Declination [Declinatio]	The mouth of Pegasus, west [Os Pegaſi occid.]
5^h $56\frac{1}{2}^m$	23° 31⅙′		44 46
5^h $58\frac{2}{3}^m$	23° 31¼′	17° 0′ with both [vtroq.]	45 24
6^h $3\frac{1}{3}^m$	23° 31⅓′	17° 0′	46 25
Put [*Pone*]	*23° 31¼′*	17° 0⅙′	

Then Mars from the bright star of ♈. [Deinde ♂ a Lucida ♈.]

Hours, minutes [H. M.]	Declination [Declinatio]	The first of the wing of Pegasus, west [1 alæ Peg. occ.]
$6^h\ 14^m$	12° 38′	29 2½
$6^h\ 15½^m$	12° 38½′ 17° 0⅙′	29 23
	17° 0′	
$6^h\ 16½^m$	12° 38⅙′	29 37
Put [*Pone*]	*12° 38¼′*	

Vice versa, from the northern horn of ♉. [Viceverſa a Boreali cornu ♉.]

Hours, minutes [H. M.]	Declination [Declinatio]	The first of the wing of Pegasus, west [1 alæ Peg. occ.]
$6^h\ 19^m$	35° 20⅙′	30 15
$6^h\ 20¾^m$	35° 20′	30 45
$6^h\ 22^m$	35° 19¾′	31 1
Put [*Pone*]	*35° 20′*	

Afterwards Mars was observed again approaching the meridian. I. from the first of the wing of Pegasus. [Poſtea rurſus obſeruabatur ♂ appropinquans Meridiano. I. a prima alæ Pegaſi.]

Hours, minutes [H. M.]	Distance [Diſtantia]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Extr. alæ Peg. occ.]
$7^h\ 34^m$	55° 29¼′[1]		
$7^h\ 35¾^m$	55° 30′		
$7^h\ 37½^m$	55° 30⅓′		
$7^h\ 38⅚^m$	55° 30⅓′		
Put the distance here [*Pone hic diſt.*]	*55° 30⅙′*		

[1] Struck through with lines. [Lineis inducta.]

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Hours, minutes [H. M.]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Extr. alæ Peg. occ.]
$7^h\ 41⅓^m$	23° 30⅔′ 7° 0′ with both [vtroque]	
$7^h\ 43⅙^m$	23° 30⅚′	
{ $7^h\ 45^m$	23° 31′	34 27
{ $7^h\ 43^m\ 27^s$ corrected [corr.]		
$7^h\ 46⅔^m$	23° 31⅙′	34 52
$7^h\ 48⅙^m$	23° 30⅚′ 7° 0⅙′ with both [vtroq.]	35 20
Put the distance here [*Pone hic diſt.*]	*23° 31′*	

Afterwards, Mars from the bright star of ♈. [Poſtea ♂ a Lucida ♈.]

Hours, minutes [H. M.]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Extr. alæ Peg. occ.]
{ 7^h $51\frac{3}{4}^m$	12° 39⅙′	36 12½
{ 7^h 52^m corrected [corr.]		
7^h $53\frac{1}{2}^m$	12° 39′	36 38
7^h $55\frac{2}{5}^m$	12° 39′ 17° 0⅓′	37 1
	17° 0⅙′	
7^h $56\frac{3}{4}^m$	12° 39′	37 29

Vice versa, Mars from the bright foot of ♊. [Viceverſa ♂ a Lucido pede ♊.]

Hours, minutes [H. M.]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Extr. alæ Peg. occ.]
7^h $59\frac{1}{2}^m$	52° 20¼′ 17° 0⅙′	38 6
	17° 0⅓′	
8^h 1^m	52° 21′	38 30
8^h $2\frac{2}{3}^m$	52° 20⅙′	38 51
8^h $4\frac{1}{6}^m$	52° 20′	39 15

8^h $9\frac{1}{2}^m$ Mars crossed the meridian, having the altitude [8 9½ Tranſiuit ♂ per Merid. habens Altitudinem]

on the steel instrument [in Chalyb.]	51° 4¾′
on the revolving quadrant [in Volub.]	51° 4⅝′

Declination of Mars [Declinatio ♂]	17° 0⅙′		
	17° 0′	the bright star of the jaw of the Whale, east, was exactly [Fuit Lucida Mandib. Cete orient. exacte]	1 38
Declination of Aldebaran [Declin. Aldeboræ]	15° 37⅙′		
	15° 37½′		

For examining the sextant, the distance of the bright star of ♈ and Aldebaran was taken [Pro examinando Sextante accipiebatur diſtantia Lucidæ ♈ & Aldeboræ]

	35° 31⅙′
	35° 31¼′

	35° 31⅓′ twice [bis]
	35° 31½′
	35° 31⅙′
By the other, new sextant [*Per alterum Sextantem nouum*]	*35° 32⅙′*
Afterwards once more, a little more. [*Poſtea adhuc ſemel paulo plus.*]	
But again more exactly, twice, yet less [*Sed denuo exactius bis, minus tamen*]	*35° 32′*

Then the distances of Mars were taken again by the new sextant, since it showed the true distance of the bright star of ♈ and Aldebaran more precisely. [Deinde denuo capiebantur diſtantiæ ♂ per Sextantem nouum, ſiquidem is præciſius veram diſtantiam Lucidæ ♈ & Aldeboræ exhibebat.]

I. Mars from the bright star of ♈. [I. ♂ a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of Mars [Decl. ♂]	The bright star of the jaw of the Whale, west [Luc. Mand. Cete occid.]
8^h $51¼^m$	12° 42′	17° 0′	8 51
		17° 0⅙′	

Hours, minutes [H. M.]	Distance [Diſt.]	Declination of Mars [Decl. ♂]	The bright star of the jaw of the Whale, west [Luc. Mand. Cete occid.]
8^h $54¼^m$	12° 42′		9 40
8^h $56⅔^m$	12° 40⅚′1	17° 0′ with one [vno]	10 14
9^h $1¾^m$	12° 42′		11 32
9^h $3⅚^m$	12° 42′		12 13

Put the distance here 12° 42′ and the declination 16° 59½′. [*Pone hic diſt. 12 42 & decl. 16 59½.*]

Vice versa, Mars from Aldebaran by the same new sextant. [Viceverſa ♂ ab Aldebora per eundem Sextantem nouum.]

Hours, minutes [H. M.]		Declination of Mars [Decl. ♂]	The bright star of the jaw of the Whale, west [Luc. Mand. Cete occid.]
9^h $9⅔^m$	23° 32⅓′		13 37
9^h $13⅔^m$	23° 33′1	17° 0⅓′	14 36
		17° 0′	
9^h 15^m	23° 31½′1		15 0
9^h $17⅖^m$	23° 32½′		15 26½
9^h $20⅓^m$	23° 32½′		16 17
9^h $22⅔^m$	23° 32⅔′		16 48
9^h 33^m	23° 32⅔′		
Put for these [*Pone pro his*]	*23° 32½′*		

9^h $46\frac{1}{6}^m$ Aldebaran crossed the meridian, having the altitude [9 46⅙ Tranſiuit Aldebora per Meridianum habens Altitud.]		
	by the steel instrument [per Chalyb.]	49° 43⅔′
	by the revolving quadrant [per Volub.]	49° 42⅚′

For the place of Mars on 18 December, by the old sextant. [Pro loco ♂ die 18 Decembris per veterem Sextantem.]

$7\frac{2}{3}^h$, distance of Mars from the first of the wing of Pegasus [H. 7⅔ Diſt. ♂ a prima alæ Peg.]	55° 30¼′
Declination of Mars [Declin. ♂]	16° 58½′ north [B.]
Declination of the first of the wing of Pegasus [Decl. primæ alæ Peg.]	13° 3′ 42″
Right ascension of the same [Aſc. R. eiusdem]	341° 10′
Angular difference of ascension [Ang. diff. aſcenſ.]	57° 31′ 1″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]	38° 41′ 1″

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Distance of Mars from Aldebaran [Diſt. ♂ ab Aldeb.]		23° 30⅚′
Declination of Aldebaran [Decl. Aldeb.]		15° 37′ 30″
Right ascension of the same [Aſc. R. eiusdem]		63° 12′
Angular difference of ascension [Ang. diff. aſcenſ.]		24° 28′ 31″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]		38° 43′ 29″
Right ascension, limited [Aſc. Recta limitata]		38° 42′ 15″
Resp. longitude [Reſp. Longitudo]		11° 41½′ ♉
	latitude [Latitudo]	1° 40′ 0″ north [B.]

But by the new sextant. [Per Nouum vero Sextantem.]

$9\frac{1}{6}^h$, distance of Mars from the bright star of ♈ [H. 9⅙ Diſt. ♂ a Luc. ♈]	12° 42′
Declination of the same [Decl. eiusdem]	21° 31′ 33″
Right ascension of the same [Aſc. R. eiusdem]	26° 9′
Angular difference of ascension [Ang. diff. aſcenſ.]	12° 33′ 58″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]	38° 42′ 58″
Vice versa, distance of Mars from Aldebaran [Vice verſa Diſt. ♂ ab Aldeb.]	23° 32½′
Angular difference of ascension [Ang. diff. aſcenſ.]	24° 30′ 53″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]	38° 41′ 7″

[1] Struck through with lines. [Lineis inducta.]

Right ascension, limited [Aſc. R. limitata]		38° 41′ 55″
Difference of the sextants [Differentia Sextantum]		20″.
Therefore the limited ascension [Ergo limitata Aſcenſio]		38° 42′ 5″
Resp. longitude [Reſp. Longitudo]		11° 41′ 19″ ♉
	latitude [Latitudo]	1° 40′ 3″ north [B.]

By the old sextant. [Per veterem Sextantem.]

8^h 0^m, distance of Mars from the bright star of ♈ [H.8.0 Diſt. ♂ a Luc. ♈]		12° 39′
Angular difference of ascension [Ang. diff. aſcenſ.]		12° 30′ 34″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]		38° 39′ 34″
Vice versa, distance of Mars from the bright foot of ♊ [Viceverſa Diſt. ♂ a Luc. pede ♊]		52° 20′ 20″
Declination of the bright foot of ♊ [Decl. Luc. pedis ♊]		16° 40′ 31″
Right ascension of the same [Aſc. R. eiusdem]		93° 33′ 28″
Angular difference of ascension [Ang. diff. aſcenſ.]		54° 52′ 24″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]		38° 41′ 4″
Right ascension, limited [Aſc. Recta limitata]		38° 40′ 19″
Resp. longitude [Reſp. Longitudo]		11° 39′ 45″ ♉
	latitude [Latitudo]	1° 40′ 34″ north [B.]

8^h⅔ There results from all the preceding observations the limited longitude [H. 8⅔ Prouenit ex omnibus obſeruationibus antecedentibus limitata Longitudo]		11° 41′ 0″ ♉
	latitude [Lati-tudo]	1° 40′ 0″ north [B.]

23 December, evening [DIE 23 DECEMBRIS, VESPERI.]

Mars was observed approaching the meridian. I. from the bright star of ♈. [Obſeruabatur ♂ appropinquans meridiano. I. a Lucida ♈.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Ext. alæ Peg. occ.]
7^h 21½^m	13° 22⅔′		36 27
7^h 24⅚^m	13° 23¼′		37 32

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Ext. alæ Peg. occ.]
7^h 26¼^m	13° 23¼′	17° 21⅚′	37 47

Hours, minutes [H. M.]	Distance [Diſt.]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Ext. alæ Peg. occ.]
		17° 21⅝′	
$7^h\ 30^m$	13° 23′		38 30

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

Hours, minutes [H. M.]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Ext. alæ Peg. occ.]
$7^h\ 34½^m$	22° 38⅓′	39 46

$7^h\ 41⅔^m$ Mars crossed the meridian, having the altitude [7 41⅔ Tranſiuit ♂ per Meridianum habens altitud.]

	by the steel instrument [per Chalyb.]	51° 26′
	by the revolving quadrant [per Volub.]	51° 26⅓′
The bright star of the jaw of the Whale, east, was then [Tunc fuit Luc. Mand. Cete or.]		0 42

Hours, minutes [H. M.]	Declination [Declinatio]	The outermost of the wing of Pegasus, west [Ext. alæ Peg. occ.]
$7^h\ 45½^m$	22° 38½′	43 9[1]
$7^h\ 48⅙^m$	22° 38½′ 17° 21½′	43 16
	17° 21⅙′	

For examining the old sextant, recently restored, there was taken [Pro veteri Sextante recens inſtaurato examinando capiebatur]

$7^h\ 52⅔^m$, distance of the bright star of ♈ and Aldebaran [H. 7 M. 52⅔ Diſtantia Lucidæ ♈ & Aldeb.] 35° 32½′

Repeated [Repetita] 35° 32½′

For the place of Mars on 23 December. [Pro loco ♂ die 23 Decembris.]

$7⅖^h$, its distance from the bright star of ♈ [H.7⅖ Diſtantia eius a Luc. ♈]	13° 23⅙′
Angular difference of ascension [Ang. diff. aſcenſ.]	13° 29′ 40″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]	39° 38′ 40″

Vice versa, Mars from Aldebaran. [Viceverſa ♂ ab Aldebora.]

7⅔ʰ, distance of Mars from Aldebaran [H. 7⅔ Diſt. ♂ ab Aldeb.]		22° 38½′
Angular difference of ascension [Ang. diff. aſcenſ.]		13° 33′ 32″
Therefore right ascension of Mars [Ergo Aſc. R. ♂]		39° 38′ 28″
Right ascension, limited [Aſcenſio Recta limitata]		39° 38′ 34″
Resp. longitude [Reſp. Longitudo]		12° 39′ 45″ ♉
	latitude [Latitudo]	1° 44′ 31″ north [B.]

Observations of Venus [OBSERUATIONES VENERIS.]

1 January, evening [DIE 1 JANUARIJ, VESPERI.]

Venus was observed first, then Jupiter, as follows[2]. [Obſeruabantur ♀ primum, deinde ♃ vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Azimuth of Venus [Azim. ♀]	Altitude of Venus [Altit. ♀]	Declination of Venus [Declin. ♀]	Venus on the equator [♀ in æquat.]
3ʰ 48ᵐ 30ˢ	12° 0′	24° 47½′	8° 40⅙′	
			8° 40½′	
3ʰ 52ᵐ 20ˢ	13° 0′	24° 40¼′		11° 55′
3ʰ 56ᵐ 15ˢ	14° 0′	24° 32½′	8° 40⅓′	
			8° 40½′	
4ʰ 3ᵐ 30ˢ	16° 0′	24° 7⅔′	8° 40½′	
			8° 40¼′	

Jupiter too was observed in the same way. [Simili modo & ♃ obſeruabatur.]

2 January, evening [DIE 2 JANUARIJ, VESPERI.]

In the usual manner Venus and afterwards Jupiter were observed. [Conſueto more obſeruabantur ♀ & poſtea ♃.]

Hours, minutes, seconds [H. M. S.]	Azimuth of Venus [Azim. ♀]	Altitude of Venus [Altit. ♀]	Declination of Venus [Declin. ♀]	Venus, west, on the equator [♀ occid. in æquat.]
4ʰ 1ᵐ 0ˢ	16° 0′	24° 42⅔′	8° 13¾′	14° 40′
			8° 13½′	
4ʰ 8ᵐ 20ˢ	18° 0′	24° 25⅔′	8° 13⅓′	16° 28′
			8° 13½′	
4ʰ 12ᵐ 0ˢ	19° 0′	24° 15′	8° 13⅓′	
			8° 13½′	
4ʰ 16ᵐ 0ˢ	20° 0′	24° 5′ good [bona]		18° 23′

[1] Thus in the codex. It should be about 42° 30′. [Sic in codice. Debet eße circiter 42° 30′.] [2] Compare above, p. 428 ff., among the observations of Jupiter. [Cf. ſupra p. 428 ſq. inter obſeruationes Iovis.]

Afterwards Venus was observed in equatorial distance from the Vulture. [Poſtea obſeruabatur ♀ in æquatoria diſtantia a Vulture.]

Hours, minutes, seconds [H. M. S.]	The Vulture, west [Vultur occ.]	Venus, west [♀ occ.]	Declination of Venus [Declin. ♀]
$4^h\ 47^m\ 20^s$	{ 71 57⅔	26 9	8° 12⅔′
	{ uncertain, among clouds [incerta inter nubes]		8° 12½′
$4^h\ 50^m\ 20^s$	72 42¾	26 50	
$4^h\ 53^m\ 15^s$	73 25¾	27 34½	8° 12⅚′ with one [vno]

These distances of Venus from the Vulture were observed among dense, recurring clouds, and they are therefore to be limited by putting, at $4\frac{5}{6}^h$, the equatorial distance of Venus and the Vulture as 45° 51½′, for finding the place of Venus. The declination of Venus, however, can be had precisely from a comparison of the declination together with the altitude and azimuth observed earlier this evening. N.B. In this, which must also be examined more scrupulously, the crux turns: that Venus on this very day was crossing the ecliptic, ascending, according to the calculation of Copernicus, or was immediately about to cross it. [Hæ diſtantiæ ♀ a Vulture obſeruabantur inter denſas nubes recurrentes, ideoque limitandæ ponendo H. 4⅚ Diſtantiam æquatoriam ♀ & Vulturis 45 51½ pro ♀ loco indagando. Declinatio autem ♀ præciſe haberi poteſt ex collatione Declinationis vna cum Altitudine & Azimuth antea hac veſpera obſeruatis, N. B. in qua etiam ſcrupuloſius inquirenda cardo vertitur, quod ♀ hoc ipſo die Eclipticam tranſiret aſcendendo, iuxta calculum Copernici, vel ſtatim tranſitura.]

19 January, evening [DIE 19 JANUARIJ, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Declination of Venus, Mer. [Decl. ♀ Mer.]	Azimuth [Azim.]	Altitude [Altit.]	Venus, west [♀ occid.]
$5^h\ 0^m\ 5^s$	1° 29⅔′	43° 0′	24° 46⅓′	
	1° 29½′			
$5^h\ 7^m\ 40^s$	1° 29⅓′	45° 0′	24° 0¾′	
	1° 29¾′			
$5^h\ 19^m\ 10^s$	1° 29′	48° 0′	22° 47′	43 15
	1° 29⅔′			

For examining the armillae, the outermost of the wing of Pegasus was observed afterwards, as follows. [Pro examinandis Armillis obſeruabatur extrema alæ Pegaſi poſtea vt ſequitur.]

6 12 0 declination [6 12 0 Declinatio]	12° 57⅔′
	12° 57⅙′

This star, moreover, stood at such an altitude when it was observed that it excluded all refraction. [Fuit autem hæc ſtella cum obſeruaretur in illa altitudine, vt refractionem omnem excluderet.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Diſt. ♀ a Vult.]	Altitude of Venus [Alt. ♀]	Declination of Venus [Decl. ♀]	Aldebaran, east [Aldeb. orient.]
$5^h\ 38^m$	27° 55′			28 9
$5^h\ 40^m\ 40^s$	27° 55⅙′			
$5^h\ 44^m\ 50^s$	27° 54⅓′		1° 29′ with one [vno]	

Vice versa, from the bright star of the jaw of the Whale. [Viceverſa a Luc. Mandib. Cete.]

Hours, minutes, seconds [H. M. S.]	Altitude of Venus [Alt. ♀]	Declination of Venus [Decl. ♀]	Aldebaran, east [Aldeb. orient.]
$5^h\ 53^m\ 50^s$	53° 3½′		24 15
$5^h\ 57^m\ 25^s$	53° 3⅓′		
$5^h\ 58^m\ 55^s$	53° 3⅔′ 18° 20′	1° 28¼′	
		1° 28⅓′	

This evening it was fairly clear. [Erat hac veſpera ſatis ſerenum.]

24 January, evening [DIE 24 JANUARIJ, VESPERI.]

Afterwards[1] Venus was observed from the fixed stars, as follows. [Poſtea obſeruabatur ♀ a fixis vt ſequitur.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the first of the wing of Pegasus [Diſt. ♀ a 1 alæ Peg.]	Declination M. [Decl. M.]	Altitude of Venus [Altit. ♀]	The left foot of Orion, east [Sin. pes Orion. or.]
$6^h\ 4^m\ 20^s$	14° 50½′		15° 45′	23 51
$6^h\ 7^m\ 5^s$	14° 51⅙′	0° 8′	15° 27′	23 13
		0° 7⅔′		
$6^h\ 10^m\ 35^s$	14° 51′		15° 0′	22 26

Vice versa, the distance from the bright star of ♈. [Viceverſa diſtantia a Lucida ♈.]

Hours, minutes, seconds [H. M. S.]	Declination M. [Decl. M.]	Altitude of Venus [Altit. ♀]	The left foot of Orion, east [Sin. pes Orion. or.]
$6^h\ 20^m\ 45^s$	42° 26′ 0° 8′	13° 44′	
	0° 8⅙′		
$6^h\ 24^m\ 15^s$	42° 27′	13° 15′	19 1
$6^h\ 27^m\ 15^s$	42° 25½′ 0° 9½′	12° 54′	18 17½
	0° 9′		

Hours, minutes, seconds [H. M. S.]	Declination M. [Decl. M.]	Altitude of Venus [Altit. ♀]	The left foot of Orion, east [Sin. pes Orion. or.]
$6^h\ 33^m\ 20^s$	42° 25⅙′	12° 7′	16 54

The same evening, at about 7^h, for examining the sextant, which we used for the most part this year and the year before in exploring the distances of the stars, we carefully observed the distance between the bright star of ♈ and Aldebaran, which we found [Eadem veſpera circa H. 7 pro examinando Sextante Trigonico, quo vſi ſumus vt plurimum hoc & ſuperiori anno in diſtantijs ſiderum rimandis, obſeruabamus diligenter diſtantiam inter Lucidam ♈ & Aldeb. quam inuenimus]

35° 32¾′	I
35° 32½′	II, better [II melior]

3 February, evening [DIE 3 FEBRUARIJ, VESPERI.]

Venus was observed *stationary and beginning to retrogress, the clock not yet corrected.* [Obſeruabatur ♀ *ſtationaria & incipiens regredi, Horologio nondum correcto.*]

Hours, minutes, seconds [H. M. S.]	Azimuth	Altitude [Altit.]	Declination, north [Decl. B.]	*Venus on the equator, west* [♀ *in æquat. occident.*]
$5^h\ 18^m\ 30^s$	62° 0′	20° 16⅔′	2° 15⅙′	
			2° 14⅔′	
$5^h\ 22^m\ 55^s$	63° 0′	19° 44¼′	2° 14¾′	
			2° 15¼′	
$5^h\ 27^m\ 0^s$	64° 0′	19° 13′	2° 18′ supp. [ſupp.]	
$5^h\ 35^m\ 45^s$	66° 0′	18° 7′	2° 15½′	60° 16′
			2° 15⅙′	

Afterwards the equatorial distance of Venus *from the bright foot of Orion* was taken. [Poſtea ſumebatur æquat. diſtantia ♀ *a Lucido pede Orionis.*]

			Declination of Venus, north [*Decl.* ♀ *B.*]
5 47 30	*Venus, west* [♀ *occidentalis*]	*63 19*	
	The foot of Orion, east [*Pes Orionis or.*]	*22 17*	*2° 15½′*
	Equatorial distance [*Diſt. æquat.*]	*85° 36′*	
5 52 30	*Venus, west* [♀ *occidentalis*]	*64 31½*	{ *2° 15⅓′*
	The bright foot of Orion [*Luc. pes Orion.*]	*21 0⅔*	{ *with both* [*vtroq.*]
	Equatorial difference [*Differ. æquat.*]	*85° 32⅙′*	
5 55 15	*Venus, west* [♀ *occidentalis*]	*65 13¼*	

			Declination of Venus, north [*Decl.* ♀ *B.*]
	The same foot of Orion [*Idem Or. pes*]	*20 20⅔ east* [*orient.*]	
	Equatorial difference [*Differ. æquat.*]	*85° 34′*	

[1] After the observations of the distance of Venus from Jupiter. Compare above, p. 429. [Poſt obſervationes diſtantiæ Veneris a Iove. Cf. ſupra p. 429.]

			Declination of Venus [*Decl.* ♀]
5 57 50	*Venus, west* [♀ *occident.*]	*65 52*	
	The foot of Orion, east [*Pes Orionis or.*]	*19 40*	*2° 15⅔′*
		85 32	
6 1 30	*Venus, west* [♀ *occident.*]	*66 47*	
	The foot of Orion, east [*Pes Orion. or.*]	*18 46*	
	Equatorial difference [*Differ. æquat.*]	*85° 33′*	

Hours, minutes, seconds [*H. M. S.*]	*Azimuth of Venus* [♀ *Azim.*]	*Altitude* [*Altit.*]	*Declination* [*Declin.*]
$6^h\ 7^m\ 25^s$	*73° 0′*	*13° 58′*	*2° 17⅓′*
$6^h\ 12^m\ 15^s$	*74° 0′*	*13° 17⅔′*	*2° 18′ doubtful* [*dubia*]

Afterwards Venus was taken from the bright star of ♈ in distance by the sextant, as follows. [*Poſtea accipiebatur ♀ a Lucida ♈ in diſtantia per Sextantem vt ſequitur.*]

Hours, minutes, seconds [*H. M. S.*]	*Distance* [*Diſt.*]	*Declination* [*Declin.*]	*Altitude* [*Altit.*]	*The bright foot of Orion, east* [*Luc. pes Orion. or.*]
{ $6^h\ 18^m\ 10^s$	*41° 30⅚′*			*14 28*
{ $6^h\ 9^m$ *corrected* [*corr.*]				
$6^h\ 20^m\ 50^s$	*41° 30¾′*	*2° 16′*		*13 48*
		2° 16⅔′		
$6^h\ 23^m\ 50^s$	*41° 30⅔′*		*11° 42′*	*13 4*
$6^h\ 27^m\ 35^s$	*41° 30⅓′*	*2° 17⅔′*		*12 9*
		2° 18⅙′		
$6^h\ 33^m\ 50^s$	*41° 30⅙′*	*2° 19⅓′*	*10° 10′*	*10 34*

For examining the armilla, the declination of the Head of Andromeda was taken in the same position towards the pole, 26° 53½′ north, and that with only one pinnule, but still quite well. For clouds soon rose from the west, among which the declination of the same star was taken with the other pinnule, 26° 52½′, but less certain because of the clouds, as has been said. [*Pro examinanda Armilla capiebatur in eodem ſitu verſus polum Declinatio Capitis Andromedæ P.26 M.53½ borea, idque vnico ſaltem pinnacidio, ſed ſatis tamen bene. Nam mox nubes aſcendebant ab occaſu, inter quas altero pinnacidio capiebatur eiuſdem ſtellæ declinatio 26 52½, ſed minus certum propter nubes vti dictum.*]

The true declination should be 26° 51½′. [Vera Declinatio eße debet 26 51½.]

From this the declination of Venus can be verified. For as much as is lacking or in excess for this star, so much must also be corrected in the declination of Venus; but account must in addition be taken of refraction and parallax. [*Hinc poterit verificari Declinatio ♀. Nam quantum ſtellæ huic deeſt vel abundat, tantum etiam in ♀ declinatione corrigendum, ſed adhibenda inſuper refractionis & parallaxeos ratio.*]

5 February, evening [*DIE 5 FEBRUARIJ, VESPERI.*]

Venus was observed, *first, before the stars appeared.* [Obſeruabatur ♀, *primum antequam ſtellæ apparebant.*]

Hours, minutes, seconds [*H. M. S.*]	*Azimuth*	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*Venus on the equator, west* [♀ *in æquat. occid.*]
$4^h\ 57^m\ 5^s$	63° 0′	19° 59⅓′	2° 28½′ 2° 29′	56° 45′
$5^h\ 1^m\ 30^s$	64° 0′	19° 27′	2° 29′ 2° 28⅓′	58° 2½′
$5^h\ 5^m\ 55^s$	65° 0′	18° 53⅔′		59° 9′
$5^h\ 10^m\ 15^s$	66° 0′	18° 10½′	2° 29⅔′ 2° 29′	60° 12′

Hours, minutes, seconds [*H. M. S.*]	*Azimuth*	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*Venus on the equator, west* [♀ *in æquat. occid.*]
$5^h\ 14^m\ 50^s$	67° 0′	17° 46′	2° 29⅔′ } *with one* [*vno*] }	61° 20′
$5^h\ 19^m\ 10^s$	68° 0′	17° 12⅙′	2° 29½′ 2° 28¾′	62° 26½′
$5^h\ 23^m\ 30^s$	69° 0′	16° 38′	2° 29⅓′ 2° 29′	63° 32½′
$5^h\ 28^m\ 20^s$	70° 0′	16° 0¼′	2° 29⅙′ } *with both* [*vtroque*] }	64° 40′

Afterwards, when the stars appeared, Venus was observed in equatorial distance from the bright foot of Orion, as also two days before. [*Poſtea apparentibus ſtellis obſeruabatur ♀ in æquatoria diſtantia a Lucido pede Orionis prout etiam ante biduum.*]

				Altitude of Venus [*Alt. ♀*]
5 32 10	*Venus, west* [♀ *oc.*]	65 41½	2 29⅙	
	The bright foot, east [*Luc. pes or.*]	20 22	2 29⅔	
	Equatorial difference [*Differ. æq.*]	86° 3½′		
5 35 20	*Venus, west* [♀ *occ.*]	66 25½		15° 8′
	The bright foot, east [*Luc. pes or.*]	19 36½		

				Altitude of Venus [*Alt.* ♀]
	Equatorial difference [*Diff. æq.*]	*86° 2′*		
5 37 45	*Venus, west* [♀ *occ.*]	*67 0*	*2 29*	
	The foot of Orion [*Pes Orion.*]	*19 0½*	*2 29¼*	
		86 1		
5 40 44	*Venus, west* [♀ *occ.*]	*67 43½*		*14° 26½′*
	The foot of Orion [*Pes Orion.*]	*18 17½*		
		86 1		
5 43 38		*68 27*	*2 29⅙*	*13° 45′*
		17 35	*2 29½*	approximately [ἐν πλάτει]
		86 2		

You can use, without sensible error, the equatorial difference at about 5⅔^h as 86° 2′. [*Poteris absque ſenſibili errore vti differentia æquatoria circa horam 5⅔ P. 86 M. 2.*]

Afterwards the distance of Venus and the bright star of ♈ was observed in this way. [*Poſtea obſeruabatur diſtantia ♀ & Lucidæ ♈ hoc modo.*]

Hours, minutes, seconds [*H. M. S.*]	*Venus from the bright star of ♈* [♀ *a Lucida ♈*]	*Declination* [*Declin.*]	*Altitude of Venus* [*Altit.* ♀]	*The same foot of Orion, east* [*Idem pes Orion. or.*]
5^h 52^m 50^s	*41° 50′ doubtful* [*dubia*]		*12° 45′*	
5^h 56^m 55^s	*41° 48′*	*2° 29¼′*		*14 16*
5^h 59^m 40^s	*41° 49¼′*		*11° 53′*	*13 40*
6^h 2^m 40^s	*41° 48′*	*2° 30′*		*12 53*
6^h 5^m 40^s	*41° 48′*		*11° 5′*	*12 11*

If, therefore, you put the distance of Venus and the bright star in the head of ♈ at about the hour 6 as 41° 48½′, you will err imperceptibly. For verifying the declination of Venus, however, the declination of the Head of Andromeda was taken in nearly the same position towards the pole: [*Si igitur poſueris circa Horam 6 diſtantiam ♀ & lucidæ in Capite ♈ 41 48½, inſenſibiliter aberrabis. Pro declinatione autem ♀ verificanda accipiebatur Declinatio Capitis Andromedæ in eodem quaſi ſitu verſus polum*]

with one pinnule [*vno pin.*]	*26° 52⅓′*
with the other [*altero*]	*26° 53′ north* [*borea*]
repeated [*Repetita*]	*26° 52¾′*
	26° 52′

The true declination this year should be 26° 51′ 30″. [*Vera decl. hoc anno eße debet 26 51 30.*]

Here the armillae are in excess by at least 1⅙, if the declination is limited. [Abundant hic Armillæ ſaltem 1⅙, ſi limitatur declinatio.]

Comparison of the refraction and parallax of Venus, for investigating its true motion for the nearest days, 3 and 5 February, from observation. [Collatio refractionis & parallaxeos ♀ pro eius vero motu ad dies proximos 3 & 5 Feb. ex obſeruatione inquirendo.]

The refraction at altitude 12° is taken, [Sumitur refractio in altitud. 12 g.,]	
nearly the mean between the Sun's [fere medium inter ☉lis]	
and the stars' [& ſtellarum]	6′ 0″ [6ᴹ 0″]
Parallax [Parallaxis]	9 20
Difference [Differentia]	3 20
Resp. in longitude [Reſp. in longitudine]	2′ 40″ to be added [addend.]
latitude [latitudine]	2 0 to be added [addend.]

(The refraction of Venus was afterwards found to be no greater than in the other fixed stars at closely similar altitudes)[1]. [(Refractio ♀ poſtea deprehenſa eſt non maior eße quam in ceteris fixis in conſimilibus altitudinibus)[1].]

For the distance of Venus from the earth between 3 and 5 February, so that the parallax at the observed altitude of 12° may be had. [Pro diſtantia ♀ a terra inter 3 & 5 diem Februarij, vt habeatur parallaxis in altitudine 12 g. obſeruata.]

On 4 February, the corrected and equated anomaly of Venus 2° 50′, approximately [ἐν πλάτει]. [Die 4 Feb. Anomalia ♀ correcta & coæquata 2ᵍ 50′ ἐν πλάτει.]

Distance of the centre of the orb from the earth, in semidiameters, 1112. [Diſtantia centri orbis a terra in ſemid. 1112.]

Diagram. A circle drawn at the left of the left column, beside the text "In triangulo BAC". A point A stands inside the circle, left of and above its centre; a straight line runs from A down through the lower part of the circle to a point B below and outside it; a second line runs from A down to a point C on the circumference at the lower right; a third line joins B and C, so that the three lines form a long, narrow triangle BAC crossing the lower arc of the circle.

- A (inside the circle, upper left of the triangle): A
- B (below the circle, at the foot of the line from A): B
- C (on the circumference, lower right): C

In the triangle BAC there is given, in semidiameters of the earth: [In triangulo BAC datur in ſemid. terræ]

BA	1112
CA	822
BAC	10 0

Therefore BC [Ergo BC]	343
the distance of Venus from the earth. [diſtantia ♀ a terra.]	

For the parallax of Venus at altitude 12°, from the given distance from the earth. [Pro parallaxi ♀ in altitudine 12 g. ex data diſtantia a terra.]

πραξις [Greek: praxis, "working, computation"] for the parallax of Venus [πραξις pro parallaxi ♀]

Diagram. A large circle drawn at the right of the left column, beside the text "In triangulo CAB". A small circle is drawn about its centre A. A horizontal diameter of the large circle runs through A. A short vertical line rises from A to the top of the small circle, where C stands, and is continued upward as a dotted line to the top of the large circle. From C a horizontal line runs right to a point B on the circumference of the large circle, and a straight line joins A and B, so that A, C and B form a right triangle.

- A (centre of both circles, letter set just below the centre): A
- B (on the circumference of the large circle, right, letter set outside it): B
- C (top of the small circle, letter set left of the vertical line): C

In the triangle CAB there is given [In triangulo CAB datur]

CA	100 000
BA	34300 000
Angle CAB [Angulus CAB]	78° 0′

And therefore the angle CBA, 9⅓′, the parallax of Venus at altitude 12°. [Ideoque Angulus CBA 9⅓[M] parallaxis ♀ in altit. 12 g.]

[1] Written in the margin. [In margine adſcripta.]

N.B. Afterwards it was noticed, from a comparison of the azimuths, altitudes and declinations taken with the armillae, that the northern declinations taken with the armillae near the equator fall short by more, near the western horizon, by 2 minutes, where from the azimuths and altitudes they are for the most part in excess by just as much; and this also near the rising, but in the opposite direction, as ought to happen. Therefore, in the declinations of Venus observed in both places, the limitation was made according to the presentation of the declinations from the azimuths and altitudes, account being taken of the said deviation of these, because the armillae are subject to inconvenience in the position of the axis and in other respects near the periphery. [N.B. Poſtea animaduerſum eſt ex collatione Azimuth, Altitudinum & Declinationum captarum per Armillas, Declinationes acceptas per Armillas Boreas circa æquatorem deficere plus iuxta Horizontem occiduum 2[bus] minutis, vbi ex Azimuthis & Altitudinibus tantundem vt plurimum abundant, idque etiam circa ortum ſed in partem contrariam vt fieri debet. Quare in ♀ declinationibus vtrobique obſeruatis limitatio facta eſt ſecundum exhibitionem declinationum ex Azimuthis &

Altitudinibus, habita ratione dictæ deuiationis harum, quod Armillæ in ſitu axis & alijs iuxta peripheriam incommodo ſunt obnoxiæ.]

For the place of Venus from the observations of the day 3 February. [Pro loco ♀ ex obſeruationibus diej 3 Februarij.]

(The calculation for this day has been revised here and corrected)[1]. [(Calculus ad hunc diem reviſus hic eſt & correctus)[1].]

$6\frac{1}{6}^{h}$, distance of Venus from the bright star of ♈ [H. 6⅙ Diſt. ♀ a luc. ♈]	41° 30¾′
Declination of Venus, north, limited [Decl. ♀ B. limit.]	
by azimuth and altitude [per Azim. & Alt.]	2° 17′
Declination of the bright star of ♈ [Declin. lucidæ ♈]	21° 31¼′
Angular difference of ascension [Ang. diff. aſcenſ.]	37° 49′ 50″
Right ascension of the bright star of ♈ [Aſc. R. luc. ♈]	26° 8′ 15″
Therefore the right ascension of Venus [Ergo Aſc. Recta ♀]	348° 18′ 25″
Resp. longitude [Reſp. Longitudo]	20° 9⅓′ ♓
Latitude [Latitudo]	6° 43½′ north [B.]
Parallax exceeding the refraction [Parallaxis Refractionem exuperans]	
in longitude [in Longitudine]	3 30 added [add.]
in latitude [in Latitudine]	2 40 added [add.]
Therefore the true longitude of Venus [Ergo vera ♀ Longitudo]	20° 12′ 50″ ♓
Latitude [Latitudo]	6° 46′ 10″ north [B.]

For the place of Venus for the day 5 February. [Pro loco ♀ ad diem 5 Feb.]

6^{h} 0^{m}, distance of Venus from the bright star of ♈ [H. 6.0 Diſt. ♀ a luc. ♈]	41° 48′
Declination of Venus, limited [Declin. ♀ limitata]	north [B.] 2° 28¼′
Angular difference of ascension [Ang. diff. aſcenſ.]	38° 16′ 10″
Therefore the right ascension of Venus [Ergo Aſc. Recta ♀]	347° 51¼′
Resp. longitude [Reſp. Longitudo]	19° 49½′ ♓
Latitude [Latitudo]	7° 5⅓′ north [B.]
Add the parallax: longitude [Adde Parall. Longit.]	19° 52′ 10″ ♓
latitude [Latit.]	7° 7⅓′ north [B.]

Altitude about 12°. [Altitudo circiter 12 g.]

On the following day, 6 February, the apparent place of Venus was at 19° 34′ ♓, at about the same hour and at nearly the same alti- [*Die ſequente 6 Februarij fuit ♀ apparens locus in 19 34 ♓ circa eandem Horam & in eadem quaſi alti-*] *tude, as is clear from what follows. Therefore within this day's time it moved 15½′, which slightly exceeds the Alphonsine, which has 13′, and by far the reckonings of Copernicus. Therefore it was stationary earlier than each of the two calculations has it, which is also established more certainly from the observations between the 3rd and the 5th day. Venus was therefore advanced against the order of the signs in the space of two days, as above, 20′, which shows that it was stationary much sooner than the Prutenic calculation gives, indeed even a little before the Alphonsine.* [*tudine, vt patet ex ſequentibus. Ergo*

mota eſt intra hoc diurnum tempus 15½', quod paulo ſuperat Alphonſinum, qui habet 13' & longe plus Copernici ratiocinia. Ergo prius fuit ſtationaria quam vterque habet calculus, quod etiam certius conſtat ex obſeruationibus inter diem 3 & 5. Promota itaque eſt ♀ in antecedentia ſpatio duorum dierum vt ſupra M. 20, quod oſtendit ipſam longe citius fuiße ſtationariam quam præbet calculus Prutenicus, imo etiam paulo antea quam Alphonſinus.]

6 February, evening [*DIE 6 FEBRUARIJ, VESPERI.*]

Venus was observed in equatorial distance from the bright foot of Orion. [*Obſeruabatur ♀ in diſt. æquatoria a lucido pede Orionis.*]

Hours, minutes, seconds [*H. M. S.*]	*Equatorial distance* [*Diſtantia æquatoria*]		*Declination of Venus* [*Decl. ♀*]	*Altitude of Venus* [*Altit. ♀*]
$5^h\ 42^m\ 15^s$			*2° 33½'* with both [vtroq.]	
$5^h\ 49^m\ 25^s$	*Venus, west* [*♀ occid.*]	*67° 27½*	*2° 34'*	
	The foot of Orion, east [*Pes Or. or.*]	*18° 53'*	*2° 34½'*	
	Equatorial difference [*Diff. æquat.*]	*86° 20'*		
$5^h\ 55^m\ 15^s$	*Venus, west* [*♀ occid.*]	*68° 52¼'*		*13° 36'*
	The foot of Orion [*Pes Orion.*]	*17° 28'*		
	Equatorial difference [*Diff. æquat.*]	*86° 20¼'*		
$5^h\ 58^m\ 15^s$	*Venus, west* [*♀ occid.*]	*69° 35⅓'*		
	The foot of Orion [*Pes Orion.*]	*16° 42½*	*2° 34⅔'*	*13° 30'*
	Difference [*Differ.*]	*86° 18'*	*2° 34'*	
$6^h\ 2^m\ 40^s$			*2° 34⅓'*	
			2° 34⅙'	

This difference was produced by the axis reversed both ways; therefore nearly the mean of the two must be taken, which is 86 15. [*Differentiam hanc peperit Axis vtrobique inuerſus, quare fere medium vtriusque capiendum, quod eſt 86 15.*]

Afterwards the distance of Venus from the bright star of ♈ was taken. [Poſtea ſumebatur diſt. ♀ a Lucida ♈.]

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	The bright foot of Orion, east [Luc. pes Orion. or.]
$6^h\ 11^m\ 35^s$	42° 1¾'		11° 36'	13 22
{ $6^h\ 16^m\ 15^s$	42° 1½'	2° 34¾' with one [vno]		12 15
{ $6^h\ 7^m$ corrected [corr.]				

For examining the armillae there was taken [Pro examinandis Armillis capiebatur]

the declination of the Head of Andromeda [Declinatio capitis Andromedæ]	26° 53′ 26° 53⅓′

Hours, minutes, seconds [H. M. S.]	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	The bright foot of Orion, east [Luc. pes Orion. or.]
$6^h\ 23^m\ 0^s$	42° 1′		10° 6′	10 34½
$6^h\ 28^m\ 30^s$	42° 0⅔′	2° 35′ with one [vno]		9 13
$6^h\ 32^m\ 5^s$	42° 0½′		8° 52′	8 20

The declination of the star in the Head of Andromeda was repeated [*Repetebatur Declinatio ſtellæ in Capite Andromedæ*]

on account of the declination [*propter declin.*]	*26° 52⅓′*

of the armillae [*Armillarum*]	
to be examined [*examinanda*]	*26° 53′*
Put [*Pone*]	*26 53*

Therefore the armillae show 1½′ more than is right. [*Ergo Armillæ 1½′ plus iuſto oſtendunt.*]

For the place of Venus for the day 6 February. [Pro loco ♀ ad diem 6 Februarij.]

6^h complete. Distance of Venus [H. 6 completa. Diſt. ♀]	
from the bright star of ♈ [a lucida ♈]	42° 2′
Declination of Venus [Declinatio ♀]	2° 33′ 0″ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	38° 35′ 25″
Right ascension of the bright star of ♈ [Aſc. R. lucidæ ♈]	26° 8′ 15″
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	347° 32⅚′
Resp. longitude [Reſp. Longitudo]	19° 34′ 0″ ♓
Latitude [Latitudo]	7° 16¾′ north [B.]

Altitude of Venus 12°. Therefore the daily motion of Venus 15½′. For yesterday at 6^h, at the same altitude, namely 12°, Venus was at 19° 49½′ ♓. The true place of Venus for 6 February at 6^h, account being taken of the parallax: [Alt. ♀ 12 grad. Ergo motus diurnus ♀ 15½ᴹ. Nam heſterna die H. 6 in eadem

altitudine viz. 12 fuit ♀ in 19 49½ ♓. Verus locus ♀ ad 6 Feb. H. 6, habita ratione parallaxeos]

Longitude [Long.]	19° 36⅔′ ♓
Latitude [Lat.]	7° 18¾′ north [B.]

8 February, evening [DIE 8 FEBRUARIJ, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Azimuth	Altitude [Altit.]	Declination of Venus [Decl. ♀]	The bright foot of Orion, east [Luc. pes Orion. or.]
5^h 34^m 40^s	73° 0′	14° 23′	2° 39′ 2° 39½′	18 55
5^h 39^m 15^s	74° 0′	13° 47′	2° 39⅙′ 2° 39⅔′	17 47

Afterwards Venus was observed in distance from the bright star of ♈, in the manner of the preceding days, as follows. [*Poſtea obſeruabatur ♀ diſtantia a Lucida ♈ modo antecedentium dierum, vt ſequitur.*]

Hours, minutes, seconds [*H. M. S.*]	*Distance* [*Diſt.*]	*Declination* [*Declin.*]	*Altitude* [*Altit.*]	*The same, east* [*Idem or.*]
5^h 47^m 15^s	*42° 35¼′*	*2° 40′ with one* [*vno*]		*15 46*
5^h 49^m 55^s	*42° 36⅔′*		*12° 15′*	*15 3½*
5^h 53^m 10^s	*42° 35½′*	*2° 40⅙′*		*14 17*
5^h 56^m 5^s	*42° 35¼′*	*2° 40½′*	*11° 28′*	*13 33*

Afterwards Venus was observed near the horizon. [Poſtea obſeruabatur ♀ vicina Horizonti.]

			Altitude with the Radius [Alt. per Radium]	West [occid.]
{ 6 58 0	42 26⅔		3° 0′	1 46
{ 6 54½ corrected [corr.]				
{ 6 59 0	42 26	2 49½	2° 45′	1 58
{ 6 55⅓ corrected [corr.]		with one [vno]		
7 4 50	24 24⅓	2 52½	2° 0′	3 28

More could not be observed on Venus because of clouds hiding the fixed stars from us. [Plura in ♀ obſeruare non licuit propter nubes ſtellas fixas nobis occultantes.]

12 February, evening [DIE 12 FEBRUARIJ, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Azimuth of Venus [Azim. ♀]	Altitude [Altit.]	Declination [Declin.]	Venus, west [♀ occid.]
$5^h\ 32^m\ 20^s$	78° 0′	11° 8¼′	2° 33′ 2° 32½′	
$5^h\ 37^m\ 10^s$	79° 0′	10° 29½′	2° 32½′ 2° 32⅚′	75 4
$5^h\ 42^m\ 10^s$	80° 0′	9° 50′		76 17
$5^h\ 46^m\ 50^s$	81° 0′	9° 12¼′	2° 33′ 2° 33½′	77 26½

Afterwards Venus was observed in distance from the bright star of ♈ by the sextant. [Poſtea obſeruabatur ♀ in diſtantia a Lucida ♈ per Sextantem.]

Hours, minutes, seconds [H. M. S.]	Dis-tance [Diſt.]	Altitude of Venus by the revolving quadrant [Altit. ♀ per Volub.]	Declination [Decl.]	The bright foot of Orion, east [Luc. pes Orion. or.]
$5^h\ 55^m\ 55^s$	44° 11½′	7° 59′	2° 33¾′ } with both [vtroque] }	8 57
$5^h\ 59^m\ 0^s$	44° 11′	7° 33′	2° 34′ 2° 33¾′	8 14
$6^h\ 2^m\ 5^s$	44° 10⅙′	7° 10′		7 24
$6^h\ 4^m\ 55^s$	44° 9¼′	6° 50′	2° 35⅓′ 2° 34½′	6 44
$6^h\ 8^m\ 30^s$	44° 8¾′	6° 17′		
$6^h\ 15^m\ 40^s$	44° 8½′	5° 15′	2° 37¼′ by the lesser quadrant [per min.Quad.] 2° 36⅚′	4 7
$6^h\ 19^m\ 40^s$	44° 7⅚′	4° 40′	2° 37′ 2° 36⅚′	3 17
$6^h\ 24^m\ 10^s$[1]	44° 7½′	4° 5′	2° 39½′ 2° 39′	2 14
$6^h\ 29^m\ 0^s$	44° 5⅓′	3° 30′	2° 40′ 2° 39⅓′	0 54
$6^h\ 32^m\ 20^s$	44° 4½′	3° 0′	2° 41′ 2° 40½′	0 6 west [occid.]
$6^h\ 35^m\ 20^s$	44° 3′	2° 35′	2° 41½′	0 39
$6^h\ 39^m\ 40^s$	44° 2½′	2° 0′	2° 43′	1 40
$6^h\ 42^m\ 50^s$	43° 59½′	1° 30′	2° 45′	2 26
$6^h\ 46^m\ 20^s$	43° 56′	1° 15′	2° 48′	3 21
$6^h\ 49^m\ 40^s$	43° 54′ doubt-ful [du-bia]	0° 40′	2° 50′	4 10

The last distance was not exact enough, but middling; nevertheless you can put 43 53, and the declination 2° 51′. [Vltima diſtantia non fuit ſatis exacta ſed mediocris, tamen potes ponere 43 53 & Declin. 2 51.]

Declination of the Head of Andromeda [Capitis Andromedæ Declinatio]	*26° 53′ with one [vno]* *26° 52⅔′ with the other [altero]*
Distance between the bright star of ♈ and Aldebaran [Diſtantia inter Lucidam ♈ & Aldeb.]	*35° 32⅙′*

Therefore a good instrument. [Ergo bonum inſtrumentum.]

14 February, evening [DIE 14 FEBRUARIJ, VESPERI.]

Hours, minutes, seconds [H. M. S.]	Altitude of Venus [Altit. ♀]	Azimuth, west [Azim. occid.]	Declination, north [Decl. B.]	The shoulder of Orion, east [Humerus Orion. or.]
$5^h\ 43^m\ 20^s$	8° 18¼′	82° 0′	2° 22¼′ 2° 22′	20 28

Hours, minutes, seconds [H. M. S.]	*Altitude of Venus [Altit. ♀]*	*Azimuth, west [Azim. occid.]*	*Declination, north [Decl. B.]*	*The shoulder of Orion, east [Humerus Orion. or.]*
$5^h\ 48^m\ 0^s$	*7° 38¾′*	*83° 0′*	*2° 23′* *2° 22½′*	*19 22*
$5^h\ 53^m\ 5^s$	*6° 58⅔′*	*84° 0′*	*2° 23′* *2° 22⅚′*	*18 4*
$5^h\ 57^m\ 50^s$	*6° 21½′*	*85° 0′*	*2° 23⅔′* *2° 23⅚′*	*16 56*

Afterwards Venus was observed in distance from the bright star of ♈. [Poſtea obſeruabatur ♀ in diſtantia a Lucida ♈.]

Hours, minutes, seconds [H. M. S.]	*Distance of Venus from the third of ♈ [Diſt. ♀ a tertia ♈]*	*Altitude of Venus [Altit. ♀]*	*Declination [Declin.]*	*The bright shoulder of Orion, east [Hum. luc. Orion. or.]*
$6^h\ 5^m\ 0^s$	*45° 8′*	*5° 15′*	*2° 25′* *2° 24½′*	*15 13*
$6^h\ 8^m\ 15^s$	*45° 7½′*	*5° 0′*	*2° 26′* *2° 25⅓′*	*14 19*
$6^h\ 12^m\ 0^s$		*4° 25′*		*13 25*
$6^h\ 15^m\ 20^s$	*45° 5½′*	*4° 0′*	*2° 27⅓′* *2° 27′*	
$6^h\ 18^m\ 20^s$	*45° 4½′*	*3° 45′*		*11 50*
$6^h\ 20^m\ 10^s$	*45° 3′*	*3° 15′*	*2° 29′* *2° 28½′*	*11 20*

Hours, minutes, seconds [*H. M. S.*]	*Distance of Venus from the third of* ♈ [*Diſt.* ♀ *a tertia* ♈]	*Altitude of Venus* [*Altit.* ♀]	*Declination* [*Declin.*]	*The bright shoulder of Orion, east* [*Hum. luc. Orion. or.*]
6h 23m 5s	*45° 2′*	*2° 50′*	*2° 30′*	*10 39*
			2° 29′	
6h 26m 15s	*45° 1′*	*2° 25′*	*2° 31′*	*9 51*
6h 29m 50s	*45° 0′*	*2° 0′*	*2° 33′*	*8 56*
6h 32m 30s	*44° 59′*	*1° 35′*	*2° 34′*	*8 15*
6h 36m 25s	*44° 57′*	*1° 15′*	*2° 37′*	*7 21*

15 February, evening [DIE 15 FEBRUARIJ, VESPERI.]

Venus was observed, as far as was possible among the clouds, in this manner. [Obſeruabatur ♀ quantum licuit inter nubes in hunc modum.]

5 56⅝, altitude of Venus 5° 29¼′, azimuth 86° 6′, the foot of Orion 6 36. [5 56⅝ ♀ Alt.5 29¼Azim.86 6 Pes Or.6 36]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from ♈ [Diſt. ♀ a ♈]	Declination of Venus [Decl. ♀]	Altitude of Venus by the lesser quadrant [Alt. ♀ per min. Q.]	The bright foot of Orion, east [Luc. pes Orion. or.]
6h 2⅙m	45° 42′	among clouds [inter nubes]		5 15
6h 4m 0s	45° 41′	2° 19′	4⅔°	4 51
		2° 18½′		
6h 6½m	45° 40½′		4° 5′	4 14
6h 7m 35s	45° 39½′			
6h 9m 15s	45° 38⅓′	2° 19½′	3½°	3 32
		2° 20′		

Afterwards Venus, descending into thick clouds lying about the horizon, was no longer open either to observation or to sight this evening. [Poſtea in denſas nubes circa Horizontem exiſtentes ♀ deſcendens nec obſeruationi nec viſui amplius hac veſpera patuit.]

[1] Perhaps the following observations were written down by Tycho. [Forſitan ſequentes obſervationes a Tychone conſcriptæ ſint.]

17 February, evening [DIE 17 FEBRUARIJ, VESPERI.]

Venus was observed approaching conjunction with the Sun. [Obſeruabatur ♀ appropinquans ad ☌ Solis.]

Hours, minutes, seconds [H. M. S.]	Altitude [Altit.]	Azimuth [Azimuth]	Declination [Declin.]	The Greater Dog, east [Can. maior orient.]
5h 38m 25s	*6° 25′*	*84° 0′*	*1° 56⅓′*	
			1° 57′	
5h 43m 10s	*5° 47¾′*	*85° 0′*	*1° 57⅙′*	*31 50*
			1° 56⅔′	
5h 45m 40s	*5° 25′*	*85° 30′*	*1° 57⅓′*	*31 8*

Hours, minutes, seconds [H. M. S.]	Altitude [Altit.]	Azimuth	Declination [Declin.]	The Greater Dog, east [Can. maior orient.]
			1° 57¾′	
5h 48m 10s	5° 6⅙′	86° 0′	1° 58⅙′	30 32
			1° 59′	

Hours, minutes, seconds [H. M. S.]	Altitude [Altit.]	Azimuth	Declination [Declin.]	*The bright shoulder of Orion, east* [*Luc. hum. Orion. or.*]
5h 52m 50s	4° 29′	87° 0′	1° 59½′	15 55
			2° 0′	
5h 55m 10s	4° 12½′	87° 30′	1° 59⅔′	15 7
			2° 0⅓′	
5h 57m 55s	3° 52′	88° 0′	2° 0⅙′	14 42
			2° 1′	

Computed declination [*Declinatio ſupputata*]	2° 5′ 20″

Afterwards Venus was taken in equatorial distance from the bright shoulder of Orion, the axis being turned alternately. [*Poſtea in æquatoria diſtantia capiebatur* ♀ *a Lucido Humero Orionis alternatim conuoluendo axem.*]

			Declination of Venus [*Decl.* ♀]	*Altitude of Venus* [*Altit.* ♀]
6 2 50	*Venus, west* [♀ *occid.*]	87 19	2° 1½′	3° 10′
	The bright shoulder, east [*Luc. hum. or.*]	13 26	2° 2½′	
	Equatorial difference [*Diff. æq.*]	100° 45′		
6 5 0	*Venus, west* [♀ *occ.*]	87 56½	2° 2′	2° 50′
		12 56	2° 3′	
		100 52½		
6 6 45		88 16	2° 2½′	2° 35′
		12 38	2° 3⅙′	
		100 54		
6 8 20		88 48	2° 3½′	2° 20′
		12 7	2° 4′	
		100 55		

The turning of the instrument's axis produced this variation. [*Conuolutio axis inſtrumenti peperit hanc varietatem.*]

Afterwards Venus was observed *from the bright star of* ♈, *as follows.* [Poſtea obſeruabatur ♀ *a Lucida* ♈ *vt ſequitur.*]

Hours, minutes, seconds [*H. M. S.*]	*Distance* [*Diſt.*]	*Altitude* [*Altit.*]	*Declination* [*Declin.*]	*The bright shoulder of Orion, east* [*Luc. hum. Orion. or.*]
$6^h\ 12^m\ 40^s$	46° 42′	1° 50′		10 57
$6^h\ 14^m\ 0^s$	46° 41¼′	1° 30′	2° 7′	10 45
			2° 8′	
$6^h\ 18^m\ 5^s$	46° 37′	1° 15′		9 43
$6^h\ 19^m\ 45^s$	46° 35⅔′	1° 0′	2° 12′	9 5
$6^h\ 22^m\ 35^s$	46° 31½′	0° 40′		8 33
$6^h\ 24^m\ 0^s$	46° 29¼′	0° 30′	2° 17′	8 10

18 February, evening [*DIE 18 FEBRUARIJ, VESPERI.*]

We watched for Venus, whether it could be observed, but it was seen with difficulty because of rather thin clouds about the horizon; nevertheless we at last obtained these, such as they are, in declination and altitude. [*Attendimus ad* ♀ *an obſeruari poßet, ſed difficulter videbatur propter rariuſculas circa Horizontem nubes, nihilominus hæc qualiacunque in Declinatione & Altitudine tandem accepimus.*]

$6^h\ 13^m\ 35^s$ [H. 6 M. 13 S. 35]

The Greater Dog, east [Canis maior. orient.]	23 42
Declination of Venus [Declin. ♀]	2° 0′ *doubtful* [*dubia*], altitude of Venus [Altit. ♀] 1¼
6 16 0 The Greater Dog, east [Canis maior orient.]	23 5
Declination of Venus [Declin. ♀]	1° 57½′.

6 22 35 Venus set in the visible horizon. [6 22 35 Occidit ♀ in viſibili Horizonte.]

The Greater Dog, east, was then 21 29. Declination of Venus 2° 22′, by the upper slit of one pinnule. [Fuit tunc Canis maior orient. 21 29 Declin. ♀ 2 22 ſuperiori rimula vnius pinnacidij.]

For the place of Venus for the day 17 February. [Pro loco ♀ ad diem 17 Februarij.]

$6¼^h$, distance of Venus from the bright star of ♈ [H. 6¼ Diſt. ♀ a Lucida ♈]	46° 41¼′
Declination observed and corrected [Declin. obſeruata & corr.]	2° 10′ 0″ north [B.]
Declination of the bright star of ♈ [Declin. Luc. ♈]	21° 31′
Right ascension of the same [Aſc. Recta eiuſdem]	26° 8⅓′
Angular difference of ascension [Ang. diff. aſcenſ.]	43° 42′ 0″
Therefore the right ascension of Venus [Ergo Aſc. Recta ♀]	342° 26⅓′
Resp. longitude [Reſp. Longitudo]	14° 39⅔′ ♓
Latitude [Latitudo]	8° 54⅔′ north [B.]

7 March [*DIE 7 MARTIJ.*]

Morning observation of Venus. [*Obſeruatio ♀ matutina.*]

Since on the preceding days there was no clear weather at all up to this day, through the 15 intervening days, so that the morning Venus could not meanwhile be observed as I wished, this morning we watched carefully for its appearances. And first, before it rose, we observed the mouth of Pegasus in a nearly similar position. The clock was corrected by the stars at 4½ʰ. [*Quoniam antecedentibus diebus non fuit vlla ſerenitas vſque in hunc diem per dies intermedias 15, ita vt ♀ matutina interea vti cupiebam obſeruari nequierit, hoc mane diligenter ad eius apparentias attendimus. Et primo antequam oriretur obſeruauimus Os Pegaſi in conſimili quaſi ſitu. Horologium emendabatur ad ſtellas H. 4½.*]

Hours, minutes [*H. M.*]		*Mouth of Pegasus in declination* [*Os Pegaſi in declin.*]		*Azimuth* [*Azim.*]	*Altitude of the mouth of Pegasus* [*Alt. Oris Peg.*]
$4^h\ 33^m$		8° 8⅔′	8° 8⅓′		14° 45′
$4^h\ 38⅓^m$	*repeated* [*Repetita*]	8° 8′	8° 8½′	81° 10′	*15° 42′*1
$4^h\ 49^m$	*again* [*Rurſus*]	8° 8′	8° 7¾′	78° 50′	17° 22′

True declination of the mouth of Pegasus 8° 3½′ north [B.]. Therefore the armillae here are in excess by 5′ [5 M.]. [Vera declinatio Oris Pegaſi 8 3½ B. Abundant igitur Armillæ hic in 5 M.]

Afterwards Venus was observed as follows. [*Poſtea ♀ obſeruabatur vt ſequitur.*]

Hours, minutes, seconds [*H. M. S.*]	*Distance of Venus from the bright star of the Vulture* [*Diſt. ♀ a Luc. Vult.*]	*Declination of Venus* [*Declinatio ♀*]		*Azimuth* [*Azim.*]	*Altitude* [*Altit.*]	*The left knee of Ophiuchus, west* [*Sin. genu Ophiu. occ.*]	*Resp. computed declination* [*Reſp. ſupput. Declin.*]
$4^h\ 52^m\ 50^s$				83° 0′	1° 44′		
$4^h\ 53^m\ 10^s$	43° 36¼′	2° 26⅓′	2° 26⅔′			7 22	
$4^h\ 56^m\ 40^s$				82° 0′	2° 16′		2° 35⅓′
$4^h\ 58^m\ 0^s$	42° 38⅔′	2° 28¾′	2° 29⅓′			8 40	
$5^h\ 3^m$ corrected [corr.]							
$5^h\ 1^m\ 20^s$				81° 0′	2° 55′		2° 36′ 15″
$5^h\ 2^m\ 0^s$	42° 41′	2° 30½′	2° 30½′			9 45	
$5^h\ 7^m\ 30^s$ corrected [corr.]							
$5^h\ 5^m\ 30^s$				80° 0′	*3° 29½′*2 not valid [non valet]		*2° 40⅗′*2

Hours, minutes, seconds [*H. M. S.*]	*Distance of Venus from the bright star of the Vulture* [*Diſt. ♀ a Luc. Vult.*]	*Declination of Venus* [*Declinatio ♀*]		*Azimuth* [*Azim.*]	*Altitude* [*Altit.*]	*The left knee of Ophiuchus, west* [*Sin. genu Ophiu. occ.*]	*Resp. computed declination* [*Reſp. ſupput. Declin.*]
$5^h\ 6^m\ 40^s$	42° 42¾′	2° 32′	2° 33⅓′			11 1	
$5^h\ 10^m\ 0^s$				79° 0′	4° 12′		2° 38′
$*5^h\ 16^{m}*3\ 20^s$	42° 43⅙′	2° 33½′	2° 33⅔′			12 14	
$5^h\ 14^m$				78° 0′	4° 54′		
$5^h\ 15^m\ 40^s$	42° 43½′, *put* [*pone*] 44		2° 35′ with both [*vtroque*]			13 32	
$5^h\ 18^m\ 50^s$				77° 0′	5° 28′		
$5^h\ 21^m\ 0^s$		2° 35⅓′	2° 35⅙′		5° 50′		
$5^h\ 22^m\ 10^s$				76° 0′	6° 6′		

Hours, minutes, seconds [*H. M. S.*]	*Distance of Venus from the bright star of the Vulture* [*Diſt. ♀ a Luc. Vult.*]	*Declination of Venus* [*Declinatio ♀*]	*Azimuth* [*Azim.*]	*Altitude* [*Altit.*]	*Arcturus, west* [*Arctur. occid.*]	*Resp. computed declination* [*Reſp. ſupput. Declin.*]
$5^h\ 27^m\ 0^s$		2° 36′ with both [*vtroque*]	75° 0′	6° 40′	51 5	

Put therefore $5^h\ 6⅓^m$ [H. 5 M. 6⅓], the distance of Venus and the bright star of the Vulture 42° 43⅙′, and the declination 2° 33⅗′ at an altitude of 4° 30′. [*Pone itaque H. 5 M. 6⅓ Diſtantiam ♀ & Lucidæ Vulturis 42 43⅙ & Declinationem 2 33⅗ in Altitudine 4 30.*]

Compare these observations with the observations made on 8 February. For these two days are almost equally removed from the time of the conjunction of Venus with the Sun, from which the commutation will, vice versa, be almost the same, and the parallaxes and refractions, if an equal altitude is taken, will behave in like manner. [*Confer has obſeruationes cum obſeruationibus factis Die 8 Februarij. Nam hi duo dies quaſi æqualiter remouentur a tempore ☌ ♀ cum Sole, vnde commutatio viceverſa erit quaſi eadem atque parallaxes & refractiones, ſi æqualis ſumatur altitudo, pariformiter ſe habebunt.*]

8 February [*Feb. 8ᴰ*],	$6^h\ 54½^m$ *p.m.* [$6^H\ 54½^M$ *P. M.*]	*Venus from the bright star of* ♈ [*♀ a Lucida* ♈]	42° 26′, 2 31′,	*declination* [*Declin.*] 2° 48′, *altitude* [*Alt.*] 3° 0′
7 March [*Martij 7*],	*5 7½ a.m.* [*A. M.*]	*Venus from the Vulture* [*♀ a Vulture*]	42° 41′, 2 30½,	3 0
Likewise 8 February [*Item Feb. 8*],	*6 55⅓*	*Venus from the bright star of* ♈ [*♀ a Lucida* ♈]	42° 26′, 2 49½,	2¾

7 March [*Martij 7*],	*5 4½*	*Venus from the bright star of the Vulture* [♀ *a Luc. Vult.*]	*42° 39½ 29⅓,*	*2¾*

There follows the calculation of the appearances of Venus from the observations written above. [Sequitur calculus apparentiarum ♀ ex ſupraſcriptis obſeruationibus.]

8 February, 6^h 54½^m [Feb. 8, 6^H 54½^M], angular difference of ascension [Ang. diff. aſc.]	39° 12′ 20″
Right ascension of the bright star of ♈ [Aſc. R. Lucidæ ♈]	26° 8′ 20″
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	346° 56′ 0″
Declination of Venus, north [Declin. ♀ B.]	2° 48′ 0″
Resp. longitude [Reſp. Longitudo]	19° 5⅔′ ♓
Altitude of Venus 3° [Alt. ♀ 3 g.]; latitude [Latitudo]	7° 45¼′ north [B.]

The same day, 6^h 55⅓^m [Eodem die H. 6 M. 55⅓]	
Difference of ascension of Venus and the bright star of ♈ [Diff. aſcenſ. ♀ & Luc. ♈]	39° 12′ 17″
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	346° 56′ 3″
Declination, north [Declin. B.]	2° 49′
Resp. longitude [Reſp. Longitudo]	19° 6⅓′ ♓
Altitude of Venus [Alt. ♀] 2¾; latitude [Latitudo]	7° 46½′ north [B.]

[1] Uncertain because of the worn leaf. [Incerta propter folium attritum.] [2] Struck through with lines. [Lineis inducta.] [3] Struck through with a line. [Linea inducta.]

If these are reduced to an altitude of Venus of 3 degrees and to 6^h 54^m, let the apparent limited place of Venus be put at longitude 19° 7½′ ♓, latitude 7° 45½′ north. [Si hæc ad altitudinem ♀ 3 graduum redigentur & H. 6 M. 54, ponatur viſus locus limitatus ♀ Long. 19 7½ ♓, Lat. 7 45½ B.]

For the parallax and refraction of Venus. [Pro parallaxi & refractione ♀.]

The distance of Venus from the Earth on this day, according to Copernicus, in semidiameters of the Earth: 319. [Diſtantia ♀ a terra hoc die iuxta Copernicum in ſemidiametris terræ 319.]

Therefore the parallax at an altitude of 3° resp. [Ergo parallaxis in altitudine 3° reſp.]	10′ 45″
Refraction, as in the other stars [Refractio vt in reliquis ſtellis]	12 30
Difference [Differentia]	1 45

Resp. in longitude [Reſp. in long.]	1′ 30″, subtract [ſubt.]
in latitude [lat.]	1 0, subtract [ſubt.]
in the western hemisphere [in hemiſphærio occid.]	

Therefore at 6^h 54^m the true longitude of Venus 19° 4′ 10″ ♓, latitude 7° 44½′ north. [Ergo H. 6 M. 54 Vera ♀ Longitudo 19 4 10 ♓, Latitudo 7 44½ B.]

Taking the more limited declination of Venus at an altitude of 3°, namely 2° 48¾′, the angle from the bright star of ♈ will be 39° 12′ 47″, resp. apparent longitude 19° 5½′ ♓, latitude 7° 46⅙′ north, and true longitude 19° 4′ 0″ ♓, latitude 7° 45½′ north. [Poſita Declinatione ♀ limitatiori in Alt. 3 gr., videlicet 2 48¾, erit Angulus a lucida ♈ 39 12 47, reſp. Viſa Longitudo 19 5½ ♓, Latitudo 7 46⅙ B. et Vera Longitudo 19 4 0 ♓, Latitudo 7 45½ B.]

7 March, morning, from the foregoing. [Die 7 Martij Mane ex ſupraſcriptis.]

5^h 6^m [H. 5 M. 6], difference of ascension of Venus and the Vulture [Diff. aſcenſ. ♀ & Vult.]	41° 30′ 25″
Right ascension of the bright star of the Vulture [Aſc. R. Vult. lucidæ]	292° 42⅓′
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	334° 12′ 45″
Altitude of Venus 3° [Alt. ♀ 3 gr.]; declination of Venus, south [Declin. ♀ M.]	2° 30½′
Resp. longitude [Reſp. Longitudo]	5° 10′ 56″ ♓
Latitude [Latitudo]	7° 39′ 47″ north [B.]

A little earlier, 5^h 5^m [Paulo antea H. 5 M. 5]	
Angular difference of ascension of Venus and the Vulture [Ang. diff. aſcenſ. ♀ & Vult.]	41° 29⅙′
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	334° 11′ 30″
Altitude 2¾° [Alt. 2¾ gr.]; declination, south [Declin. M.]	2° 29′ 20″
Resp. longitude [Reſp. Longitudo]	5° 10⅙′ ♓
Latitude [Latitudo]	7° 41⅓′ north [B.]

Reducing these likewise to an altitude of 3 degrees at 5^h 6^m, the limited longitude of Venus is put at 5° 11′ 0″ ♓, latitude 7° 40′ north. [Reducendo item hæc ad altitudinem 3 graduum H. 5 M. 6 ponitur limitata ♀ Longitudo 5 11 0 ♓, Latitudo 7 40 B.]

For the parallax and refraction of Venus: the distance of Venus from the Earth 348 semidiameters of the Earth. [Pro parallaxi & refractione ♀ : Diſtantia ♀ a Terra 348 ſemid. terræ.]

The parallax at altitude 3° corresponds [Reſpondet parallaxis in alt. 3 gr.]	9′ 52″
refraction, as in the fixed stars [refractio vt in fixis]	12 30
Difference [Differentia]	2 38

Resp. in longitude [Reſp. in Long.]	0′ 32″, add [add.]
Latitude [Lat.]	2 30, subtract [ſubt.]

Therefore the true place of Venus: longitude 5° 11½′ ♓, latitude 7° 37⅖′ north. [Ergo verus locus ♀ Long. 5 11½ ♓, Lat. 7 37⅖ B.]

N.B. Taking the more limited declination of Venus as 2° 34½′ south, the angle of difference of ascension comes out 41° 27′ 48″; therefore the right ascension of Venus 334° 10′ 8″, resp. longitude 5° 7′ 0″ ♓, latitude 7° 37′ 0″ north. Therefore the true longitude 5° 7½′ ♓, latitude 7° 34′ 30″ north. [N. B. Poſita limitatiori declinatione ♀ 2 34½ M., prouenit Angulus diff. aſcenſionalis 41 27 48, ergo Aſcenſio Recta ♀ 334 10 8, reſp. Long. 5 7 0 ♓, Lat. 7 37 0 B. Ergo vera Longitudo 5 7½ ♓, Latitudo 7 34 30 B.]

16 March, morning [*DIE 16 MARTIJ, MANE.*]

Venus was observed near the morning station. [*Obſeruabatur ♀ iuxta ſtationem matutinam.*]

Hours, minutes [*H. M.*]	*Venus and the bright star of the Vulture* [*♀ & Vultur. Lucida*]	*Declination* [*Declinatio*]	*Altitude* [*Altitudo*]	*Azimuth*	*The Vulture, east* [*Vultur or.*]
$4^h\ 30\frac{3}{4}^m$	42 53	4° 18′	4° 17⅔′ 1¼° *roughly* [*quaſi*]		40 0
$4^h\ 36^m$			2° 0′	79	38 33
$4^h\ 38^m$	42 59⅓	4° 25½′	4° 26⅓′		37 59
$4^h\ 41\frac{1}{4}^m$	43 1¼		2° 40′	78	37 14
$4^h\ 44\frac{1}{2}^m$	43 2	4° 28′	4° 28½′		36 29
$4^h\ 45\frac{3}{4}^m$			3° 17′	77	
$4^h\ 48^m$	43 2¼	4° 29′	4° 28½′		35 30
$4^h\ 50\frac{1}{6}^m$			3° 51½′	76	
$4^h\ 51^m$	43 4⅔	4° 29¼′	4° 29⅔′		34 46
$4^h\ 54\frac{1}{6}^m$	43 5	4° 30⅙′	4° 29¾′		33 56
$4^h\ 54\frac{5}{6}^m$			4° 29′	75	33 8
$4^h\ 59\frac{1}{3}^m$			5° 6⅔′	74	

Afterwards, lower down, by another sextant, a little more carefully. [*Poſtea inferius per alium Sextantem paulo diligentius.*]

Hours, minutes [*H. M.*]	*Venus and the bright star of the Vulture* [♀ & *Vultur. Lucida*]	*Declination* [*Declinatio*]	*Altitude* [*Altitudo*]	*Azimuth*	*The Vulture, east* [*Vultur or.*]
5^h $1\frac{1}{3}^m$	43 5½	4° 31′	4° 30½′ The altitude may be [Altit. eße poteſt]	73	31 58
5^h 5^m corrected [corr.]			5° 22′ approximately [5 22 proxime]		
5^h $4\frac{1}{6}^m$	43 5⅔		5° 49½′	73	31 25
5^h 6½^m	43 6⅚				30 44
5^h $9\frac{5}{6}^m$	43 6½ *doubtful* [*dubia*]	4° 32⅓′	4° 31½′		29 58
5^h $13\frac{1}{6}^m$			7° 0⅚′	71	
5^h $17\frac{2}{3}^m$			7° 37′	70	

Afterwards, since no stars appeared, Venus was taken in azimuth and altitude alone, for investigating its declination. [*Poſtea cum nullæ ſtellæ apparerent, accipiebatur* ♀ *in ſolis Azimuth & Altitudine propter declinationem eius rimandam.*]

Hours, minutes [*H. M.*]	*Venus and the bright star of the Vulture* [♀ & *Vultur. Lucida*]	*Declination* [*Declinatio*]	*Altitude* [*Altitudo*]	*Azimuth*	*The Vulture, east* [*Vultur or.*]
5^h 26^m 24^s			8° 47′	68° 0′	
5^h 30^m 42^s			9° 19¾′	67° 0′	

Afterwards Venus, because of the imminent rising of the Sun, was no longer distinctly seen. [*Poſtea* ♀ *propter Solis ortum inſtantem non amplius diſcrete cernebatur.*]

For a fuller examination of the preceding observations of Venus in declination, altitude and azimuth, we observed the Sun near its rising at almost the same altitudes as Venus before, so that, a comparison having then been made, the declination of Venus might be established more certainly. [Pro maiori examinatione obſeruationum præcedentium in Declinatione, Altitudine & Azimuth ♀ obſeruabamus ⊙$^{\text{lem}}$ ortui vicinum in ijsdem fere Altitudinibus, quibus antea ♀, vt facta deinceps collatione Declinatio ♀ certius conſtaret.]

Hours, minutes, seconds [H. M. S.]	Azimuth of the Sun [Azim. ⊙]	Altitude [Altitudo]	Declination [Declinatio]		The Sun, east [⊙ or.]
6^h $4\frac{1}{6}^m$	89° 0′	3° 12½′	2° 12½′	2° 12′	87 20
6^h $8\frac{2}{3}^m$	88° 0′	3° 52¼′			86 10
6^h $13\frac{2}{3}^m$	87° 0′	4° 33′	2° 10½′	2° 10′	84 54
6^h 18^m 10^s	86° 0′	5° 12′			83 48
6^h 21^m 30^s			2° 10′	2° 9⅓′	
6^h 25^m 0^s	84½°	6° 11½′			81 55
6^h $27\frac{1}{4}^m$	84° 0′	6° 31½′			81 20
6^h 31^m 20^s			2° 7½′	2° 8′	
6^h 36^m 20^s	82° 0′	7° 50′			79 1

17 March, morning [DIE 17 MARTIJ, MANE.]

Hours, minutes [H. M.]	Distance of Venus from the Vulture [Dist. ♀ a Vulture]	Declination by the largest armillae [Decl. per Arm. max.]	Declination by the smaller armillae [Decl. per Arm. min.]	Altitude of Venus [Altit. ♀]	Azimuth of Venus [Azim. ♀]	The Vulture, east [Vultur orient.]
$4^h\ 36^m\ 25^s$				1° 49¾′	79° 0′	
$4^h\ 40\frac{2}{3}^m$	43° 9′	*4° 44′*[1]	*4° 35⅓′*[1]	2° 20′		37 22
			4° 36′			
$4^h\ 48^m$				3° 21′	76° 40′ moderate [mediocris]	
$4^h\ 51^m$	43° 12¼′	4° 39′	4° 48′	3° 50′		34 46
		4° 39′	4° 48⅓′			
$4^h\ 55\frac{2}{3}^m$	43° 14⅔′			4° 20′		33 33
$4^h\ 58\frac{1}{2}^m$		4° 41⅓′	4° 50′	4° 45′		32 50
		4° 41½′	4° 49′			
$5^h\ 3\frac{1}{2}^m$	43° 17⅙′		4° 51½′	5° 23′		31 34
			4° 50′			
$5^h\ 8\frac{1}{3}^m$	43° 18½′	4° 43′		6° 2′		30 20
		4° 42⅚′				
$5^h\ 13^m$		4° 44′	4° 52′	6° 40′		
		4° 43½′	4° 51′			

[1] Thus in the codex. [Sic in codice.]

Afterwards the stars were not seen; therefore Venus was taken in altitudes and azimuths alone. [*Poſtea non videbantur ſtellæ, igitur in ſolis Altitudinibus & Azimuthis capiebatur* ♀.]

Hours, minutes, seconds [*H. M. S.*]	*Azimuth* [*Azim.*]	*Altitude* [*Altit.*]	*Declination by the larger* [*Declin. per mai.*]	*Declination by the smaller* [*Declin. per min.*]	*Arcturus, west* [*Arcturus occid.*]	
$5^h\ 23^m\ 50^s$	69° 0′	7° 57¼′	4° 45′	4° 49′	56 57	
				4° 50½′		
$5^h\ 27^m\ 40^s$	68° 0′	8° 32⅔′	4° 44½′	4° 50′*	58 0	*better [**melior*]
$5^h\ 32^m\ 25^s$	67° 0′	9° 10′†		4° 51′	59 25	†moderate [†*mediocris*]
$5^h\ 41^m$	*The upper limb of the Sun began to rise* [*Incepit ſuperior limbus* ⊙ *oriri*]					
$5^h\ 42\frac{5}{6}^m$	*middle* [*medius*]					
$5^h\ 45\frac{1}{4}^m$	*whole* [*totus*]					

Afterwards, for examining the declinations in Venus, the Sun was observed, as on yesterday morning. [Poſtea pro examinandis Declinationibus in ♀ obſeruatus eſt ☉, quemadmodum heſterno mane.]

Hours, minutes, seconds [H. M. S.]	Azimuth of the Sun [Azim. ☉]	Altitude of the Sun [Altit. ☉]	Declination by the larger armillae [Declin. per mai. Arm.]	Declination by the smaller armillae [Declin. per min. Arm.]	The Sun, east, on the equator [☉ or. in æquat.]	
$6^h\ 1^m\ 30^s$	91° 0′	2° 40′	2° 35′	2° 36′		*The shadow could not be seen distinctly enough. [*Vmbra non ſatis discrete cerni potuit.]
	*		2° 40′	2° 30′		
$6^h\ 7^m\ 30^s$	90° 0′	3° 0′	2° 35½′	2° 20′	88° 20′	**Resp. supp. declination [**Reſp. ſupp. declin.] 2° 28′ 56″
	**		2° 39½′	2° 30′		
$6^h\ 11^m\ 10^s$	89° 0′	3° 40⅔′			87° 6′	
$6^h\ 15^m\ 40^s$	88° 0′	4° 21′	2° 31½′	2° 19′	85° 56′	
			2° 35⅓′	2° 30′		
$6^h\ 20^m\ 50^s$	87° 0′	5° 0¾′			84° 47′	
$6^h\ 25^m\ 30^s$	86° 0′	5° 39⅓′	2° 30′	2° 21′	83° 34′	
			2° 34⅓′	2° 27′		
$6^h\ 29^m\ 50^s$	85° 0′†	6° 17¾′ good [bona]	2° 32′ corrected [corr.]		82° 21′	†Resp. declination supp [†Reſp. declin. ſupp] 2° 25⅓′
$6^h\ 34^m\ 10^s$	84° 0′	6° 56⅙′	2° 29½′	2° 22′	81° 19′	
			2° 34′	2° 26′		
$6^h\ 39^m\ 40^s$	83° 0′	7° 37′			80° 3′	
$6^h\ 44^m\ 20^s$	82° 0′	8° 18′	2° 29′	2° 23′	78° 47′	
			2° 33′	2° 27′		

An examination of the instruments, undertaken by means of the Sun, for the certainty of the preceding observations of Venus. [Examinatio inſtrumentorum pro antecedentium ♀ obſeruationum certitudine per $\odot^{\text{lem}}$ inſtituta.]

$6\frac{1}{2}^h$, declination of the Sun by the armillae [H. 6½ Declin. ☉ per Armillas]	2° 32′
Altitude of the Sun [Altitudo $\odot^{\text{lis}}$]	6° 17¾′
Azimuth of the Sun from merid. [Azimuth ☉ a merid.]	85° 0′
Resp. declination from the altitude and azimuth [Reſp. Declin. ex Altit. & Azim.]	2° 25⅓′
True declination of the Sun from our tables [Vera Declin. ☉ ex noſtris Tab.]	2° 26⅓′

Parallax of altitude [Parallaxis Altit.]	2′ 59″
Refraction of the observed altitude [Refractio Altitudinis obſeruat.]	13 19
Difference [Differentia]	10 20
Resp. refraction of declination [Reſp. Refractio Declin.]	8 30
Apparent declination from the tables [Declin. viſa ex Tab.]	2° 34⅚′

Correction of the armillae toward the rising. [Correctio Armillarum ad ortum.]

The larger armillae are therefore to be trusted in the preceding observations of Venus very nearly according to this limitation: that in the earlier one, made on 16 March in the morning before the correction of the armillae, 2¾′ [M. 2¾] be added everywhere to the declination of Venus Merid. [ad Declinationem ♀ Merid.], and after the correction, namely on 17 March in the morning, the same number of minutes be subtracted; as is further also proved by the comparison made from the meridian altitude of the Sun for each day, and it is gathered that the armillary instrument was corrected by 4½′. [Fidendum itaque eſt Armillis maioribus in antecedentibus obſeruationibus ♀ proxime ſecundum hanc limitationem, vt in priori facta die 16 Martij mane ante correctionem Armillarum, addantur vbique ad Declinationem ♀ Merid. M. 2¾, & poſt correctionem videlicet 17 Martij mane totidem minuta ſubtrahantur, quemadmodum collatione ex Altitudine ☉ Meridiana ad vtrumque diem facta vlterius etiam probatur & quod inſtrumentum Armillare in 4½ minutis correctum ſit colligitur.]

Investigation of the place of Venus near the station. [Inueſtigatio loci ♀ circa ſtationem.]

For 16 March, morning [Ad diem 16 Martij, Mane]

$5^h\ 5^m$, distance of Venus from the Vulture [H. 5 M. 5 Diſt. ♀ a Vulture]	43° 5½′
Altitude of Venus 5⅓. Emended declination of Venus [Alt. ♀ 5⅓. Declin. ♀ emendata]	4° 33½′ south [M.]
Declination of the Vulture [Declin. Vulturis]	7° 52½′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	41° 21′ 30″
Right ascension of the Vulture [Aſc. R. Vulturis]	292° 44⅓′
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	334° 5′ 50″
Resp. longitude [Reſp. Longitudo]	4° 19⅔′ ♓
Latitude [Latitudo]	5° 47⅗′ north [B.]

17 March, morning [Die 17 Martij, Mane]

$5^h\ 3^m$, distance of Venus from the Vulture [H. 5 M. 3 Diſt. ♀ a Vulture]	43° 17⅙′
Altitude of Venus 5⅓. Emended declination of Venus [Alt. ♀ 5⅓. Decl. ♀ emendata]	4° 40′ south [M.]

Angular difference of ascension [Ang. diff. aſcenſ.]	41° 31′ 50″
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	334° 16′ 10″
Resp. longitude [Reſp. Longitudo]	4° 27′ 0″ ♓
Latitude [Latitudo]	5° 38′ 0″ north [B.]

For the refraction and parallax of Venus for 16 March. [Pro refractione & parallaxi ♀ ad diem 16 Martij.]

At 5^h A. M., the distance of Venus from the Earth 401 semidiameters. [H. 5 A. M. Diſtantia ♀ a Terra 401 ſemid.]

Observed altitude of Venus 5⅓; there corresponds a parallax [Altitudo ♀ obſeruata 5⅓, reſpondet parallaxis]	8′ 30″
Refraction at a like altitude [Refractio in conſimili altitudine]	9 40
Difference [Differentia]	1 10

Resp. in longitude 0′ 15″, in latitude 1′ 5″. Hence for the rest. [Reſp. in Longit. 0′ 15″, in Latit. 1′ 5″. Hinc de cæteris.]

18 March, morning [*DIE 18 MARTIJ, MANE.*]

Venus was observed in this way. [*Obſeruabatur ♀ hoc pacto.*]

Hours, minutes [*H. M.*]	*Distance of Venus from the Vulture* [*Diſt. ♀ a Vulture*]	*Declination of Venus by the larger* [*Declinatio ♀ per maior.*]	*by the smaller* [*minor.*]	*Altitude of Venus* [*Altit. ♀*]	*Azimuth of Venus* [*Azim. ♀*]	*Arcturus, west* [*Arcturus occid.*]	
4^h 41¾^m	43° 24½′	4° 44′ 4° 44¼′	4° 44½′ 4° 50′	2° 20′		46 27	
4^h 47½^m		4° 46′ 4° 46′	4° 46′ 4° 52′			47 53	
4^h 51^m				3° 24′	76° 0′		
4^h 51⅔^m	43° 27′						
4^h 53¾^m	43° 27¾′ *good* [*bona*]	4° 47½′ *with both* [*vtroque*]	4° 48′ *with one* [*vno*]	3° 54′		49 25	
4^h 56^m				4° 9′*	75°		**better* [**melior*]
5^h 0⅔^m				4° 50′**	74°		***doubtful* [***dubia*]
5^h 5½^m	43° 31′	4° 50′ 4° 50⅓′	4° 50½′ *with one* [*vno*]	5° 24′	73°	52 22	

Hours, minutes [*H. M.*]	*Distance of Venus from the Vulture* [*Diſt.* ♀ *a Vulture*]	*Declination of Venus by the larger* [*Declinatio* ♀ *per maior.*]	*by the smaller* [*minor.*]	*Altitude of Venus* [*Altit.* ♀]	*Azimuth of Venus* [*Azim.* ♀]	*Arcturus, west* [*Arcturus occid.*]	
5^h 8⅔^m	43° 31½′†			5° 50′		53 11	†*good* [†*bona*]
5^h 10⅓^m				6° 1′	72°		
5^h 11½^m	43° 31⅚′	4° 51¼′					
		4° 51½′					
5^h 15⅙^m	43° 33′	4° 52′	4° 52′	6° 37½′	71°		
		4° 52′					

Afterwards the star of the Vulture was not seen; therefore Venus was carefully taken in altitude and azimuth in this way, as follows. [*Poſtea Vulturis ſtella non cernebatur, quare* ♀ *in Altitudine & Azimutho diligenter capiebatur hoc modo vt ſequitur.*]

Time [*Tempus*]	*Altitude* [*Altitudo*]	*Azimuth*	*Arcturus, west* [*Arcturus occid.*]
5^h 19^m 35^s	7° 5′	70	55 51
5^h 24^m 27^s	7° 49½′	69	57 3
5^h 29^m 5^s	8° 26′	68	58 15
5^h 33^m 40^s	9° 3¼′	67	

Inquiry into the place of Venus from the immediately preceding observations. [Inquiſitio loci ♀ ex præcedentibus proximis obſeruationibus.]

Day 18, 5^h 2^m, distance of Venus from the Vulture [D. 18 H. 5 M. 2 Diſt. ♀ a Vulture]	43° 31′
Altitude 5° 24′. Emended declination of Venus [Alt. 5 24 Decl. ♀ emendata]	4° 48′
Angular difference of ascension [Ang. diff. aſcenſ.]	41° 43′ 54″

Right ascension of Venus [Aſc. Recta ♀]	334° 28′ 15″
Resp. longitude [Reſp. Longitudo]	4° 35½′ ♓
Latitude [Latitudo]	5° 26′ 0″ north [B.]

20 March, morning [*DIE 20 MARTIJ, MANE.*]

Hours, minutes [*H. M.*]	*Distance of Venus from the Vulture* [*Diſt.* ♀ *a Vulture*]	*Declination, with one* [*Declinatio vno*]	*with the other* [*altero*]	*Alti-tude* [*Alti-tudo*]	*Az-imuth*	*Arcturus, west* [*Arcturus occid.*]
4^h 14⅙^m	44° 0′	5° 2½′	5° 2⅔′	4° 20′		51 21
4^h 16⅚^m	44° 0¾′			4° 44′		52 0
4^h 19⅚^m	44° 1′	5° 3′	5° 3′	5° 5′	73	52 41

Hours, minutes [*H. M.*]	*Distance of Venus from the Vulture* [*Dist. ♀ a Vulture*]	*Declination, with one* [*Declinatio vno*]	*with the other* [*altero*]	*Altitude* [*Altitudo*]	*Azimuth*	*Arcturus, west* [*Arcturus occid.*]	
4^h 22⅔^m*	*44° 1¼′ (2)*1			5° 26′		53 18	*4 57 corrected [*4 57 corr.]
4^h 24⅔^m	*44° 1′ (3)*1	5° 5′	5° 4⅚′	5° 40′	72	53 56	
4^h 27½^m	44° 5⅓′**			6° 7′		54 38	**moderate [**mediocr.]
4^h 29⅓^m	44° 6¼†	5° 5½′	5° 6′	6° 19′	71	55 4	†good [†bona]
*4^h 38⅙^m*2				7° 25′		57 8	
4^h 39⅓^m				7° 35′	69		
4^h 42^m		5° 7⅔′	5° 8′	7° 55′		58 18	
4^h 44⅓^m				8° 9′	68	58 41	
4^h 46⅙^m				8° 27′			
4^h 49^m		5° 8⅙′		8° 45′	67		
4^h 50⅚^m				9° 0′			
4^h 53^m				9° 23′	66		
4^h 57⅓^m				9° 50′			

Calculation of the place of Venus for 20 March from the preceding observations. [Calculus loci ♀ ad diem 20 Martij ex præcedentibus obſeruationibus.]

4^h 57^m, distance of Venus from the Vulture [H. 4 M. 57 Dift. ♀ a Vulture]	44° 2′
Declination of Venus, limited [Decl. ♀ limitata]	5° 2½′ south [M.]
Declination of the Vulture [Declin. Vulturis]	7° 52½′ north [B.]
Angular difference of ascension [Ang. diff. aſcenſ.]	42° 12′
Therefore the right ascension of Venus [Ergo Aſc. R. ♀]	334° 56′ 20″
Resp. longitude [Reſp. Longitudo]	4° 56′ 20″ ♓
Latitude [Latitudo]	5° 2′ 20″ north [B.]

25 March, morning [DIE 25 MARTIJ, MANE.] Venus was observed. [Obſeruabatur ♀.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Dift. ♀ a Vulture]	Declination [Declin.]	Altitude by the smaller [Altit. per min.]	Arcturus, west [Arcturus occid.]
5^h 2^m 10^s	45° 51⅚′	5° 25½′ with both [vtroque]	5° 10′	54 36
5^h 7^m 10^s	45° 53⅓′		5° 45′	55 48
5^h 11^m 20^s	45° 52′*	5° 27′ 5° 26½′	6° 15′ *doubtful because of the dawn [*dubia propter auroram.]	56 45

It was not possible to observe more on Venus because of the dawn. [Plura in ♀ obſeruare propter auroram non licuit.]

3 April, morning [DIE 3 APRILIS, MANE.]

Venus was observed between the station and the greatest departure, both for determining the longitude and above all the latitude in that position. [Obſeruabatur ♀ inter ſtationem & digreßionem maximam tum ob Longitudinem tum maxime Latitudinem in eo ſitu cognoſcendam.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Diſt. ♀ a Vulture]	Declination of Venus M. [Decl. ♀ M.]	Altitude [Altit.]	Arcturus, west [Arcturus occid.]
$4^h\ 47^m\ 50^s$	50° 25′	5° 14½′ 5° 15⅙′	5° 10′	59 23

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Diſt. ♀ a Vulture]	Declination of Venus M. [Decl. ♀ M.]	Altitude [Altit.]	Arcturus, west [Arcturus occid.]
$4^h\ 52^m\ 20^s$	50° 25′		5° 50′	
$4^h\ 53^m\ 0^s$	50° 25¼′	5° 14⅔′ 5° 15′	5° 55′	60 54
$4^h\ 57^m\ 20^s$	50° 25½′		6° 25′	61 40

Afterwards, Venus having become higher, there was taken of it: [Poſtea ♀ facta altiore capiebatur eius.]

	Declination [Declin.]	Altitude [Altit.]	Azimuth	
5 5 50	5° 16′ 5° 16⅓′	7° 19′	69° 0′	63^3 48
5 10 45		7° 55′	68° 0′	

The morning was fairly clear but somewhat unsettled. [Erat hoc mane ſatis ſerenum ſed nonnihil intranquillum.]

16 May, morning [DIE 16 MAIJ, MANE.]

Venus was observed near the greatest morning departure. [Obſeruabatur ♀ circa maximam digreßionem matutinam.]

Afterwards[4] we saw Venus rising, but because of the clouds it was not possible to observe it either from Jupiter or from any other stars. [Poſtea[4] exorientem videbamus ♀, ſed propter nubes illam nec a Ioue nec vllis alijs ſtellis obſeruare conceßum eſt.]

21 May, morning [DIE 21 MAIJ, MANE.]

Observation of Venus a little after the greatest departure. [Obſeruatio ♀ paulo poſt digreßionem maximam.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Dist. ♀ a Vulture]	Declination [Declin.]	Altitude of Venus [Alt. ♀]	The Vulture, east [Vultur or.]
2^h $32\frac{1}{6}^m$	89° 3½′	7° 30′	1° 55′	
	doubtful [dubia]	7° 28′ better [melior]		
2^h 39^m 0^s	89° 5′ good [bona]		2° 50′	6 9
2^h 41^m 20^s	89° 6′	7° 23′	3° 5′	5 30
	good [bona]	7° 24′		

[1] Thus in the codex. [Sic in codice.] [2] Compare above, p. 387, among the observations of the Moon. [Cf. supra p. 387 inter obſervationes lunæ.] [3] The codex has 36. [Codex habet 36.] [4] That is, after the observation of Jupiter. [Id eſt poſt obſervationem Jovis.]

Hours, minutes, seconds [H. M. S.]	Distance of Venus from the Vulture [Dist. ♀ a Vulture]	Decli-nation [De-clin.]	Altitude of Venus [Alt. ♀]	The Vulture, east [Vultur or.]
2^h 53^m 20^s	89° 6′	7° 20½′	5° 0′	2 0
2^h 54^m corrected [corr.]	doubtful [dub.]	7° 21′		
3^h 29½^m	The whole Sun was rising. Venus was then east 82 35 in the visible horizon. [Totus ⊙ oriebatur. Tunc fuit ♀ orient. 82 35 in Horizonte viſibili.]			

26 May, morning [DIE 26 MAIJ, MANE.]

Venus and Jupiter were observed from each other. [Obſeruabantur ♀ & ♃ ab inuicem.]

Hours, minutes [H. M.]	Distance of Venus from Jupiter [Dist. ♀ a ♃]	Declination [Declin.]	Altitude [Altit.]
3^h 6^m	29° 1½′	♃ 0° 59′ south [M.]	♀ 6° 25′
		0° 59¼′	♃ 12° 40′
		♀ 9° 8′ with one pinnule [vno pin.]	
3^h $15\frac{2}{3}^m$	29° 1⅓′		♀ 7° 27′
3^h $20\frac{2}{3}^m$	29° 3′	♀ 9° 6¼′	♀ 8° 5′
		9° 6′	by the revolving quadrant [per Vol.]
			♃ 14° 0′
			by the smaller quadrant [per min. Q.]
		♃ east [♃ orient.]	61 51.

22 July, morning [DIE 22 JULIJ, MANE.]

We observed Venus approaching the Sun, for investigating the semidiameter of the orb. [Obſeruabamus ♀ ☉ appropinquantem pro ſemidiametro orbis inquirenda.]

Hours, minutes [H. M.]	Distance of Venus from the eye of ♉ [Diſt. ♀ ab oculo ♉]	Declination of Venus, north [Decl. ♀ B.]	Altitude of Venus [Altit. ♀]
2^h $57\frac{1}{6}^m$	30° 16⅓′		
2^h 59^m	30° 17′	22° 32′	14° 5′
		22° 31½′	

Venus could not be observed from Aldebaran more often because of the light of the dawn. [Pluries ab Aldebora propter Auroræ lucem obſeruari ♀ nequibat.]

Hours, minutes [H. M.]	Distance of Venus from the eye of ♉ [Diſt. ♀ ab oculo ♉]	Declination of Venus, north [Decl. ♀ B.]	Altitude of Venus [Altit. ♀]
3^h 7^m		22° 32′	15° 3′
		22° 31½′	

Put the rectified declination of Venus at 22° 28½′ [P. 22 M. 28½], without the refraction with the parallax. [*Pone Declinationem ♀ rectificatam P. 22 M. 28½ absque refractione cum parallaxi.*]

23 July [DIE 23 JULIJ.]

For correcting the declination of Venus in the armillae, there was observed in the evening: [Pro declinatione ♀ in Armillis corrigenda obſeruabatur Veſperi]

at the rising of the bright star of ♈, declination [in ortu Lucidæ ♈ Decl.]	21° 34⅚′
at altitude 13° 35′ [in altit. 13 35]	21 34⅓
It should be [*Debet eße*]	*21 31½*
Therefore the difference [*Ergo diff.*]	*3′*

10 September, morning [DIE 10 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Venus from the Lesser Dog [Diſt. ♀ a Cane minori]	Declination [Declin.]	Altitude by the revolving quadrant [Alt. per Volub.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
4^h $3\frac{1}{3}^m$	47° 8½′			
4^h $7\frac{1}{2}^m$		11° 2½′	7° 50′	18 22
		11° 2′		
4^h $11\frac{1}{2}^m$	47° 9′		8° 30′	17 30
4^h 14^m	47° 9′	11° 1′		16 52
		11° 1½′		

Hours, minutes [H. M.]	Distance of Venus from the Lesser Dog [Dist. ♀ a Cane minori]	Declination [Declin.]	Altitude by the revolving quadrant [Alt. per Volub.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
4^h 16½^m	47° 8⅔′		9° 10′	16 15

Put at 4¼^h [H. 4¼] the distance of Venus from the Lesser Dog 47° 9′, and emend the declination from some fixed one in a like position, and take account of the refraction. [*Pone H. 4¼ Dist. ♀ a Cane minore 47 9, & Declinationem emenda ab aliqua fixa in consimili situ, atque refractionis rationem habe.*]

On the following day the declination of cor ♌ was observed at an altitude of 13° 0′ [13 gr. 0′]: [Die sequenti observata est Declinatio Cordis ♌ in altitudine 13 gr. 0′]

	13° 59⅓′
	13° 58¾′

for avoiding and limiting the refraction in the declination of Venus. [pro refractione in Declinatione ♀ euitanda & limitanda.]

But it should have been at least 13 55; therefore 4′ [4 minuta] are to be taken away from the declination of Venus, so that it may be true and free from refraction. Therefore at 4¼^h [ad horam 4¼] that very declination will be 10° 57′ [P. 10 M. 57] as nearly as possible; and indeed the distance, too, to be limited because of the refraction. For it comes out a little larger, which the Table of the Refractions of the stars, applied to the distance, will settle. [*Debuit autem esse saltem 13 55, ergo 4 minuta demenda sunt Declinationi ♀, vt sit vera & a refractione libera. Erit itaque ad horam 4¼ illa ipsa Declinatio P. 10 M. 57 quam proxime, quin & distantia ob refractionem limitanda. Euadit enim paululum maior, quod Tabula Refractionum stellarum in distantiam applicata expediet.*]

11 September, morning [DIE 11 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Venus from the Lesser Dog [Dist. ♀ a Cane minori]	Declination of Venus [Decl. ♀]	Altitude [Altit.]	The bright foot of Orion [Luc. pes Orion.]
5^h 2⅓^m	48° 18′	10° 31½′	11° 35′	west [occ.]
		10° 32′		
5^h 7½^m	48° 17⅚′	10° 32′	12° 15′	1 0
		10° 33′		
5^h 11^m	48° 18¼′	10° 32′	12° 55′	1 58
	good [bona]	10° 32⅚′		
5^h 15⅓^m	48° 18⅔′	10° 32⅔′	13° 25′	2 55
	good [bona]			
5^h 19⅓^m	48° 18′	10° 33′	14° 0′	3 50
		10° 32¾′		

N.B. Cor ♌ at an altitude of 13° [13 P.] had a declination of 13° 59′. But in fact it should have had 13 55. Therefore 4′ [4 minuta] to be taken away, so that the true declination of Venus about 5¼ʰ [Horam 5¼] is 10° 29′ [P. 10 M. 29], nearly. And indeed the distances, too, to be limited because of the refraction. [*N.B. Cor ♌ in Altitudine 13 P. habuit Declinationem 13 59. Debuit autem habere reuera 13 55. Ergo 4 minuta auferenda, vt ſit vera Declinatio ♀ circa Horam 5¼ P. 10 M. 29 fere. Quin & diſtantiæ ob Refractionem limitandæ.*]

14 September, morning [DIE 14 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Venus from the Lesser Dog [Diſt. ♀ a Cane minori]	Declination [Decl.]	Altitude of Venus [Alt. ♀]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
4ʰ 25ᵐ[1]	51° 44′	9° 19′ 9° 19⅚′	4° 55′	16 46
4ʰ 23ᵐ	51° 43⅓′	9° 19′ 9° 18′	5° 30′	15 20
4ʰ 32ᵐ	51° 44′		6° 40′	13 3

[1] Thus in the codex. [Sic in codice.]

Hours, minutes [H. M.]	Distance of Venus from the Lesser Dog [Diſt. ♀ a Cane minori]	Declination [Decl.]	Altitude of Venus [Alt. ♀]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
5ʰ 14ᵐ	51° 45′	9° 14′ 9° 13⅔′	12° 28′	4 35
5ʰ 28ᵐ	51° 46′	9° 12′ 9° 13′	14° 10′	

15 September, morning [DIE 15 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Venus from the Lesser Dog [Diſt. ♀ a Cane minore]	Declination of Venus [Decl. ♀]	Altitude [Altit.]	The bright shoulder of Orion, east [Luc. hum. Orion.or.]
4ʰ 20ᵐ	52° 57½′	8° 45½′ with both [vtroque]	10° 50′	3 18
4ʰ 24ᵐ	52° 57⅔′		11° 30′	2 49
4ʰ 26ᵐ	52° 57⅔′	8° 46′ 8° 46¼′	11° 50′	1 28
4ʰ 30ᵐ	52° 57½′			0 40

More could not be observed because of the dawn. [Plura propter Auroram obſeruari non potuerunt.]

Afterwards, before noon, at 11½ʰ [H. 11½], the clock that had been used this night was corrected, and it was then found to have run an hour and a half slower than it should. But this error not to be charged everywhere to the preceding ones; rather, the

time to be corrected by the stars. [*Poſtea ante Meridiem H. 11½ corrigebatur horologium, quo vſi ſunt hac nocte, & viſum eſt tunc ſeſquialtera hora iuſto tardius promotum. Sed is error in antecedentibus non vbique imputandus, ſed ad ſtellas corrigendum tempus.*]

18 September, morning [*DIE 18 SEPTEMBRIS, MANE.*]

Hours, minutes [*H. M.*]	*Distance of Venus from the Lesser Dog* [*Diſt. ♀ a Cane minore*]	*Declination of Venus* [*Decl. ♀*]	*Altitude* [*Altit.*]	*The bright foot of Orion, west* [*Luc. pes Orion.occ.*]
4^h $54\frac{2}{5}^m$	56° 26½′	7° 23′ 7° 23¼′	11° 5′	11 53
4^h $57\frac{5}{6}^m$	56° 27′		11° 40′	12 45
4^h $58\frac{1}{2}^m$	56° 27⅓′	7° 22⅚′ 7° 22½′	12° 5′	12 58
5^h 4^m	56° 28′	7° 22⅓′ 7° 22⅙′	12° 40′	14 10

About 8^h [Horam 8] the clock was corrected by the Sun, because it had run 37^m [37 Minutis] faster than it should. [*Circa Horam 8 corrigebatur Horologium ad Solem, quod 37 Minutis iuſto celerius motum erat.*]

21 September, morning[1] [*DIE 21 SEPTEMBRIS, MANE*[1].]

Hours, minutes [*H. M.*]	*Distance of Venus from Regulus* [*Diſt. ♀ a Regulo*]	*Declination of Venus* [*Declin. ♀*]	*Altitude* [*Altit.*]	*Sirius, east* [*Syrius or.*]
5^h 31^m	24° 1′	5° 59⅓′	10° 21′	7 17
5^h 33^m	24° 2′	5° 59½′	10° 30′	6 45

It was not possible to have more on Venus, because of Regulus appearing faintly through the dawn. You can use this place of Venus for the observations of the preceding day too, comparing together the observations of the 18th, made three days before, on that very one. [*Plura in ♀ habere non licuit ob Regulum per Auroram minute apparentem. Potes vti hoc loco ♀ pro obſeruationibus diej antecedentis quoque conferendo vna obſeruationes diej 18 ante triduum in ipſa factas.*]

22 September [DIE 22 SEPTEMBRIS.]

Hours, minutes [H. M.]	Distance of Venus from cor ♌ [Diſt. ♀ a Corde ♌]	Declination [Declin.]	Altitude [Altit.]	The Greater Dog, east [Can. mai. orient.]
5^h 13^m	25° 16¾′	5° 31½′ with both [vtroque]	7° 15′	11 1
5^h 18^m	25° 17′	5° 30′ 5° 30⅙′	7° 52′	9 49
5^h 22^m	25° 18′		8° 29′	8 50
5^h 24^m	25° 19′	5° 29′ 5° 29⅓′	8° 40′	8 21

The angular difference of ascension is [*Angulus differ. aſcenſ. eſt*]	*24° 13′*	
and therefore the right ascension of Venus [*ideoque Aſc. R.* ♀]	*170° 54′*	
Declination [*Declinatio*]	*5° 30′*	
Resp. longitude [*Reſp. Longitudo*]	*19° 29¼′* ♍	*apparently* [*appa-*]
Latitude [*Latitudo*]	*1° 26′ north* [*B.*]	[*renter*]
		with the refraction [*cum refractione*]

	Longitude [*Longit.*]	*Latitude* [*Latit.*]
Alphonsine calculation of Venus [*Calculus Alphonſ.* ♀]	*19° 39′* ♍	*0° 55′ north* [*B.*]
Copernicus's [*Copernici*]	*18° 50′*	*1° 7′ north* [*B.*]

25 September, morning [DIE 25 SEPTEMBRIS, MANE.]

At 4^h $58\frac{1}{6}^m$ [H. 4 M. 58⅙] Venus was observed in the east, having an altitude of 4° 43′, an azimuth of 90° 22′ from the south toward the rising; its declination [H. 4 M. 58⅙ Obſeruabatur ♀ orientalis, habens Altitudinem 4 43 Azimuth 90 22 a Meridie ad ortum Declinatio eius]

4° 9½′ with one [vno]
4° 9⅚′ with the other [altero]

20 October, morning [DIE 20 OCTOBRIS, MANE.]

Morning observation of Venus, when it was near the Sun. The clock set approximately [ἐν πλάτει] at 6^h 0^m [H. 6 M. 0.]. Observation of Venus from Regulus. [Obſeruatio ♀ matutina cum prope ☉ eßet. Poſitum horologium ἐν πλάτει ad H. 6 M. 0. Obſeruatio ♀ a Regulo.]

Clock corrected, as also the times [Horol. correctum vt & tempora]	Distance from Regulus [Diſt. a Regulo]	Declination of Venus, with one [Declinatio ♀ vno]	with the other [al-tero]	Az-imuth of Venus [Azim. ♀]	Altitude of Venus [Altit. ♀]	The Lesser Dog, west [Can. min. occid.]	
6^h 36^m	48° 32′	8° 11⅔′	8° 11⅙′	68° 34′	4° 0′	23 19	
6^h 38^m	48° 33′*	8° 12½′	8° 12¼′	68° 11′	4° 20′	23 50	*bet-ter [*me-lior]
6^h 40^m	48° 34′	8° 12⅔′ with one [vno]		67° 38′	4° 27′	24 18	

[1] You will find the observations of the declination of Venus made on 20 September above, among the observations of the Moon (p. 400). [Obſeruationes declinationis Veneris die 20 Septembris factas ſupra inter obſervationes lunæ invenies (p. 400).]

	Distance from the Greater Dog [Diſt. a Cane mai.]						Altitude of Sirius [Altit. Syrij]
6 43	103° 11′	8 13½	8 14	67 7	4 57	25 3	
6 45½	103° 12½′	8 14⅔	8 14⅙		5 7	25 41	10¾°
6 49¼	103° 13′	8 14⅚ with one [vno]		65 40	5 26	26 37	10½°
6 52	103° 13′	8 15⅙ with one [vno]		64 57	5 45	27 18	
6 56	103° 13½′	8 16 with one [vno]		64 14	6 14		9° 55′

No star seen because of the dawn. [Stella nulla viſa propter auroram.]
27 October, morning [DIE 27 OCTOBRIS, MANE.]
Venus was observed from the Greater Dog. [Obſeruabatur ♀ a Cane maiore.]

Hours, minutes [H. M.]	Distance [Diſt.]	Declination, M. [Declin. M.]	Altitude [Altit.]	Canicula, west [Canicula occid.]
7^h $1\frac{1}{2}^m$	109° 42½′	11° 23½′ 11° 23⅓′	4° 10′	36 33

				The Greater Dog, west [Can. mai. occ.]
7 7	109 43		4 35	50 42
7 8⅔	109 45⅔	11 26	5 0	51 2
	doubtful [dubia]	11 25⅚		

Put the declination at 11° 30′, and the distance of Venus in the last observation at 109° 44′, and it will be right. [*Pone declinationem 11 30 & diſt. ♀ in vlt. obſeruat. 109 44, & recte erit.*]

N.B. This observation of Venus was good by its commutation. For it was near the Sun, about 10° [10 gr.], in the morning. And it was as it were in an equilibrium of the horizon with Sirius. [N.B. Hæc obſeruatio ♀ fuit bona per commutationem eius. Nam erat propinqua ☉ circiter 10 gr. mane. Et erat quaſi in æquilibrio Horizontis cum Syrio.]

Rising of the Sun 7^h 50^m [☉ ortus H. 7 M. 50.]

But for limiting the declination of Venus, on account both of the refraction and of the error of the armillae (if there was any fault), the Greater Dog was taken on the following night, since it was at nearly a like altitude, namely 5½, and its declination was found [*Pro limitanda vero ♀ Declinatione tam propter refractionem*

quam Armillarum (ſi quod fuit vitium) errorem capiebatur nocte ſequente Canis maior cum in conſimili ferme eßet altitudine vtpote 5½, & inuenta eſt eius declinatio]

with one pinnule [*vno pinnacidio*]	*16° 5′*	*both* [*vtraque*]
with the other [*altero*]	*16° 5⅓′*	*good* [*bona*]

But it should have been 16 10½, or rather 10¾. The bright foot of Orion bears out nearly the same, at altitude 5⅔, having declination 8° 38′; it should have been 8 42½. [*Debuit autem eße 16 10½ vel potius 10¾. Idem probat ferme Lucidus pes Orionis in altit. 5⅔, habens decl. 8 38, debuit eße 8 42½.*]

28 October, morning [DIE 28 OCTOBRIS, MANE.]

For yesterday's observation of Venus the Greater Dog was taken at a like altitude. [Pro heſterna ♀ obſeruatione capiebatur Canis maior in conſimili altitudine.]

12^h 9⅓^m corrected, declination [H. 12 M. 9⅓ correct. Declin.]	16° 5′
of the Greater Dog [Canis maioris]	16° 5⅓′
both good. Altitude [vtrumque bonum. Alt.]	5½°
The bright star of the jaw of the Whale, west [Luc. mandib. Ceti occid.]	2 25

Venus was observed from Saturn. [Obſeruabatur ♀ a ♄.]

Hours, minutes [H. M.]	Distance of Venus from Saturn [Diſt. ♀ a ♄]	Declination of Venus, computed [Decl. ♀ ſupputata]	Altitude of Venus [Altit. ♀]	Azimuth [Azim.]
6^h 34½^m	57° 57¼′ good [bona]	11° 56′	1° 40′	65° 40′

	from Sirius [a Syrio]			
6 41⅔	110 43⅓	12 11	2 5	64 30
The Greater Dog, west [Canis maior occid.]				48 30

The declination of Venus could not be had because of the declivity; but we shall borrow it either from yesterday's observation, reduced to here, or rather from these observations and the altitudes. [Declinatio ♀ haberi nequijt ob decliuitatem, ſed hanc vel ab heſterna obſeruatione huc reducta mutuabimur vel potius ex his obſeruatis & Altitudinibus.]

Observations of Mercury [OBSERUATIONES MERCURIJ.]

30 March, evening [DIE 30 MARTIJ, VESPERI.]

We observed Mercury for the first time this year. [Primum obſeruabamus ☿ hoc anno.]

Hours, minutes, seconds [H. M. S.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury [Decl. ☿]	Altitude of Mercury [Alt. ☿]	The Lesser Dog, west [Can. min. occ.]
$7^h\ 52^m\ 40^s$	27° 58′	15° 50′	6° 40′	26 4
$7^h\ 51^m$ corrected [corr.]	with both pinnules [vtroq. pin.]			
$7^h\ 56^m\ 50^s$	27° 52⅓′	15° 46½′	6° 5′	
	with one, doubtful [vno, dub.]			
$8^h\ 0^m\ 20^s$	27° 56¾′	15° 50½′	5° 40′	27 56
$7^h\ 58^m$ corrected [corr.]		15° 52′		
$8^h\ 5^m\ 0^s$		15° 53′	5° 10′	29 7
$8^h\ 3^m\ 0^s$ corrected [corr.]		15° 52¾′		

Hours, minutes, seconds [H. M. S.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury [Decl. ☿]	Altitude of Mercury [Alt. ☿]	The Lesser Dog, west [Can. min. occ.]
$8^h\ 7^m\ 40^s$	28° 3′		4° 50′	29 46
$8^h\ 5½^m$ corrected [corr.]				
$8^h\ 11^m\ 10^s$	27° 57⅚′	15° 53′	4° 15′	30 40
$8^h\ 10^m\ 0^s$	good [bona]	with both [vtroq.]		
corrected [corr.]				
$8^h\ 14^m\ 20^s$	27° 57⅓′	15° 54′	3° 50′	31 26
$8^h\ 12⅓^m$ corrected [corr.]	good [bona]	15° 53⅚′		
$8^h\ 18^m\ 0^s$	27° 55′		3° 25′	32 25
$8^h\ 16^m\ 4^s$ corrected [corr.]	moderate [mediocris]			

Afterwards Mercury ceased to be seen among the rather sparse clouds. [Poſtea ☿ videri deſijt inter rariuſculas nubes.]

8 22½ For examining the armillae [8 22½ Pro examinandis Armillis]
the eye was taken [capiebatur oculus] 15° 36½′
of ♉, in declination [♉ in Declinatione] 15° 37′
Altitude of the eye of ♉ 18½ by the smaller quadrant [Altitudo oculi ♉ 18½ per minor. Q.]

The true declination of Aldebaran reduced to the present time 15° 37⅚′. [Vera Aldeboræ Declinatio reducta ad præſens tempus 15 37⅚.]

Trust the last three distances. [Confide vltimis tribus diſtantijs.]

But this evening the wind was very unsettled. [Erat autem hac veſpera ventus admodum intranquillus.]

Calculation of the place of Mercury for 30 March from the observations. [Calculus loci ☿ ad diem 30 Martij ex obſeruationibus.]

$8^h\ 10^m$, distance of Mercury [H. 8 M. 10 Diſt. ☿]	
from Aldebaran [ab Aldebora]	27° 58′
Declination of Mercury, emended [Declin. ☿ emendata]	15° 54½′
Declination of Aldebaran, emended [Decl. Aldeb. emendata]	15° 38′
Angular difference of ascension [Ang. diff. aſcenſionalis]	29° 5′
Right ascension of Mercury [Aſc. recta ☿]	34° 6′ 35″
Resp. longitude [Reſp. Longitudo]	7° 10⅙′ ♉
Latitude [Latitudo]	2° 4′ 0″ north [B.]

Altitude of Mercury [Alt. ☿]	refraction [Refr.]	10′ 45″	in longitude [in Long.]	6 0
4¼	parallax [Parall.]	3 15	latitude [Lat.]	4 30
		7 30		

Therefore the true longitude of Mercury [Ergo vera ☿ Longitudo]	7° 4⅙′ ♉
Latitude [Latitudo]	1° 59½′ north [B.]

1 April, evening [DIE 1 APRILIS, VESPERI.]

Mercury was observed near the greatest elongation from the Sun, in the manner that follows. [Obſeruabatur ☿ iuxta maximam a ☉ elongationem in modum qui ſequitur.]

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury, north [Decl. ☿ B.]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occid.]
$7^h\ 36^m$	25° 11½′	16° 59⅚′	9⅓°	25 26
$7^h\ 41^m$		17° 1′		
corrected [corr.]				
$7^h\ 40\frac{5}{6}^m$	25° 10′	17° 1½′	8° 50′	26 32
$7^h\ 45\frac{2}{3}^m$		17° 2′		
$7^h\ 45\frac{1}{3}^m$	25° 11′	17° 5′	8° 20′	27 40
$7^h\ 50^m$		17° 4⅓′		
$7^h\ 48\frac{1}{3}^m$	25° 11′		7° 50′	28 24
$7^h\ 53^m$				
$7^h\ 51\frac{2}{3}^m$	25° 10⅙′	17° 4½′		29 11

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury, north [Decl. ☿ B.]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occid.]
$7^h\ 56^m$		17° 4⅚′		
$7^h\ 55½^m$	25° 10′	17° 4⅔′	7° 0′	30 8
$8^h\ 0^m$		17° 5′ nearly [fere]		
$7^h\ 59½^m$	25° 9¼′	17° 4¾′	6° 35′	31 4
$8^h\ 3¼^m$		17° 5⅙′		

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury, north [Decl. ☿ B.]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occid.]
$8^h\ 3½^m$	25° 8⅓′	17° 6′	6° 0′	32 0
$8^h\ 7⅓^m$		17° 6½′		
$8^h\ 8^m$	25° 8′	17° 6⅚′	5° 30′	33 5
$8^h\ 11⅔^m$		17° 6⅔′		
$8^h\ 12½^m$	25° 6¾′	17° 7⅚′	5° 0′	34 8
$8^h\ 16^m$		17° 7½′		
$8^h\ 16⅓^m$	25° 6⅓′	17° 9½′	4° 30′	35 6
$8^h\ 19⅔^m$		17° 9⅓′		
$8^h\ 19½^m$	25° 5⅔′	17° 9⅔′	4° 0′	35 54
$8^h\ 23^m$		17° 9½′		
$8^h\ 22⅚^m$	25° 5¼′	17° 9¾′	3° 40′	36 42
$8^h\ 26^m$		with both [vtroque]		
$8^h\ 27^m$	25° 4⅔′	17° 9⅚′	3° 10′	37 42
$8^h\ 30^m$		with one [vno]		

8 32 For the examination of the armillae [8 32 Pro Armillarum examine]	15° 38½′
Declination of Aldebaran [Declinatio Aldeboræ]	15° 38′
Altitude of the same [Altitudo eiusdem]	15° 20′

It was fairly clear and calm. [Fuit ſatis ſerenum & tranquillum.]

Inquiry into the place of Mercury for 1 April from the observations. [Inquiſitio loci ☿ ad diem 1 Aprilis ex obſeruationibus.]

$8^h\ 0^m$, distance of Mercury from Aldebaran [H. 8 M. 0 Diſt. ☿ ab Aldeb.]	25° 10′
Declination of Mercury, limited [Declin. ☿ limitata]	17° 6½′
Angular difference of ascension [Ang. diff. aſcenſ.]	26° 12¼′
Right ascension of Mercury [Aſc. Recta ☿]	36° 59⅓′
Resp. longitude [Reſp. Longitudo]	10° 10½′ ♉
Latitude [Latitudo]	2° 18⅔′ north [B.]

Altitude of Mercury [Alt. ☿]	Resp. refraction [Reſp. Refr.]	8′ 15″	in longitude [in Long.]	4 0
7° 0′	parallax [Parall.]	3 15	latitude [Lat.]	3 0
		5 0		

True longitude of Mercury [Vera ☿ Longitudo]	10° 6½′ ♉
Latitude [Latitudo]	2° 15⅔′ north [B.]

2 April, evening [DIE 2 APRILIS, VESPERI.]

Mercury was observed in the following manner. [Obſeruabatur ☿ in modum ſequentem.]

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldebora]	Declination of Mercury [Decl. ☿]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occid.]
8^h 0⅔^m	23° 55½′	17° 37⅔′	7¼°	
8^h 2⅔^m		17° 38½′		
corrected [corr.]				
8^h 5⅙^m	23° 54⅚′	17° 38′	6° 50′	32 53
8^h 7^m		17° 38½′		
corrected [corr.]				
8^h 9⅔^m	23° 53½′	17° 38⅙′	6° 0′	34 3
8^h 11⅚^m		17° 38½′		
8^h 15^m	23° 52′	17° 40½′	5° 20′	35 25
8^h 17⅓^m		17° 40⅓′		
8^h 19½^m	23° 51¼′	17° 41½′	4° 50′	36 34
8^h 22^m		17° 41⅓′		

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldebora]	Declination of Mercury [Decl. ☿]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occid.]
8^h 24^m	23° 51′	17° 42′	4¼	37 46
8^h 26⅚^m		17° 42⅓′		
8^h 29½^m	23° 50⅙′		3⅗	39 2
8^h 31⅚^m				

It was moderately clear, and calm enough. [Fuit mediocriter ſerenum & tranquillum ſatis.]

In these days, although the clear weather had been continuous, yet on every side, from the horizon at an elevation of about 39 or beyond, there were dark little clouds, covering the φαινόμενα [Greek: phainomena, "appearances"] rising and setting below the altitude mentioned. [Hiſce diebus etſi continua

fuerat ſerenitas, tamen vndequaque ab Horizonte in elevatione circiter 39 vel vltra obſcuræ nubeculæ fuerunt φαινόμενα aſcendentia & deſcendentia infra dictam altitudinem obtegentes.]

There follows the calculation of Mercury from the observations written above, on 2 April. [Sequitur calculus ☿ ex ſupraſcriptis obſeruationibus d. 2 Apr.]

$8^h\ 5^m$ [H. 8 M. 5]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]		23° 55′
	Declination of Mercury, limited [Declin. ☿ limitata]		17° 40′
	Declination of Aldebaran [Declin. Aldeboræ]		15° 38′
	Angular difference of ascension [Ang. diff. aſcenſ.]		24° 53½′
	Resp. longitude [Reſp. Longitudo]		11° 32½′ ♉
Altitude 7° 0′ [Alt. 7° 0′]	Latitude [Latitudo]		2° 26⅔′ north [B.]
	True, free of refraction [Vera a refractione]	longitude [Long.]	11° 28½′ ♉
	and of parallax [& parallaxi libera]	latitude [Lat.]	2° 23⅔′ north [B.]

3 April, evening [DIE 3 APRILIS, VESPERI.]

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury [Decl. ☿]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occ.]
$7^h\ 55½^m$	22° 40⅚′	18° 8′	7° 40′	33 30
$8^h\ 6^m$ corrected [corr.]	doubtful [dubia]	18° 7¾′		
$7^h\ 59^m$	22° 43′	18° 9⅓′	7° 8′	34 25
$8^h\ 10^m$ corrected [corr.]		18° 9⅔′		
$8^h\ 3^m$	22° 42¼′	18° 9½′	6° 50′	35 22
$8^h\ 13½^m$		18° 9⅔′		
$8^h\ 7½^m$	22° 41⅔′	18° 10′	6° 7′	36 20
$8^h\ 17⅓^m$		with both [vtroque]		
$8^h\ 12¼^m$	22° 40⅔′	18° 11′	5° 23′	37 42
$8^h\ 23^m$		18° 11½′		
$8^h\ 17⅓^m$	22° 40⅓′	18° 12½′	4° 50′	38 59
$8^h\ 28^m$		18° 12⅓′		
$8^h\ 20⅚^m$	22° 39′	18° 13′	4° 30′	39 50
$8^h\ 31⅓^m$	with one pinnule at least [vno ſaltem pinn.]			
$8^h\ 25½^m$	22° 38¾′	18° 13⅓′	3° 52′	41 3

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury [Decl. ☿]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occ.]
$8^h\ 36^m$				
$8^h\ 30^m$	22° 38⅔′	18° 14′	3° 15′	42 25
$8^h\ 41⅔^m$	doubtful [dubia]	doubtful [dubia]		

For the examination of the armillae [Pro Armillarum examine]	15° 37⅔′
the declination of Aldebaran was taken [capiebatur Aldeb. Declin.]	15° 38′
its altitude then [Altitudo eius tum]	12⅓°

This evening it was exceptionally clear and calm. [Erat hac veſpera apprime ſerenum & tranquillum.]

Calculation of Mercury from the observations written above. [Calculus ☿ ex ſupraſcriptis obſeruationibus.]

$8^h\ 10^m$ [H. 8 M. 10]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	22° 43′
	Declination of Mercury, limited [Declin. ☿ limitata]	18° 11′
	Altitude of Mercury at that time [Altit. ☿ tunc temporis]	7° 8′
	Angular difference of ascension [Ang. diff. aſcenſ.]	23° 36⅓′
	Resp. longitude [Reſp. Longitudo]	12° 52′ ♉
	Latitude [Latitudo]	2° 33′ 25″ north [B.]
With the parallax and refraction subtracted [Subductis Parallaxi & Refractione]		
	Resp. true longitude of Mercury [Reſp. vera ☿ Longitudo]	12° 48′ ♉
	Latitude [Latitudo]	2° 30½′ north [B.]

4 April, evening [DIE 4 APRILIS, VESPERI.]

Observation of Mercury. [Obſeruatio ☿.]

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury, north [Decl. ☿ borea]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occ.]
$7^h\ 53½^m$	21° 39½′	18° 34′	9° 30′	31 45
$7^h\ 55^m$ corrected [corr.]		with both [vtroque]		
$7^h\ 58^m$	21° 36′	18° 35′	9° 0′	32 57
$8^h\ 0^m$	doubtful [dubia]	18° 35½′		

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury, north [Decl. ☿ borea]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occ.]
8^h 1^m	21° 38′	18° 37′	8° 30′	33 48
8^h $3½^m$		18° 38′		
8^h $6⅚^m$	21° 38′	18° 38′	7° 48′	35 20
8^h $9½^m$		18° 38⅓′		
8^h $11½^m$	21° 37½′	18° 38′	7° 0′	36 39
8^h 15^m		with both [vtroque]		
8^h 15^m	21° 37¼′	18° 39¾′	6° 30′	37 30
8^h 18^m		18° 40′		

Vice versa, from the right shoulder of Orion [Viceverſa a dextro humero Orionis]

8 21⅚	42 54	18 40	5 40	39 13
8 25		18 39⅚		
8 24½	42 52½	18 40⅓	5 10	40 5
8 28½		18 40½		
8 26⅚	42 51	18 41	4 40	40 40
8 30⅚		with one pinnule [vno pin.]		

This evening Mercury could not be observed any longer because of the thick clouds present about the western horizon. Moreover, this evening the wind was somewhat more unsettled, from the same quarter of the sky. [☿ hac veſpera amplius obſeruari nequibat propter nubes circa Horizonta occiduum craßas exiſtentes. Erat inſuper hac veſpera ventus aliquanto intranquillior ab eadem cœli plaga.]

Place of Mercury on 4 April from the observations written above. [Locus ☿ ad diem 4 Aprilis ex obſeruationibus ſupraſcriptis.]

8^h 15^m [H. 8 M. 15]	Distance between Mercury and [Diſt. inter ☿ &]	
	Aldebaran [Aldeb.]	21° 37½′
	Declination of Mercury, limited [Declin. ☿ limitata]	18° 39½′
	Altitude of Mercury was then [Alt. ☿ tunc fuit]	7° 0′
	Angular difference of ascension [Ang. diff. aſcenſ.]	22° 25½′
	Resp. longitude [Reſp. Longitudo]	14° 5′ 0″ ♉
	Latitude [Latitudo]	2° 39′ 50″ north [B.]
	True Mercury, free of refraction and [Vera ☿ a Refractione &]	
	parallax [Parallaxi libera]	
	Longitude [Longitudo]	14° 1′ ♉
	Latitude [Latitudo]	2° 36⅚′ north [B.]

6 April, evening [DIE 6 APRILIS, VESPERI.]

Mercury was observed near its greatest digression from the Sun. [Obſeruabatur ☿ iuxta maximam a ☉[le] digreßionem.]

Hours, minutes [H. M.]	Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination of Mercury [Decl. ☿]	Altitude [Altit.]	The Lesser Dog, west [Can. min. occid.]
8^h $15\frac{2}{3}^m$	19° 40½′	19° 21½′	7° 50′	38 30
8^h $14\frac{5}{6}^m$ corrected [corr.]		19° 21⅔′		
8^h $20\frac{1}{3}^m$	19° 40¼′	19° 24⅙′	7° 15′	39 43
8^h 20^m		19° 23⅔′		
8^h $24\frac{2}{3}^m$		19° 24⅙′	6° 40′	40 45
8^h 24^m		19° 24¼′		
8^h 30^m 40^s	19° 40′	19° 26½′	6° 0′	
		19° 26⅔′		Cor ♌, west [Cor ♌ occ.]
8^h 34^m 20^s	*19° 39⅙′*	*19° 26′*	*5° 30′*	*6 6*
		19° 26⅔′		
8^h 38^m 30^s	*19° 39′*		*4° 50′*	*7 7*

Afterwards Mercury was observed by its distance from the right shoulder of Orion. [*Poſtea obſeruabatur ☿ diſtantia a dextro humero Orionis.*]

8 47 10	*41 53*	*19 31*	*3 50*	*The Lesser Dog [Can.min.]*
		19 30		*46 28*

This last was doubtful because of the clouds coming between. [*Hæc vltima fuit dubia propter nubes intervenientes.*]

Inquiry into the place of Mercury from the observations written above. [Inquiſitio loci ☿ ex ſupraſcriptis obſeruationibus.]

8^h 20^m [H. 8 M. 20]

Distance of Mercury from Aldebaran [Diſt. ☿ ab Aldeb.]	19° 40¼′
Declination of Mercury, limited [Declin. ☿ limitata]	19° 25′
Altitude of Mercury was then [Altit. ☿ tunc fuit]	7° 15′
Angular difference of ascension [Ang. diff. aſcenſ.]	20° 15½′
Resp. longitude [Reſp. Longitudo]	16° 12⅓′ ♉
Latitude [Latitudo]	2° 48′ north [B.]

With the parallax and refraction subtracted [Subtractis Parallaxi & Refractione]

	Resp. true longitude of Mercury [Reſp. Vera ☿ Longitudo]	16° 8½′ ♉ B.
	Latitude [Latitudo]	2° 45′ north [B.]

11 April [DIE 11 APRILIS.]
Observation of Mercury. [*Obſeruatio* ☿.]

Hours, minutes, seconds [H. M. S.]	*Distance of Mercury from the bright shoulder of Orion [Diſt. ☿ ab hum.luc. Or.]*	*Declination of Mercury [Decl. ☿]*	*Altitude [Altit.]*	*The Lesser Dog, west [Can. min. occid.]*
$8^h\ 14^m\ 10^s$		20° 36⅓′ *with one [vno]*	6° 0′	47 30
$8^h\ 18^m\ 20^s$	37° 38⅙′		5° 50′	48 30
$8^h\ 21^m\ 0^s$	37° 40¼′	20° 36⅔′ 20° 37′	5° 30′	49 17
$8^h\ 23^m\ 40^s$	37° 41½′	20° 37½′ 20° 37′	5° 10′	49 58
$8^h\ 26^m\ 20^s$		20° 38½′	4° 50′	50 41

About the middle of these times the altitude of the bright shoulder of Orion, from which the distance of Mercury was taken, was about 14 or 15°. [*Circa medium horum temporum fuit Altitudo lucidi humeri Orionis, vnde capiebatur diſtantia* ☿ *quaſi 14 vel 15 gr.*]

$8^h\ 40½^m$ [H. 8 M. 40½]	*for the examination of the armillae [pro Armillarum]*	15° 40½′
	the declination of Aldebaran [examine, Decl. Aldeboræ]	15° 40′
	the altitude of the same [Altitudo eiusdem]	7½

Afterwards Mercury could not be observed any longer, namely from $8^h\ 26⅓^m$ [hora videlicet 8 M. 26⅓], but it was covered by clouds, and vapours at the horizon hindered. You can, however, without sensible error use the intermediate distance, which was taken at $8^h\ 21^m$ [H. 8 M. 21], setting it at 37° 40′ [P. 37 M. 40] at the altitude 5½, and assuming its declination as 20° 37′ [P. 20 M. 37]. But account must be taken of the refraction of the bright shoulder of Orion, the star from which the distance was taken, and it must also be seen how far the armillae perhaps deviate in declination, by an experiment made with Aldebaran, with its refraction applied. [*Poſtea non potuit amplius obſeruari* ☿, *ab hora videlicet 8 M. 26⅓, ſed nubibus tegebatur, & vapores ad Horizontem impediebant. Potes autem absque ſenſibili errore vti diſtantia intermedia, quæ accepta eſt H. 8 M. 21, ponendo eam P. 37 M. 40 in Altitudine 5½, & aßumendo declinationem eius P. 20 M. 37. Habenda vero eſt ratio refractionis Lucidi humeri Orionis, a qua ſtella diſtantia capiebatur, & videndum etiam quid Armillæ in Declinatione forte devient, experimento facto per Aldeboram adhibita eius refractione.*]

Inquiry into the place of Mercury for 11 April. [Inquiſitio loci ☿ ad diem 11 Aprilis.]

8⅓h [H. 8⅓]	Distance of Mercury from the bright shoulder [Diſt. ☿ a luc. hum.]	
	of Orion [Orionis]	37° 40′
	Declination of Mercury, corrected [Decl. ☿ correcta]	20° 38′
at altitude [in altit.]	Apparent declination of the shoulder of Orion [Decl. viſa hum. Or.]	7° 16′
14½	Its apparent right ascension [Aſc. R. eius viſa]	83° 21½′
	Angular difference of ascension [Ang. diff. aſcenſ.]	36° 25′ 15″
	Therefore right ascension of Mercury [Ergo Aſc. recta ☿]	46° 56′ 15″
Altitude 5½ [Altit. 5½]	Longitude [Longitudo]	20° 13½′ ♉
	Latitude [Latitudo]	2° 52′ 35″ north [B.]

(12 April) [[DIE 12 APRILIS.]]

Mercury could not be observed this evening because of the twilight and the bright vapours near the west, the Moon too, approaching full moon, obscuring it with its light. This day, however, is referred here to 12 Apr., on the evening of which we observed Saturn. [*Non potuit hac veſpera obſeruari ☿ propter crepuſculum & lucidos vapores iuxta occaſum,* ☾ *etiam ad plenilunium tendente ſuo lumine ipſum offuſcante. Refertur autem hic dies ad 12 Apr., cuius veſpera* ♄ *obſeruauimus.*]

Collection of the true phenomena [Phænomevωv] of Mercury observed by us in the sky, together with the addition of the calculation of Copernicus and of the Alphonsines, the daily motion of each being set beside our observed one for the sake of comparison. [Collectio verorum Phænomevωv ☿ cœlitus a nobis obſeruatorum vna cum adiectione calculi Copernici & Alphonſinorum, moto diurno vtriusque cum obſeruato noſtro collationis gratia aſcripto.]

Day [Dies]	Hours, minutes [H. M.]	Observed, true [Obſeruata vera]: longitude ♉ [Long. ♉]	Latitude north [Lat. B.]	Of Copernicus [Copernici]: longitude ♉ [Long. ♉]	Latitude north [Lat. B.]	Of the Alphonsines [Alphonſinorum]: longitude ♉ [Long. ♉]	Latitude north [Lat. B.]	Daily motion of the longitude [Motus diurnus Longitudinis]: observed [Obſeruatus]	Copernicus [Coperni.]	Alphonsines [Alph.]
30	8h 10m	7° 4⅙′	1° 59½′	6° 48′	1° 30′	5° 5′	1° 11′			
								3° 2′ 20″	2° 45′	3° 14′
1	8h 0m	10° 6½′	2° 15⅔′	9° 33′	1° 52′	8° 19′	1° 23′			
								1° 22′ 0″	1° 20′	1° 36′
2	8h 5m	11° 28½′	2° 23⅔′	10° 53′	1° 59′	9° 55′	1° 30′			
								1° 19′ 30″	1° 17′	1° 34′
3	8h 10m	12° 48′	2° 30½′	12° 10′	2° 7′	11° 29′	1° 36′			
								1° 13′	1° 15′	1° 31′

Day [Dies]	Hours, minutes [H. M.]	Observed, true [Obſeruata vera]: longitude ☿ [Long. ☿]	Latitude north [Lat. B.]	Of Copernicus [Copernici]: longitude ☿ [Long. ☿]	Latitude north [Lat. B.]	Of the Alphonsines [Alphonſinorum]: longitude ☿ [Long. ☿]	Latitude north [Lat. B.]	Daily motion of the longitude [Motus diurnus Longitudinis]: observed [Obſeruatus]	Copernicus [Coperni.]	Alphonsines [Alph.]
4	$8^h\ 15^m$	14° 1′	2° 36⅚′	3° 25′	2° 13′	13° 0′	1° 41′			
								2° 7′ 30″	2° 17′	2° 54′
6	$8^h\ 20^m$	16° 8½′	2° 45′	15° 42′	2° 24′	15° 54′	1° 59′			
								4° 0½′	4° 26′	6° 30′
11	$8^h\ 20^m$	20° 9′	2° 48½′	20° 8′	2° 45′	22° 24′	2° 0′			

14 September, morning [DIE 14 SEPTEMBRIS, MANE.]

N. B. A morning observation of Mercury near its greatest remoteness from the Sun. [*N. B. Obſeruatio ☿ matutina prope maximam a ☉ remotionem.*]

Hours, minutes [H. M.]	Distance of Mercury from the Lesser Dog [Diſt. ☿ a Cane min.]	Altitude of Mercury [Altit. ☿]	The bright shoulder of Orion, east [Luc. humerus Orion. orient.]
$4^h\ 44^m$	54° 42′	4° 55′	11 38
$4^h\ 51^m$	54° 42⅙′		10 5
$4^h\ 55^m$	54° 43′	6° 10′	8 30
$5^h\ 4^m$	54° 42⅔′	7° 20′	6 24

Put the true declination of Mercury, about the last times, as 7° 18′, *which however does not agree with the sky.* [Pone circa vltima tempora Declinationem ☿ veram 7 18, *quæ tamen cum cælo non quadrat.*]

15 September, morning [DIE 15 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Mercury from the Lesser Dog [Diſt. ☿ a Cane min.]	Declination of Mercury [Declin. ☿]	Altitude [Altit.]	The bright shoulder of Orion, east [Luc. hum. Orion. or.]
$4^h\ 4⅚^m$	55° 20′		6° 0′	7 1½
$4^h\ 8^m$	55° 22′	7° 16′	6½°	6 7
		7° 16½′		
$4^h\ 12^m\ 30^s$	55° 23½′	7° 15½′	7° 50′	5 0
		7° 16′		

Put for the last times the distances and declinations free of refraction, in the manner which follows. [*Pone ad vltima tempora diſtantias & declinationes liberas a Refractione hoc modo qui ſequitur.*]

55 27½ 7 10¾

or 28 at most. [*vel 28 ad ſummum.*]

16 September, morning [DIE 16 SEPTEMBRIS, MANE.]

Mercury was observed near its greatest morning remoteness from the Sun, which could be on the following day. [*Obſeruabatur* ☿ *iuxta maximam a* ☉^{le} *remotionem matutinam, quæ poterit eße die ſequente.*]

Hours, minutes [H. M.]	*Distance of Mercury from the Lesser Dog [Diſt. ☿ a Cane min.]*	*Declination of Mercury [Declin. ☿]*	*Altitude [Altit.]*	*The bright foot of Orion, east [Luc. pes Orion. or.]*
3^h $59\frac{1}{3}^m$	56° 14½′	7° 10′	4° 50′	1 15
		7° 10⅙′		
4^h 2^m 40^s	56° 14⅔′	7° 9¼′	5° 10′	0 25
		7° 9½′		
4^h 7^m	56° 15¼′	7° 8′	5° 50′	west [occid.]
		7° 8½′		0 40
4^h $9\frac{1}{3}^m$	56° 16′	7° 7½′	6° 5′	1 15
		7° 8′		

N. B. You can rely safely on these observations of Mercury, but they are to be limited on account of refraction on both sides, and that in proportion to that which Cor ♌ *makes at about the same altitude, as is evident from those things which are noted at the end of the book, near the fixed stars, in the observation of* Regulus *to the Lesser Dog, under this sign ▽ noted in the same place.*[1] [*N. B. His obſeruationibus* ☿ *potes tuto te fundare, ſed limitandæ ſunt ob Refractionem vtrobique idque ad rationem eius, quam* Cor ♌ *facit in conſimili Altitudine quaſi, vti patet ex ijs, quæ in fine libri prope fixas denotantur in obſeruatione* Reguli *ad Canem minorem ſub hoc ibidem annotato ſigno* ▽[1].]

And thus the observation of Mercury will come out unrefracted and duly corrected, as follows. [*Et ſic prodibit* ☿ *obſeruatio irrefracta & rite correcta vt ſequitur.*]

		Distance of Mercury from the Lesser Dog [Diſt. ☿ a Cane minore]	*Declination [Declinatio]*
I.		56° 26′	7° 2′
II.		56° 25¼′	7° 2′
III.	4^h 7^m [H. 4 7]	56° 23¾′	7° 2′
IV.	4 9⅓	56° 23′	7° 2′

Rely rather on the last two, setting, when the bright foot of Orion was about one degree west [occid.]: distance of Mercury from the Lesser Dog 56° 23½′ and declination 7° 2′ north [B.], both freed from refraction. [*Confide potius duabus vltimis ponendo quando pes lucidus Orionis fuit quaſi vno gradu occid.: Diſt.* ☿ *a Cane minore 56 23½ & Decl. 7 2 B., vtraque a refractione vindicata.*]

[1] Thus in the codex. Compare below, on 16 Sept., among the observations of the fixed stars. [Sic in codice. Cf. infra d. 16 Sept. inter obſervationes fixarum.]

18 September, morning [DIE 18 SEPTEMBRIS, MANE.]

Mercury should have been, yesterday, at its greatest morning digression from the Sun, namely on day 17; but examine the observations as regards the longitude.

[*Opportebat* ☿ *fuiße heſterna die in maxima a* ☉ *digreßione matutina, vtpote die 17, ſed examina obſeruationes quo ad Longitudinem.*]

	Distance of Mercury from the Lesser Dog [Diſt. ☿ a Cane min.]	*Declination of Mercury [Declin. ☿]*	*Altitude of Mercury [Altit. ☿]*	*The bright foot of Orion, west [Luc. pes Orion. occ.]*
…[1]	58° 6½′	6° 47½′	3° 0′	0 15
		6° 46′		
	58° 8′	6° 47′	3° 20′	1 24
		6° 46⅙′		
	58° 9′	6° 44½′	3° 45′	1 54
	58° 9½′	6° 45′		2 21
	58° 10′	6° 44½′	4° 25′	[2]
	good [bona]	6° 44⅚′		
4 15¼	*58° 11′*	*6° 43¾′*	*4° 31′*	*2 52*
		6° 44⅙′		
4 18⅗	*58° 12′*	*6° 43⅓′*	*5° 0′*	*3 32*
		6° 43′		
4 21⅔	*58° 12⅓′*	*6° 42½′*	*5° 23′*	*4 18*
		with both [vtroque]		
4 27⅚	*58° 12½′*	*6° 42½′*	*5° 45′*	*4 59*
		6° 42′		
4 31½	*58° 12⅔′*	*6° 42⅓′*	*6° 17′*	*5 52*
		6° 41¼′		
4 37¾	*58° 13⅙′*	*6° 40½′*	*6° 50′*	*6 46*
		6° 41½′		
4 41 5	*58° 14′*	*6° 40′*	*7° 40′*	*8 20*
		6° 39⅚′		
4 43½	*58° 14½′*		*8° 10′*	*9 10*
4 46	*58° 14¾′*	*6° 39⅔′*	*8° 30′*	*9 47*
		6° 39½′		

Put, about the times of the last observations, the distance of Mercury from the Lesser Dog as 58° 18′ and the declination as 6° 35′, both freed from refraction and error. [*Pone circa tempora vltimarum obſeruationum diſtantiam* ☿ *a Cane minore 58 18 & Declinationem 6 35, ambo a Refractione & errore vindicata.*]

20 September, morning [DIE 20 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	*Distance of Mercury from Regulus [Dist. ☿ a Regulo]*	*Declination of Mercury [Decl. ☿]*	*Altitude [Altit.]*	*The bright foot of Orion, west [Luc. pes Orion. occ.]*
4h 23½m		*6° 4′*	*2° 32′*	*2 18*
		6° 3′		
4h 31m		*6° 4′*	*3° 17′*	*3 45*
		with both [vtroque]		
4h 37m	*24° 43′*			*5 9*
4h 43⅙m	*24° 44′*	*6° 1½′*	*4° 37′*	*6 16*
		6° 2′		
4h 47m	*24° 44½′*	*6° 0⅙′*	*5° 0′*	*6 55*
		5° 59¾′		

Hours, minutes [H. M.]	*Distance of Mercury from Regulus [Dist. ☿ a Regulo]*	*Declination of Mercury [Decl. ☿]*	*Altitude [Altit.]*	*The bright foot of Orion, west [Luc. pes Orion. occ.]*
4h 56½m	*24° 45½′*	*5° 59⅓′*	*6° 1½′*	*8 53*
		5° 59′		
5h 2½m	*24° 46′*	*5° 58′*	*6° 45′*	*10 8*
		5° 58⅔′		

Meanwhile the distance of Venus and Mercury was also observed with the Radius, from 4h 45m [H. 4 M. 45] to 5h 0m [H. 5 0], and it was found, taking the middle, to be 1° 45′ [P. 1 M. 45], and that in the straight line which ran from Mercury through Venus to Cor ♌, *as seen.* [*Interea etiam per Radium obſeruabatur diſtantia* ♀ *&* ☿ *ab H. 4 M. 45 in H. 5 0, & inuenta eſt illa medio modo P. 1 M. 45, idque in ea linea recta, quæ ibat a* ☿ *per* ♀ *in* Cor ♌ *ad viſum.*]

N. B. Put, about the times of the last observations, its distance from Regulus *as 24° 52½′ and the declination of the same as 5° 53′, both freed from refraction. As the time, however, take 5h 0m [H. 5 M. 0].* [*N. B. Pone circa tempora vltimarum obſeruationum diſtantiam eius a* Regulo *24 52½ & Declinationem eiusdem 5 53, vtraque a refractione vindicata. Tempus autem aßume H. 5 M. 0.*]

Setting Cor ♌ *at 24° 13′* ♌, *as it is this year, there comes out, by adding 24 52, the longitude of Mercury at 19° 5′* ♍. *The Prutenic calculation has 19 48, the Alphonsine 20 2.* [*Ponendo* Cor ♌ *in 24 13* ♌ *vt eſt hoc anno, euadit addendo 24 52 Longitudo* ☿ *in 19 5* ♍. *Calculus Prutenicus habet 19 48, Alphonſinus 20 2.*]

It is clear, therefore, that the observation runs ahead of each calculation. But account must also be taken of the latitude of Mercury, which we have neglected here, because it perhaps does not differ much from the one which Regulus *has.* [*Patet itaque obſeruationem vtrumque calculum antecedere. Sed habenda quoque eſt ratio latitudinis* ☿ *quam hic negleximus, quod ea forte non multum differat ab ea, quam* Regulus *habet.*]

21 September, morning [DIE 21 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	*Distance of Mercury from Regulus [Diſt. ☿ a Regulo]*	*Declination of Mercury [Decl. ☿]*	*Altitude [Altit.]*	*The Greater Dog, east [Can. maior orient.]*
5h 1m	*26° 6′*	*5° 53′ with both [vtroque]*	*4° 45′*	*14 42*
5h 5m	*26° 6½′*	*5° 32½′*	*5° 18′*	*13 43*
5h 11m	*26° 7′*	*5° 31′*	*5° 55′*	*12 36*
5h 16m	*26° 7½′*	*5° 30¾′*	*6° 44′*	*11 5*
5h 20m	*26° 7⅔′*	*5° 30¼′*	*7° 17′*	*10 10*
5h 26m	*26° 8½′*	*5° 30′*	*8° 4′*	*8 36*

22 September, morning [DIE 22 SEPTEMBRIS, MANE.]

Hours, minutes [H. M.]	Distance of Mercury from cor ♌ [Diſt. ☿ a Corde ♌]	Declination of Mercury [Decl. ☿]	Altitude [Altit.]	The Greater Dog, east [Can. maior orient.]
5h 0m	27° 27′	5° 5′ 5° 4½′	3° 45′	14 21½
5h 5m	27° 27⅙′	5° 3½′ with both [vtroque]	4° 33′	12 58
5h 9m	27° 27¼′	5° 1⅚′ 5° 2′	5° 0′	12 7
5h 27½m	27° 31⅙′	4° 59½′ with both [vtroque]	7° 39′	7 22
5h 32m	27° 32′	4° 59′ 4° 58⅔′	8° 12′	6 14
5h 35m	27° 33′	4° 58′ with both [vtroque]	8° 37′	5 29

[1] These five times have been deleted and cannot be read. [Hæc quinque tempora deleta ſunt et legi non poßunt.] [2] The codex has 3 50, which is manifestly false. [Codex habet 3 50, quod manifeſte falſum eſt.]

N.B. The angular difference of ascension [Angulus diff. aſc.] comes out 26° 26¼′, and therefore the right ascension of Mercury [Aſc. R. ☿] 173° 7¼′, the declination [Decl.] 4° 59′. And therefore the longitude 21° 42¾′ ♍, the latitude 1° 50′ north [B.], apparent [appar.]. Both places, of Mercury and of Venus, computed here still contain refraction. [Ambo loca ☿ & ♀ hic ſupputata habent adhuc refractionem.] Calculation [Calculus]: Alphonsine [Alphonſ.]: longitude 22° 1′ ♍, latitude 1° 7′ north [B.]. Copernican [Copern.]: 22° 27′ ♍, 0 53 north [B.].

25 September [DIE 25 SEPTEMBRIS.]

Since it had not been clear in the morning hours on the two preceding days, Mercury was seen again in the morning and was observed by means of Venus [per ♀], since no other stars were visible, the sky being otherwise veiled with clouds except near the eastern horizon. [Cum duobus antecedentibus

diebus non fuißet matutinis horis ſerenum, denuo mane viſus eſt ☿ & per ♀ obſeruatus, cum nullæ aliæ ſtellæ paterent, vtpote cœlo alias niſi prope Horizontem orientalem nubibus obvelato.]

Some azimuths and altitudes, of Venus as well as of Mercury, were taken in the following way. [Capiebantur autem Azimutha quædam & Altitudines tam ♀ quam ☿ ſequenti ratione.]

I corrected the times from the Sun *at the following noon, approximately.*[1] [*Correxi tempora ex* Sole *in meridie ſequenti fere*[1].]

At 4^h $58\frac{1}{6}^m$ [H. 4 M. 58⅙] Venus was observed, east [♀ orientalis], having an altitude of 4° 43′. Azimuth 90° 22′ from the south [a Meridie] towards the east [ad ortum]. Its declination 4° 9½′ with one [vno], 4° 9⅚′ with the other [altero].

Afterwards we observed Mercury in the same way. [Poſtea eodem modo obſeruauimus ☿.]

Hours, minutes [H. M.]	Altitude of Mercury [Altit. ☿]	Azimuth from mer. towards the east [Azimuth a mer. ad ort.]	Declination [Declin.]
5^h $4\frac{3}{5}^m$	3° 14′	91° 12′	3° 23¼′
			3° 23⅓′
5^h $9\frac{1}{2}^m$	3° 49′	90° 13′	3° 21′
			3° 21½′
5^h 14^m 55^s [5 14 55″]	4° 32′	89° 5′	3° 19′
			3° 19⅙′

N.B. The times of the clock are not exact enough. For no fixed star appeared by which the clock could be corrected. The assigned times can, however, be emended from the observed altitudes of Venus, provided that its place is first found from the observations of the preceding and following days. One must use, however, the apparent place of Venus, not freed from parallax and refraction. Meanwhile, while the other students were noting the azimuths and altitudes in the manner described, another, namely Franciscus Tengnagel [Frans Tengnagel], with the Radius, to which he had recently become accustomed, found the distance of Venus and Mercury in the following way. [N. B. Tempora horologij non ſunt ſatis exacta. Nulla enim fixa ſtella apparuit, per quam horologium corrigeretur. Poßunt tamen tempora aßignata emendari ex altitudinibus ♀ obſeruatis, modo eius locus prius ex præcedentium & ſequentium dierum animadverſionibus indagetur. Vtendum vero loco viſo ♀ & a Parallaxi & Refractione non vindicato. Interea vero dum cæteri ſtudioſi Azimutha atque Altitudines prædicto modo denotabant, alius, nempe Franciscus Tengnagel per Radium cui nouiter aßuefierat, inueniebat ♀ & ☿ diſtantiam modo ſequenti.]

Distance of Venus and Mercury 2° 58½′, *doubtful, among clouds* [*dub. inter nubes*]; by the Radius 2° 55′, *better* [*melior*].

If, therefore, we take 2° 55′ as, so to speak, the truer distance of them, the error will be imperceptible. [Si itaque 2 55 quaſi pro veriore eorundem diſtantia acceperimus, inſenſibiliter aberrabitur.]

But once the place of Venus has been corrected from the observations of the preceding and following days, the place of Mercury can be found quite safely from this very distance, by using, namely, the declinations of Venus and of Mercury together, and these freed from refraction. [Correcto vero loco ♀ ex antecedentium & ſubſequentium dierum obſeruationibus, poteſt ex hac ipſa diſtantia ☿ locus ſatis tuto perueſtigari, adhibitis videlicet vna tam ♀ quam ☿ declinationibus & ijsdem a Refractione liberatis.]

It should be noted, however, that Mercury was more easterly than Venus, and therefore had more in degrees and minutes than she did, as on all the other preceding days too. But the time must be corrected here too from the altitude of Venus, as I also indicated before. [Notandum vero quod ☿ fuerit ♀ orientalior. Ideoque plus in gradibus & minutis habuerit quam ipſa, quemadmodum omnibus etiam alijs antecedentibus diebus. Sed tempus etiam hic corrigendum eſt ex altitudine ♀ prout antea quoque innuebam.]

N.B. The observation of Mercury, faintly visible about its morning heliacal setting, was nevertheless made approximately [ἐν πλάτει], and at a clear discrepancy of both calculations. [N.B. Obſeruatio ☿ circa occaſum Heliacum matutinum tenuiter apparentis ἐν πλάτει tamen facta & in euidenti diſcrimine vtriusque calculi.]

The last day of September [DIE VLTIMO SEPTEMBRIS]

In the morning, about a short hour before the rising of the Sun, we saw Mercury again, though appearing very faintly because of its approach to the Sun. Nor was it observed by my students on that day, although they attended to other morning observations. But I,[2] crossing at that time in a small boat towards Copenhagen, saw it with those sitting by me still fairly high above the horizon, though hardly conspicuous because of the dawn and the presence of the Sun. And since instruments were lacking, it was observed after a fashion with a staff, so that, this means being taken up as best it could be, and the transversal line being of one part, the Radius was longer, of the same parts about 8. From this it is gathered by plane triangles that the angle of their distance, namely of Venus and Mercury, was 7⅙° [Part. 7⅙] very nearly. This comes very close to the Copernican reckonings, but differs much from the Alphonsine. [mane quaſi horula ante ortum ☉ denuo vidimus ☿ admodum tamen tenuiter apparentem ob appropinquationem ad ☉. Nec a ſtudioſis meis eo die obſeruatus eſt, licet alijs obſeruationibus matutinis attenderint. Sed ego[2] tunc in nauicula Hafniam verſus traijciens cum aßidentibus ipſum ſatis adhuc altum ſupra Horizontem vidi, vtut ob Auroram & ☉ præſentiam parum conſpicuum: Cumque inſtrumenta deeßent per baculum vtcunque obſeruabatur. Ita vt hoc medio prout fieri poterat arrepto & linea tranſuerſali exiſtente partis vnius, fuerit Radius oblongior, earundem partium quaſi 8. Hinc colligitur per triangulos planos angulum diſtantiæ earum, videlicet ♀ & ☿ fuiße

Part. 7⅙ quam proxime. Quod Copernianis ratiocinijs quam proxime accedit, ab Alphonſinis vero multum differt.]

[1] Tycho wrote this in the margin. [Hæc in margine adſcripſit Tycho.] [2] This is not written in the codex by Tycho himself. In the meteorological diary we read, at the day 30 Sept.: »Tych. B. left; Haf.« [Hæc in codice ab ipſo Tychone conſcripta non ſunt. In diario meteorologico legimus ad diem 30 Sept.: »Abiit Tych. B. Haf.«]

Observations of fixed stars that are wanting in the catalogue [OBSERUATIONES FIXARUM STELLARUM QUÆ IN CATALOGO DESIDERANTUR.]

24 January, evening [DIE 24 JANUARIJ, VESPERI.]

Between the middle one in the base [Inter mediam in baſi]	35° 55′
of the Triangle and Aldebaran [trianguli & Aldeboram]	35° 54½′
Between the same and the head [Inter eandem & caput]	27° 31⅓′
of Andromeda [Andromedæ]	27° 32′
Its declination [Declinatio eius]	32° 23′
	32° 23½′
Between the 11th [11^{mam}] in number (magnitude 5 min.) in [Inter 11^{mam} numero (magn. 5 min.) in]	
Eridanus and the bright star [Eridano & Lucidam]	19° 26′
of the jaw of the Whale [mandib. Cete]	19° 27′
Between the same and [Inter eandem &]	
the bright foot of Orion [lucid. pedem Orionis]	22° 10′ twice [bis]
South declination [Declin. auſtr.]	13° 24′
	13° 24½′
The preceding one of the contiguous ones in Hydra that [Præcedens ex contiguis in Hydra quæ]	
follow the bright Heart [Cor lucidum ſequuntur,]	48° 17′
is distant from the Greater Dog [diſtat a Cane maiore]	48° 17⅚′
Declination, with both [Declin. vtroque]	11° 6′
The following one of the same, from [Sequens earundem a]	49° 46′
the Greater Dog [Cane maiore]	49° 47′
South declination [Declin. auſt.]	10° 20′
	10° 20⅔′

(These two are found to have been observed before.) [(Hæ duæ antea obſeruatæ reperiuntur).]

1 February [DIE 1 FEBRUARIJ.]

Distance of Cor and of the tail of ♌ [Diſt. Cordis & Caudæ ♌]: 24° 39⅔′.

5 February [DIE 5 FEBRUARIJ.]

For restoring the place of the tail of ♌, from which Saturn was observed this year, vice versa. [Pro reſtituendo loco Caudæ ♌ ex qua ♄ hoc anno vice verſa

obſeruatus eſt.] Distance of the tail of ♌ [Diſtantia Caudæ ♌] 24° 39½′ from cor ♌ [a Corde ♌] 24° 39⅔′ twice [bis]

To establish the true declination of the head of Andromeda for the beginning of this year from the meridian altitudes taken on the same star in earlier years: [Pro Declinatione vera capitis Andromedæ ad principium huius anni ſtabilienda ex Altitudinibus meridianis ſuperioribus annis in eadem ſtella habitis:]

In the year completed [Anno completo]	84	Meridian altitude of the head of Andromeda [Altitud. Merid. Cap. Andr.]	60° 53′ 45″
	87		54′ 55″
	90		55′ 25″

From all these the declination is gathered to be, exactly at the beginning of 1595, 26° 51½′ north [B.]. We used this star for correcting the armillae in the observations of Venus, as can be seen above. [Ex his omnibus colligitur Declinatio præciſe ad initium 1595 eße 26 51½ B. Hac ſtella vſi ſumus pro corrigendis armillis in obſeruationibus ♀, vt videre eſt ſuperius.]

12 February [DIE 12 FEBRUARIJ.]

		Altitude of Spica [Alt. Spicæ]
Was observed four times [Obſeruabatur quater]	35° 0⅓′	22½
The distance of the tail of ♌ from [Diſtantia caudæ ♌ a]	35° 0′	22⅚
Spica, carefully [Spica diligenter]	35° 0½′	23
	35° 0½′	23⅙

The declination of the tail of ♌ observed among clouds immediately after its transit through the meridian [per Merid.]: 16° 53½′, with both [vtroque]. [Declinatio obſeruata caudæ ♌ inter nubes ſtatim poſt eius tranſitum per Merid. 16 53½ vtroque.]

From this about two minutes ought to be subtracted, because cor ♌ in the same position gave the declination just as much too great. [Hinc debent ſubtrahi quaſi duo minuta, quia cor ♌ in eodem ſitu tantundem præbuit declinationem plus iuſto.]

13 February [DIE 13 FEBRUARIJ.]

To test the recently corrected quadrants, the meridian altitude of the bright shoulder of Orion was observed: [Pro examinandis quadrantibus recens correctis obſeruabatur Lucidi Humeri Orionis altitudo meridiana]

by the steel instrument [per Chalyb.]	41° 21⅓′
by the revolving quadrant [per Volub.]	41° 21⅓′
Declination [Declinatio]	7° 17½′
	7° 18′

Declination of the Greater Dog [Declin. Canis maioris]	16° 10⅙′
among clouds [inter nubes]	16° 10¼′

At 2^{h} 35^{m} 20^{s} [H. 2 M. 35 S. 20] Spica [Spica ♍] transited the meridian [per Merid.], having an altitude

by the steel instrument [per Chalyb.]	25° 6⅙′
by the revolving quadrant [per Volub.]	25° 6⅙′

From this comes the declination of Spica *8° 59⅓′, which agrees exactly with the observation made on* Spica *nine years ago. For in the year 1585 completed the declination of* Spica *was 8° 56′ 20″, and 9 years and 1½ months add 2′ 59″, so that the true declination is very nearly 8° 59⅓′, which is right. A proof that the quadrants, corrected today, are in proper order.* [*Hinc prouenit Declin.* Spicæ *8 59⅓, quod plane concordat cum obſeruatione in* Spica *ante nouennium habita. Nam anno 1585 completo fuit Declin.* Spicæ *8 56 20 & 9 anni atque 1½ menſis addunt 2′59″, vt ſit vera Declinatio quam proxime 8 59⅓, quod bene ſe habet. Proba quod Quadrantes hodie correcti rite ſe habeant.*]

14 February, evening [DIE 14 FEBRUARIJ, VESPERI.]

Meridian altitude of the uppermost in [Altitudo Meridiana Supremæ in]	
the belt of Orion [baltheo Orionis]	
by the steel instrument [per Chalyb.]	33° 26 5/[?]′
by the revolving quadrant [per Volub.]	33° 27′
Of the middle one [Mediæ]	
by the steel instrument [per Chalyb.]	32° 34¾′
by the revolving quadrant [per Volub.]	32° 34½′
Of the lowest [Infimæ]	
by the steel instrument [per Chalyb.]	31° 53¼′
by the revolving quadrant [per Volub.]	31° 53⅙′

10 September, evening [DIE 10 SEPTEMBRIS, VESPERI.]

Meridian altitude of the bright star of the Vulture [Alt. Merid. Lucidæ Vulturis]	
by the steel instrument [per Chalyb.]	41° 58⅚′
by the revolving quadrant [per Volub.]	41° 57⅔′
Distance between the Vulture and [Diſt. inter Vult. &]	28° 1½′
the mouth of Pegasus [Os Pegaſi]	28° 1′
The same repeated [Eadem repetita]	28° 2′
	28° 1′ twice [bis]

11 September, morning [DIE 11 SEPTEMBRIS, MANE.]

Meridian altitude [Alt. Merid.]	by the steel instrument [per Chal.]	by the revolving quadrant [per Vol.]
the bright star of ♈ [Lucidæ ♈]	55° 35¾′	55° 35½′
the bright star of the jaw of the Whale [Luc. mandib. Cete]	36° 32⅚′	36° 33′
Aldebaran [Aldeboræ]	49° 43⅓′	49° 42⅔′

Look elsewhere for its meridian altitude. For the declination ought again to have been 15° 37′ 40″, and therefore the meridian altitude 49° 43′ 10″, which almost agrees with the steel one. [Quære alibi eius altit. merid. Nam debuit iterum eße Declin. 15 37 40, ideoque altit. merid. 49 43 10, quod pene conſentit cum Chalybeo.]

The same day, in the evening [Eodem die veſperi]

Meridian altitude [Alt. merid.]	by the steel instrument [per Chal.]	by the revolving quadrant [per Vol.]
the bright star of the Vulture [Lucidæ Vulturis]	41° 57½′	41° 57½′
the mouth of Pegasus [Oris Pegaſi]	42° 9⅙′	42° 9⅙′
the bright star of the shoulder of ♒ [Luc. humeri ♒]	26° 48′	26° 48′

14 September, evening [DIE 14 SEPTEMBRIS, VESPERI.]

Meridian altitude [Alt. merid.]	by the steel instrument [per Chal.]	by the revolving quadrant [per Vol.]
7^h 24½^m [7^{H}24½] the bright star of the Vulture [Luc. Vulturis]	41° 57⅚′	41° 57⅔′
9 15⅓ the mouth of Pegasus [Oris Pegaſi]	42° 9′	42° 9⅓′
12 49⅓ the bright star of ♈ [Lucidæ ♈]	55° 36′	55° 36⅓′

In the night following 14 September [Nocte diem 14 Septembris ſequenti]		
the bright star of the jaw of the Whale [Luc. mand. Cete]	36 33⅔	36 33¾
Aldebaran [Aldeboræ]	49 42¾	49 43

15 September, morning [DIE 15 SEPTEMBRIS, MANE.]

Cor ♌ was observed in [Obſeruabatur Cor ♌ in]	37° 19¾′
distance from the Lesser Dog [diſtantia a Cane minori]	37° 19⅓′
Declination of Cor ♌ [Declinatio Cordis ♌]	13° 57⅓′
	13° 58′

Altitude of Cor ♌ [Altitudo Cordis ♌] 15° 50′.

The same day, in the evening. [Eodem die veſperi.]

At 7^h $56\frac{2}{3}^m$ [$7^H56\frac{2}{3}$], corrected, the bright star of the Vulture [correcte, Luc. Vulturis]

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by the steel instrument [per Chalyb.]	41 58
by the revolving quadrant [per Volub.]	41 58
by the mural quadrant [per Mural.]	41 59½

N.B. A memorandum. It will be necessary afterwards to examine most exactly those stars from which acronychal Jupiter [♃ Achronychius] was taken this year, such as the mouth of Pegasus and the bright star of the jaw of the Whale, and this both by distances from others, vice versa, and by declination. [*N. B. Memoriale. Oportebit poſtmodum exactißime eas ſtellas ſcrutari, a quibus ♃ Achronychius hoc anno acceptus eſt, quales ſunt Os Pegaſi & Luc. Mandib. Ceti, idque tam per diſtantias ab alijs vice verſa quam declinationem.*]

Observations for examining and restoring the places of the mouth of Pegasus and of the bright star of the jaw of the Whale, from which acronychal Jupiter [♃ achronychius] was observed this year. [Obſeruationes pro locis oris Pegaſi & luc. mand. Ceti examinandis & reſtituendis, a quibus ♃ achronychius hoc anno obſeruatus eſt.]

Distance of the mouth of Pegasus from the bright star of the Vulture [Diſt. Oris Peg. a luc. Vult.]	28° 3¾′
The same repeated [Repetita eadem]	28° 3⅚′
The same was found again [Eadem comperta eſt denuo]	28° 3⅚′

Vice versa, the mouth of Pegasus from the first [Vice verſa Os Pegaſi a prima]	
of the wing of Pegasus [alæ Pegaſi]	20° 20⅚′
The same repeated [Repetita eadem]	*20° 20′ 55″*
Repeated a third time [*Tertio repetita*]	*20° 21′*

Afterwards the distance of the bright star [Poſtea capiebatur diſtantia luc.]	
of the jaw of the Whale from Aldebaran was taken [mand. Ceti ab Aldebora]	26° 5⅔′ twice [bis]

Vice versa, the bright star of the jaw of the Whale from [Vice verſa Luc. mand. Ceti a]	
the first of the wing of Pegasus [prima alæ Pegaſi]	59° 24⅚′
The same, repeated, was found [Repet. eadem inuenta eſt]	59° 26′ approximately [fere]

16 September, morning [*DIE 16 SEPTEMBRIS, MANE.*]

▽[1] *To examine the refraction of Cor ♌ towards the east at certain altitudes, as regards both distance and declination.* [▽[1] *Pro examinanda refractione Cordis ♌ verſus ortum in certis altitudinibus tam quoad diſtantiam quam declinationem.*]

Refraction [*Refractio*], *distance* [*Diſt.*]	*declination* [*Decl.*]	*Distance of cor ♌ from the Lesser Dog* [*Diſt. cordis ♌ a cane min.*]	*Declination of cor ♌* [*Declin. cordis ♌*]	*Altitude of cor ♌* [*Altitudo cordis ♌*]
8½′	*6⅔′*	*37° 11⅔′*	*14° 1⅔′*	*5° 50′*
6	*5½*	*37° 14′*	*14° 0½′*	*6° 20′*
4	*5*	*37° 16′*	*14° 0′*	*7° 50′*
2	*4½*	*37° 18′*	*13° 59½′*	*11° 0′*
1	*4*	*37° 19′*	*13° 59′*	*11° 30′*
½[2]	*2½*	*37° 19⅔′*	*13° 57¾′*	*15° 50′*

At this time, however, the declination of cor ♌ itself ought to have been 13° 55′; what is in excess therefore belongs to the refraction and to a slight deviation of the instrument. [*Debuit autem hoc tempore eſſe declinatio ipſius cordis ♌ 13 55, quæ igitur abundant pertinent ad Refractionem & inſtrumenti aliquantulam deuiationem.*]

The distance of these stars, however, was taken earlier, when they were higher and free on both sides from refractions: 37° 20′. [*Diſtantia autem harum ſtellarum prius eſt accepta, cum altiores eſſent & liberæ vtrinque a refractionibus, 37 20.*]

[1] Compare the observation of Mercury on the same day. [Cf. obſervationem Mercurii eiusdem diei.] [2] Written in the margin: »Day 15, morning«. [Adſcriptum eſt in margine »Die 15 Mane«.]

18 September [*DIE 18 SEPTEMBRIS.*]

I examined similar ones in this way. [*Similia ſic examinaui.*]

(Refraction [*Refractio*], *distance* [*Diſt.*]	*declination)* [*Decl.*]	*Distance of Regulus from the Lesser Dog* [*Diſt. Reguli a cane min.*]	*Declination of Regulus* [*Declin. Reguli*]	*Altitude of Regulus* [*Altitudo Reguli*]
4′	*4¼*	*37° 16′*	*13° 59¼′*	*11* approximately [circiter]
3	*4*	*37° 17′*	*13° 59′*	*12* approximately [circiter]
2	*3¾*	*37° 18′*	*13° 58¾′*	*12½ approximately* [*fere*]
1	*3½*	*37° 19′*	*13° 58½′*	*13*

(Refraction [Refractio], distance [Diſt.]	*declination) [Decl.]*	*Distance of Regulus from the Lesser Dog [Diſt. Reguli a cane min.]*	*Declination of Regulus [Declin. Reguli]*	*Altitude of Regulus [Altitudo Reguli]*
0	*3*	*37° 20′*	*13° 58′*	*16½*
0	*2½*	*37° 20′*	*13° 57½′*	*17*
…	*2¼*	*37° 20′*	*13° 57¼′*	*17¼*

20 September, morning [*DIE 20 SEPTEMBRIS, MANE.*]

Distance of the Lesser Dog from cor ♌ [Diſt. Can. min. a Corde ♌]	*Declination of Regulus [Declin. Reguli]*	*Altitude of Regulus [Altitudo Reguli]*	*The bright foot of Orion, east [Pes Orion. luc. orient.]*
37° 18′	*13° 59′*	*12° 55′*	*14 55*
37° 18½′	*13° 58½′*	*13° 30′*	*13 36*
37° 19½′	*13° 58′*	*14° 45′*	*11 26*
37° 20′	*13° 57½′*	*15° 5′*	*9 8*
37° 20′	*13° 57′*	*17° 17′*	*6 53*

21 October, evening [DIE 21 OCTOBRIS, VESPERI.]
For correcting the equatorial armillae. [Pro Armillis æquatorijs corrigendis.]

Hours, minutes [H. M.]	Declination of Arcturus [Declin. Arcturi]	Altitude of the same [Altitudo eiusdem]	The Vulture, west [Vultur occid.]
	21° 22′	17	
	21° 22¾′		
7^h 53⅔^m	21° 22⅚′	16⅓	8 52
	21° 22¾′		

	The bright star of the Crown [Luc. Coronæ]	Altitude of the same [Altitudo eiusdem]	
	28 9¾	32° 0′	10 21
	28 9⅙		
8 6	28 9¾	31⅓°	11 29
	28 9⅓		

	Afterwards the bright star of ♈ [Poſtea Luc. ♈]	
8 13	21 30½	22⅓
	21 8[1]	

15 November [DIE 15 NOUEMBRIS.]

Meridian altitude of the 1st of the wing of Pegasus [Alt. mer. 1 alæ Pegaſi]
by the steel instrument [per Chalyb.] 47° 9⅓′

by the revolving quadrant [per Volub.]	47° 9½′

Declinations of certain fixed stars, for examining the recently corrected armillae, towards the west. [Declinationes quarundam ſtellarum fixarum pro correctis recens armillis examinandis verſus occaſum.]

[1] Thus in the codex. Perhaps 28′. [Sic in codice. Fortaße 28′.] [2] The distance is missing. [Diſtantia deeſt.]

Declination of Canicula towards [Declin. Caniculæ verſus]	
the east, in both places [ortum vtrobique]	6° 13′
towards the west [ad occaſum]	6° 13′
towards the east [ad ortum]: Arcturus [Arcturi]	21° 19⅚′
	21° 20¼′
the bright star [Lucidæ Co-]	28° 7⅚′
of the Crown [ronæ]	28° 8¼′
of the lower head of ♊ [Inferioris capitis ♊]	28° 56½′
	28° 57⅙′
of Cor ♌, not far [Cordis ♌ non longe]	13 54⅚
from the merid. towards the west [a merid. ad occaſum]	13 54 55″
of Spica; it was high enough, [Spicæ, fuit ſatis alta,]	9 1
free from refraction [a refractione libera]	9 1⅓

23 November [DIE 23 NOUEMBRIS.]

In the evening a start was made on observing, by distances and declinations, stars hitherto wanting in the catalogue of fixed stars. [Veſperi inceptum eſt obſeruare in Diſtantijs & Declinationibus ſtellas in Catalogo fixarum hactenus deſideratas.]

The lower of the two unformed ones above the [Inferior duarum informium ſupra Sa-]	
Arrow, which is in a straight line with [gittam, quæ in recta linea eſt cum]	
its middle one and another of the unformed ones [eiusdem media & alia informium]	
from the mouth of Pegasus [ab ore Pegaſi]	29° 52′
magnitude 4 [4 magn.], again [denuo]	29° 53′ better [melior]
Declination of the same [Declin. eiusdem]	21° 38′
Between the upper of the same [Inter ſuperior. earundem]	
magnitude 4, and the mouth of Pegasus [4 magn. & Os Pegaſi]	29° 55⅓′
Declination of the same [Declin. eiusdem]	23° 7½′
Between the mouth of Pegasus and the unformed one below the [Inter Os Pegaſi & informem infra ro-]	
beak of the Swan, magnitude 4, which forms an acute-angled [ſtrum Cygni 4 magn. quæ facit ox-]	

triangle with those just observed.[2] [ygonium cum modo obſeruatis[2].]	
Declination of the same [Declin. eiusdem]	23° 58′ better [melior]
	23° 59′
Distance of the lower of the unformed ones [Diſt. inferioris informium]	
between the Lyre and the upper [inter Lyram & ſuperiorem]	
wing of the Swan, [alam Cygni,]	16° 27′
magnitude 4, from the breast [4 magn., a pectore]	16° 26½′
Declination of the same [Declin. eiusdem]	43° 28½′
	43° 29′
Between the upper of the same [Inter ſuperiorem earundem]	15° 58½′
unformed ones and the breast of the Swan [informium & pectus Cygni]	15° 59′
Declination of the same [Declin. eiusdem]	46° 26′
Four unformed ones between the mouth of Pegasus [Informes 4 inter Os Pegaſi]	
and its left foot [& pedem eius ſiniſtrum]	
whose arrangement is as follows: [quarum ſitus talis:]	

Diagram. A small figure of four star marks, drawn as asterisks, set at the right of the column beside the lines "& pedem eius ſiniſtrum", "quarum ſitus talis:" and "Diſtantia ejus quæ eſt in": two marks above, two below, roughly at the corners of a rectangle wider than it is high. Three carry a figure beside them; the upper left carries none.

- upper left: no label
- upper right: 2
- lower left: 3 (set low, to the right of the mark)
- lower right: [?] (a single slanted stroke to the right of the mark)

The distance of the one that is in [Diſtantia ejus quæ eſt in]	
a straight line to the middle one [recta linea ad Mediam]	
of the wing of the Swan [alæ Cygni]	24° 51′
from the first of the wing of Pegasus [a prima alæ Pegaſi]	24° 50½′
Declination of the same [Declin. eiusdem]	18° 9½′
	18° 10½′

Distance of the other one, which is above [Diſt. alterius quæ ſupra]	23° 44′
this one, from the first of the wing of Pegasus [hanc a prima alæ Pegaſi]	23° 45′ approximately [fere]
Declination of the same [Declin. eiusdem]	21° 57′
	21° 58′
Distance of 3 of those described above, from [Diſt. præſcriptarum 3 a]	
the first of the wing of Pegasus [prima alæ Peg.]	19° 20⅙′
	19° 20⅚′
Declination of the same [Declin. ejusdem]	15° 34′

Diagram. A small figure of four star marks, drawn as rayed asterisks, set at the left of the column beside and below the lines "21 58", "Diſt. præſcriptarum 3 a", "prima alæ Peg." and "Declin. ejusdem": one mark high, one in the middle a little to the right, and two low, left and right. Each carries a figure beside it.

- upper mark: 2 (at its lower left)
- middle mark: 3 (below it, to the left)
- lower left mark: 1 (below it, with a small dot below the figure)
- lower right mark: 4 (below it)

12 December, evening [DIE 12 DECEMBRIS, VESPERI.]

Distance of the one of the four unformed ones that is lower [Diſt. quatuor informium quæ eſt in-]	
towards the east, above the back of ♈ [ferior ad ortum ſupra dorſum ♈]	
from the northern horn of ♉ [a boreali cornu ♉]	34° 21½′
from the head of Andromeda [a Capite Andromedæ]	35° 27′
Declination of the same [Declin. eiusdem]	25° 33′ north [B.]

17 December, evening [DIE 17 DECEMBRIS,VESPERI.]

Altitude of Aldebaran by the meridian [Altit. Aldeboræ per Merid.]	49° 43′ 10″

18 December [DIE 18 DECEMBRIS,]

Morning. For examining the quadrants, the meridian altitudes of these were taken. [Mane. Pro quadrantibus examinandis capiebantur harum Altitudines Merid.]

The third and bright one in the southern wing of ♍ [Tertia & lucida in auſtrali ala ♍]	
by the revolving quadrant [per Volub.]	34° 53¼′
Vindemiatrix [Vindemiator]	
by the steel instrument [per Chalyb.]	47° 15′
by the revolving quadrant [per Volub.]	47° 14¼′

Evening [Veſperi]

distances and declinations were observed in the fixed stars as follows. [obſeruabantur in ſtellis fixis Diſtantiæ & Declinationes vt ſequitur.]

Magnitude 3. Of three contiguous ones in the river of the Whale [Magn. 3. Trium in fluuio Cete conti-]	
the preceding one, distance [guarum præcedens Diſt.]	34° 9⅛′

from the bright foot of Orion [a luc. pede Orionis]	34° 9⅝′
from the outermost of the wing of Pegasus [ab extrema alæ Pegaſi]	47° 1½′ twice [bis]
Declination of the same [Declin. eiusdem]	10° 32½′ south [M.]
	10° 32⅓′

Magnitude 3. The one that follows this, [Magn. 3 Quæ hanc ſequitur,]	29° 17¾′
distance from the bright foot of Orion [diſt. a luc. pede Orionis]	29° 19′
from the outermost of the wing of Pegasus [ab extrema alæ Pegaſi]	51° 10⅝′
	51° 11½′
Declination of the same [Declin. eiusdem]	10° 21′
	10° 22′

Magnitude 4. In the middle of the river, distance [4 Magn. In medio fluuij, diſt.]	22° 2¼′
from the bright foot of Orion [a luc. pede Orionis]	22° 3′
from the knot of the line of ♓ [a nodo lini ♓]	29° 46⅔′
	29° 47′
	29° 47⅓′
Declination of the same [Declin. eiusdem]	13° 24′
	13° 23½′

At the same time. At the outermost right [Eodem tempore. In extrema dextra]	
wing of the Swan, distance from [ala Cygni, diſtantia ab]	31° 55⅛′
the outermost of the wing of Pegasus [extrema alæ Pegaſi]	31° 55½′
magnitude 4, from the breast of the Swan [4 mag. a pectore Cygni]	20° 19½′
	with both [vtroque]
Declination of the same [Declin. eiusdem]	26° 59⅔′
	27° 0⅙′

Above the river, of two unformed ones [Supra fluuium duarum informium]	
magnitude 4, the preceding one, [4 magn. Præcedens,]	31° 40¾′
distance from the bright star of ♈ [Diſt. a luc. ♈]	31° 41⅔′
from the bright foot of Orion [a luc. pede Orionis]	25° 46⅓′
	with both [vtroque]
Declination of the same Merid. [Declin. eiusdem Merid.]	0° 54⅓′
	0° 55¼′

magnitude 4. The one that follows this [4 magn. Quæ hanc ſequitur]	
Distance from the bright star of ♈ [Diſt. a luc. ♈]	37° 8½′
	with both [vtroque]
Distance from the bright foot [Diſt. a luc. pede]	20° 37¼′
of Orion [Orionis]	20° 38½′
Declination Merid. [Declin. Merid.]	4° 10¾′
	4° 10⅙′

Of three unformed ones, the preceding one between Orion and the Milky Way, above the Greater Dog. [Trium informium præcedens inter Orionem&Viam lacteam, ſupra Canem maior.]

Diagram. A small figure of three star marks, drawn as asterisks, set to the right of the five lines "Trium informium" to "Canem maior.": one mark above, two below, left and right. Each carries a figure to its right.

- upper mark: 3
- lower left mark: 2
- lower right mark: 1

Magnitude 4. Towards the west, the preceding one [Magn. 4. Ad occaſum præcedens]	
Distance from the Heart of Hydra [Diſt. a Corde Hydræ]	47° 45⅚′
vice versa [vice verſa]	33° 24⅔′
from Aldebaran [ab Aldebora]	33° 26′
	33° 27⅙′
Declination of the same merid. [Declin. eiusdem merid.]	6° 11⅙′
	6° 11⅚′

Magnitude 4. The one that follows that one towards the east, [Magn.4. Quæ ſequitur illam ad ortum,]	
Distance from Aldebaran [Diſt. ab Aldeb.]	36° 29⅔′
	36° 29⅚′
vice versa, from the Heart [vice verſa a Corde]	44° 15′
of Hydra [Hydræ]	44° 15½′
Declination of the same merid. [Declin. eiusdem merid.]	6° 48⅔′
	6° 49′

The one above this [Quæ ſupra hanc]	
Magnitude 5. Distance from the Heart of Hydra [Mag. 5. Diſt. a Corde Hydræ]	44° 43′
	with both [vtroque]
Vice versa, from Aldebaran [Vice verſa ab Aldeb.]	34° 55⅔′

	with both [vtroque]
Declination merid. of the same [Decl. merid. eiusdem]	4° 33⅔′
	with both [vtroque]

23 December [DIE 23 DECEMBRIS.]

Observation was made from the fixed stars as follows. [Obſeruabatur a fixis ſtellis vt ſequitur.]

Magnitude 4. In the neck of Pegasus [Mag. 4. In collum Pegaſi]	
distance from the breast of the Swan [a pectore Cygni diſt.]	38° 25′
vice versa, from the outermost [vice verſa ab extrema]	27° 19⅔′
of the wing of Pegasus [alæ Pegaſi]	27° 18⅔′
Declination [Declin.]	10° 12′
	10° 12½′

Magnitude 4. Afterwards there was observed [Mag. 4. Poſtea obſeruabatur]	18° 40½′
in the river, distance from the knot of the line of ♓ [in fluuio a nodo lini ♓ diſt.]	18° 40⅚′
vice versa, from the bright foot [vice verſa a luc. pede]	32° 17′
of Orion [Orionis]	32° 18′
Declination south [Declin. auſtr.]	9° 15′
	better [melior]
	9° 14¾′

Magnitude 4. Above the river, the unformed one [Mag. 4. Supra fluuium informis præ-]	
preceding of two is distant from the bright [cedens duarum diſtat a lucido]	
foot of Orion [pede Orionis]	15° 33¾′
Vice versa, from the bright star of [Vice verſa a luc.]	20° 31⅔′
the jaw of the Whale [mand. Cete]	with both [vtroque]
Declination south [Declin. auſtr.]	7° 57′
	better [melior]
	7° 57⅙′

Magnitude 4. The one that follows is distant [Mag. 4. Quæ ſequitur diſtat]	14° 28½′
from the bright foot of Orion [a lucido pede Orionis]	with both [vtroque]
Declination south [Declin. auſt.]	8° 19½′

	with both [vtroque]
Magnitude 4. In Cepheus, the first in the base of the △, of the two [Mag.4. In Cepheo prima in baſi △ dua-]	
the preceding towards the north, is distant [rum præcedens ad boream diſtat]	
from the girdle of Cepheus [a cingulo Cephei]	13° 5⅔′
	with both [vtroque]
Vice versa, from the flanks [Vice verſa ab ilia]	20° 51′
	better [melior]
of Cassiopeia [Caßiopeæ]	20° 50½′
Magnitude 4. The second is distant [Mag. 4. Secunda diſtat]	14° 18½′
from the girdle of Cepheus [a cing. Ceph.]	with both [vtroque]
Vice versa, from the flanks [Vice verſa ab ilia]	20° 53½′
of Cassiopeia [Caßiopeæ]	20° 54½′
	better [melior]
	20° 55′
Magnitude 4. The third, under the [Mag. 4. Tertia ſub cubito]	
right elbow, the preceding of two, [dextro duarum præcedens]	
the more southern, is distant [auſtralior diſtat]	29° 4⅚′
from the flanks of Cassiopeia [ab ilia Caßiopeæ]	29° 5⅚′
Vice versa, from the Bear's [Vice verſa ab Vrſæ]	31° 39′
lesser, bright star [min. luc.]	with both [vtroque]
Magnitude 4. The fourth, [Mag. 4. Quarta,]	
the other, more northern, [altera borealior,]	30° 8′
is distant from the flanks of Cassiopeia [ab ilia Caßiopeæ diſtat]	30° 9′
Vice versa, from the bright star [Vice verſa a lucida]	29° 37⅔′
of the Lesser Bear [Vrſæ min.]	29° 38′
Magnitude 4. The fifth, in the neck [Mag. 4. Quinta in ceruice]	19° 50⅔′
from the flanks of Cassiopeia [ab ilia Caßiopeæ]	19° 50′

Vice versa, from the bright star of the Bear [Vice verſa a luc. Vrſæ]	33° 39⅙′
Lesser [minoris]	33° 40′

Magnitude 4. The sixth, in the right foot [Mag. 4. Sexta in pede dextro]	18° 4⅙′ better [melior]
Distance from the bright star of the Lesser Bear [Diſt. a luc. Vrſæ min.]	18° 5⅙′
Vice versa, from the right [Vice verſa a dextro] shoulder of Cepheus [humero Cephei]	16° 4½′

Magnitude 3. The seventh, in the left foot [Mag.3. Septima in pede ſiniſtro]	
from the bright star of the Chair of Cassiopeia [a luc. cathedræ Caßiop.]	18° 25½′ with both [vtroque]
distance from the bright star of the Lesser Bear [a luc. Vrſæ min. diſt.]	25° 46⅝′ with both [vtroque]

Around the end of this year, declinations and right ascensions of certain fixed stars. [*Circa finem huius Anni declinationes & Aſcenſiones rectæ quarundam fixarum.*]

The first of the wing of Pegasus [*Prima alæ Pegaſi*]	*13° 3½′* [*13ᴾ 3½ᴹ*]	*341° 10′* [*341ᴾ10ᴹ*]
Aldebaran [*Aldebora*]	*15 37½*	*63 12*
the bright star of ♈ [*lucida* ♈]	*21 31½*	*26 9*
the middle one of the neck of ♌ [*Media ceruicis* ♌]	*21 51½*	*149 21¾*
the bright shoulder of Orion [*lucidus humer. Or.*]	*7 15½*	*83 22*
Arcturus	*21 20*	*209 20*
the bright star of the Vulture [*lucida Vulturis*]	*7 52½*	*292 45*
the lower head of ♊ [*inferius caput* ♊]	*28 56½*	*110 7½*
the mouth of Pegasus [*Os Pegaſi*]	*8 4*	*321 6*

What the Twelfth Volume Contains [QUÆ DUODECIMO TOMO CONTINENTUR.]

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