Tychonis Brahe Dani Thesaurus Observationum, Tomus IV

(1926)

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 fourth part of J. L. E. Dreyer's *Thesaurus Observationum*, the edition that printed those logbooks complete from the manuscripts for the first time, covering 1596 through 1601.

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 in 2015 by the TIB — Leibniz Information Centre for Science and Technology, Hannover, and made available under the Public Domain Mark. 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; **Asc.** ascension; **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 Complete Works [Opera Omnia] Volume XIII
Copenhagen, 1926 [HAUNIÆ MCMXXVI]
Tycho Brahe the Dane Complete Works [Opera Omnia]
Under the auspices of the Society for Danish Language and Literature [Auspiciis Societatis linguæ et litterarum Danicarum] ([Danish:] Det Danske Sprog- og Litteratur-Selskab [the Danish Language and Literature Society])
Tycho Brahe the Dane Complete Works [Opera Omnia]
edited by **J. L. E. Dreyer [I. L. E. DREYER]**
Volume XIII [TOMUS XIII]
Diagram. A black device centred below the volume line. At the top, a monogram of heavy ornamental capitals with scrolled terminals, interlaced; a D stands at its left and an S at its right, and the interlaced looped strokes between them are not resolved into letters [?]. Below the monogram, three crowned lion figures, each lying with a long curling tail: two side by side beneath the monogram and one lower, at the centre. Nine hatched hearts are set around them: three at the left, three at the right, and three in a downward-pointing group beneath the lowest lion. The device carries no text other than the monogram.
Copenhagen, 1926 [HAUNIÆ MCMXXVI] Gyldendal [IN LIBRARIA GYLDENDALIANA] Printed by Nielsen & Lydiche (Axel Simmelkiær) [TYPIS NIELSEN & LYDICHE (AXEL SIMMELKIÆR)]
(blank)
Tycho Brahe the Dane Treasury of Observations [THESAURUS OBSERVATIONUM]
edited from the manuscripts [AD FIDEM CODICUM] complete for the first time [PRIMUM INTEGRUM EDIDIT] by **J. L. E. Dreyer [I. L. E. DREYER]**
at the expense of the Carlsberg Institute [SUMPTIBUS INSTITUTI CARLSBERGICI]
Volume IV [TOMUS IV]
Copenhagen, 1926 [HAUNIÆ MCMXXVI] Gyldendal [IN LIBRARIA GYLDENDALIANA] Printed by Nielsen & Lydiche (Axel Simmelkiær) [TYPIS NIELSEN & LYDICHE (AXEL SIMMELKIÆR)]
(blank)
To the Chief Directors of the Carlsberg Institute. [SUMMIS INSTITUTI CARLSBERGICI PRÆFECTIS.]
Before his death (on the 14th of this month), Dr. J. L. E. Dreyer asked the presidents of the Society for Danish Language and Literature [Societas Linguæ et Litterarum Danicarum] to present this fourth and last volume of TYCHO BRAHE's *Treasury of Observations* to the chief directors of the CARLSBERG INSTITUTE on this day, the day on which that Institute was founded fifty years ago. At the same time they were to thank them sincerely that the generous munificence of that Institute had made it possible to publish the principal part of the works of this illustrious Danish astronomer.

Copenhagen, the 25th day of September, 1926. [HAUNIÆ, d. 25. m. Septembris a. MCMXXVI.]

The Society for Danish Language and Literature. [SOCIETAS LINGUÆ ET LITTERARUM DANICARUM.]

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Observations of the Year 1596 [OBSERUATIONES ANNI 1596.]

Observations of the Sun [OBSERUATIONES SOLIS.]

2 January [DIE 2 JANUARIJ.]
At noon [In Meridie.].

Meridian altitude of the ⊙ [Altitudo ⊙ Meridiana]	
by the steel instrument [per Chalyb.]	12 24⅓
by the revolving instrument [per Volub.]	12 23¾
Declination of the ⊙ by the armillae [Declin. ⊙ per Armillas]	21 41½
	21 41⅙

It was not clear enough.
17 January [DIE 17 JANUARIJ.]
The ⊙ was observed at noon, when it had an altitude

by the steel instrument	15 32⅚
by the revolving instrument	15 32½
Declination [Declinatio]	18 33
	18 33½

It was clear enough, and the sky entirely cloudless.
4 February [DIE 4 FEBRUARIJ.]

Meridian altitude of the ⊙ [Altit. ⊙ Merid.]	
by the steel instrument	20 56¼
by the revolving instrument	20 56¼
Declination, by one [Declinatio vno]	13 10½
by the other [altero]	13 10⅙

It was moderately clear.
21 February [DIE 21 FEBRUARIJ.]

Meridian altitude of the ⊙	
by the steel instrument	27 6
by the revolving instrument	27 6
Declination of the ⊙ [Declin. ⊙]	7 1¼
by the armillae [per Armillas]	7 1⅙

It was not clear enough.

24 February [DIE 24 FEBRUARIJ.]

Meridian altitude of the ⊙	
by the steel instrument	28 15¼
by the revolving instrument	28 15⅙
Declination [Declin.]	5 49⅚
by the armillae	5 50¼

It was quite clear.

25 February [DIE 25 FEBRUARIJ.]

Meridian altitude of the ⊙	
by the steel instrument	28 38⅔
by the revolving instrument	28 39⅙
Declination	5 26½
by the armillae	5 26⅔

26 February [DIE 26 FEBRUARIJ.]

Meridian altitude of the ⊙	
by the steel instrument	29 1⅔
by the revolving instrument	29 1½
Declination by the armillae [Declin. per Armillas]	5 5
	5 4½

It was clear enough.

7 March [DIE 7 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	32 56½
by the revolving instrument	32 56 0
Declination	1 9 0

by the armillae	1 9⅙[1]

It was moderately clear.
8 March [DIE 8 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	33 20½
by the revolving instrument	33 20½
Declination	0 46½
by the armillae	0 46

It was clear enough.
9 March [DIE 9 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	33 43⅓
by the Mural [per Muralem]	33 45 +
by the revolving instrument	33 43½
Declination	0 22½
	0 22

It was moderately clear.
11 March [DIE 11 MARTIJ.]
N.B. Close to the equinox [N.B. Æquinoctio vicinum.].

Meridian altitude of the ⊙	
by the steel instrument	34 30⅔
by the revolving instrument	34 30⅚
by the Mural	34 32
Declination	0 25 B.
	0 25

It was not very clear.
14 March [DIE 14 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	35 41⅚
by the revolving instrument	35 41½

[1] The codex has 1 9 0⅙ [Codex habet 1 9 0⅙.].

Declination [Declinatio]	1 35
	1 35⅔

It was reasonably clear [Erat mediocriter bene ſerenum.].

15 March [DIE 15 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	36 6¼
by the revolving instrument	36 4⅚
Declination	2 0 0
	1 59½

It was not very clear.

16 March [DIE 16 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	36 28⅓
by the revolving instrument	36 28⅔
Declination	2 22⅚
	2 23

17 March [DIE 17 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	36 53
by the revolving instrument	36 52⅓
Declination	2 46½
	2 46⅚

18 March [DIE 18 MARTIJ.]

Meridian altitude of the ⊙ [Alt. ⊙ Merid.]	
by the steel instrument	37 15⅔
by the revolving instrument	37 15½
Declination [Declin.]	3 8⅓
by the armillae	3 8⅚

N.B. It was fairly clear [N.B. Erat ſatis bene ſerenum.].
23 March [DIE 23 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	39 11¾
by the revolving instrument	39 11½
Declination	5 6⅙
	5 6

It was clear enough [Fuit ſatis ſerenum.].
29 March [DIE 29 MARTIJ.]

Meridian altitude of the ⊙	
by the steel instrument	41 28⅔
by the revolving instrument	41 28⅙
Declination	7 22⅔
	7 22½

4 April [DIE 4 APRILIS.]

Meridian altitude of the ⊙	
by the steel instrument	43 40 0
by the revolving instrument	43 40½
Declination	9 33⅓
	9 33⅔

It was quite clear [Erat bene ſerenum.].
7 April [DIE 7 APRILIS.]

Meridian altitude of the ⊙	
by the steel instrument	44 43⅓
by the revolving instrument	44 43½
Declination by the armillae	10 37½
	10 38

It was fairly clear [Erat ſatis bene ſerenum.].
9 April [DIE 9 APRILIS.]

Meridian altitude of the ⊙	
by the steel instrument	45 24⅚
by the revolving instrument	45 25
Declination	11 20
	11 19½

It was not very clear.

10 April [DIE 10 APRILIS.]

Meridian altitude of the ⊙	
by the steel instrument	45 46
by the revolving instrument	45 46⅚
Declination	11 40⅔
	11 40

It was not very clear [Non fuit satis serenum.].

19 April [DIE 19 APRILIS.]

Meridian altitude of the ⊙	
by the steel instrument	48 41⅔
by the revolving instrument	48 42⅙
Declination	15 23
	15 23½

Moderately clear [Mediocriter serenum.].

25 April [DIE 25 APRILIS.]

Meridian altitude of the ⊙	
by the steel instrument	50 28¾
by the revolving instrument	50 29 0
Declination	16 22¾
	16 22

26 April [DIE 26 APRILIS.]

Meridian altitude of the ⊙	
by the steel instrument	50 45⅙
by the revolving instrument	50 45½
Declination of the ⊙ [Declinatio ⊙]	16 40

	16 40⅓

28 April [DIE 28 APRILIS.]

Meridian altitude of the ⊙	
by the steel instrument	51 17½
by the revolving instrument	51 18
Declination	17 12¾
	17 13

It was moderately clear [Erat mediocriter ferenum.].

1 May [DIE 1 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	52 6⅓
by the revolving instrument	52 6
Declination	18 0 0
	18 1 0

2 May [DIE 2 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	52 16½
by the revolving instrument	52 17
Declination	18 15⅔
	18 15

3 May [DIE 3 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	52 35⅙
by the revolving instrument	52 35⅙
Declination	18 30
	18 29½[1]

4 May [DIE 4 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	52 50 0
by the revolving instrument	52 50 0
Declination	18 45 0
	18 45⅔

It was not very clear [Non satis erat serenum.].

5 May [DIE 5 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	53 4
by the revolving instrument	53 3⅚
Declination	18 59
	18 58½

7 May [DIE 7 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	53 30⅔
by the revolving instrument	53 31⅙
Declination	19 28
by the armillae	19 27⅔

It was moderately clear [Erat mediocriter serenum.].

8 May [DIE 8 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	53 45
by the revolving instrument	53 44⅓

13 May [DIE 13 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	54 58
by the revolving instrument	54 57⅓
Declination	20 52
	20 52½

24 May [DIE 24 MAIJ.]

Meridian altitude of the ⊙	
by the steel instrument	56 29½
by the revolving instrument	56 29
Declination	22 25⅓
	22 25⅙

4 June [DIE 4 JUNIJ.]

Meridian altitude of the ⊙	
by the steel instrument	57 25⅔
by the revolving instrument	57 25⅚
Declination	23 20½
	23 20⅔

5 June [DIE 5 JUNIJ.]

Meridian altitude of the ⊙	
by the steel instrument	57 28¼
by the revolving instrument	57 28
Declination	23 23½
	23 23

The clock was being corrected. It was clear enough [Corrigebatur horologium. Erat ſatis ſerenum.].

10 June [DIE 10 JUNIJ.]

Meridian altitude of the ⊙	
by the steel instrument	57 35⅚
by the revolving instrument	57 35½
Declination	23 30
	23 30⅔

11 June [DIE 11 JUNIJ.]

Meridian altitude of the ⊙	
by the steel instrument	57 35
by the revolving instrument	57 35⅔
Declination	23 29⅚
	23 30

23 August [DIE 23 AUGUSTI.]

Meridian altitude of the ⊙	
by the steel instrument	41 55¾
by the revolving instrument	41 55⅚
Declination	7 50
	7 50½

14 September [DIE 14 SEPTEMBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	33 29¾
by the revolving instrument	33 30½
Declination [Declin.]	0 37⅔
by the armillae	0 38 M

It was not very clear [Non erat ſatis ſerenum.].
16 September [DIE 16 SEPTEMBRIS.]

Meridian altitude of the ⊙	…[2]
with the declination [cum Declinatione]	1 23⅔
	1 23

[1] The codex has 19½ [Codex habet 19½.].
[2] It was not observed [Obſervata non eſt.].
17 September [DIE 17 SEPTEMBRIS.]

Meridian altitude of the ⊙ [Altit. ⊙ Merid.]	
by the steel instrument [per Chalyb.]	32 20⅙
by the revolving instrument [per Volub.]	32 21
Declination [Declinatio]	1 46½
	1 46 M.

It was quite clear [Erat bene ſerenum.].
21 September [DIE 21 SEPTEMBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	30 45½

by the revolving instrument	30 46
Declination	3 19½
	3 19⅚

It was quite clear [Erat bene ſerenum.].

23 September [DIE 23 SEPTEMBRIS.]

Meridian altitude of the ⊙ [Aliit. ⊙ Merid.]	
by the steel instrument	30 0⅓
by the revolving instrument	30 0 0
Declination	4 5
	4 5½

It was quite clear [Erat bene ſerenum.].

24 September [DIE 24 SEPTEMBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	30 23⅔
by the revolving instrument	30 22⅚
Declination	4 29½
	4 29⅓

27 September [DIE 27 SEPTEMBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	28 28⅓
by the revolving instrument	28 29 0
Declination	5 40 0
	5 39½

2 October [DIE 2 OCTOBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	26 32⅙
by the revolving instrument	26 32⅚
Declination	7 33⅔
	7 34⅙

6 October [DIE 6 OCTOBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	25 2⅗[1]
by the revolving instrument	25 3½
Declination	9 4
	9 3½

10 October [DIE 10 OCTOBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	23 35⅔
by the revolving instrument	23 36⅙
Declination by the armillae [Declin. per Armillas]	10 30
	10 30⅙

12 October [DIE 12 OCTOBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	22 52⅙
by the revolving instrument	22 52½
Declination	11 11⅔
	11 12⅙

27 October [DIE 27 OCTOBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	17 58⅔
by the revolving instrument	17 59⅙
Declination	16 8½
	16 9 0

2 November [DIE 2 NOUEMBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	16 15½
by the revolving instrument	16 16½
Declination	18 10
	18 9⅚

1 December [DIE 1 DECEMBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	11 5
by the revolving instrument	11 4¼
Declination by the armillae, max. [Declin. per Armillas max.]	23 1
	23 1⅔

It was not very clear [Non fuit ſatis ſerenum.].

12 December [DIE 12 DECEMBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	10 41¼
by the revolving instrument	10 41⅔
Declination	23 25½
	23 26

It was moderately clear [Erat mediocriter ſerenum.].

24 December [DIE 24 DECEMBRIS.]

Meridian altitude of the ⊙	
by the steel instrument	11 20¾
by the revolving instrument	11 20
Declination by the armillae, max., with one pinnule [Decl. per Armillas max., vno]	22 45½
with the other pinnule [altero pin.]	22 46

It was quite clear [Fuit bene ſerenum.].

[1] The codex has 2⅗ [Codex habet 2⅘.].

Observations of the Moon [OBSERUATIONES LUNÆ.]

2 January [DIE 2 JANUARIJ.]

At hour 7 39 the western limb of the ☾ was seen in a straight line with the right, or eastern, shoulder of Orion and Capella. The ☾ was, moreover, set roughly midway between the two fixed stars, since, from the inner edge of the circumference of the halo that surrounded the ☾ this evening, and by which the said fixed stars were enclosed together, Capella was observed with the Radius to be about 2¼° away towards the ☾, and on the other side the shoulder of Orion at a nearly equal distance. The position and mutual arrangement of the ☾, the said halo and the stars was such as is set down here [qualis hic aſcriptus eſt]. Further, the distance from the nearer limb of the ☾ to the circumference of the halo, by the Radius, was 23⅖ g.

Afterwards, when the ☾ was approaching the 90th degree of the ecliptic, its distance from ♂ was observed, because no other stars were visible on account of snow clouds [ob nubes niuosas]. It would, moreover, be at about the 90th degree at H. 9½, in 20⅔ ♊. These observations are therefore especially useful for examining its latitude and parallax, since it was not far from the summer tropic.

H. M.	Distance of the western limb from ♂ [Diſt. occid. limbi a ♂]	Declination [Declinatio], inf.	sup.
8 47½	34 41½	27 21½	26 51
8 50½	34 46		
8 54 0	34 48½	27 21	26 52½

Afterwards, when ♂ could no longer be seen, we observed the ☾ in altitude and azimuth with the revolving instrument [per Volubilem], together with its declination, as follows.

H. M.	Declination [Declin.]	Azimuth of the western limb from the meridian towards the east [Azim. occ. limb. a Mer. ad ort.]	Altitude, inf./sup. [Altit. inf./ſup.]
9 8	27 24	14	60 24⅓
	26 53		60 57
9 12	27 24¼	12	60 34
	26 54		61 3
9 17	27 24½	10	60 42½
	26 53⅔		61 11½
9 21⅔	27 24¼	8	60 48
	26 54⅙		61 17⅔
9 26⅓	27 24½	6	60 52⅔
	26 54⅓		61 22½
9 30⅔	27 24⅔	4	60 57 0
	26 54		61 27 0

Afterwards the western limb of the ☾ crossed the meridian, having the altitude [Poſtea tranſiuit ☾ occidentalis limbus per Meridianum habens Altitud.]:

by the steel instrument [per Chalyb.]	inf.	60 59½
	sup.	61 31 0
by the revolving instrument [per Volub.]	inf.	60 59 0
	sup.	61 30½
9 39½ Decl.		27 24 doubtful [dubia]
		26 54

For the place of the ☾ on 2 January [Pro loco ☾ ad diem 2 Jan.]:

H. 7⅙	Right ascension of ♂ from Aldebaran [Aſc. Recta ♂ ab Aldeb.]	42 19
	Its declination [Declinatio eius]	18 14
8 55	Distance of the ☾ from ♂ [Diſtantia ☾ a ♂]	35 4
	Declination of the ☾	27 7
	Therefore the right ascension of the ☾ [Ergo Aſcenſio Recta ☾]	79 13
	Longitude of the ☾	20 23 ♊
	Therefore the place of the ☾ at the time of the transit [Ergo locus ☾ tempore tranſitus]	20 47 ♊

3 January [DIE 3 JANUARIJ.]

For the altitude, azimuth and declination of the ☾ observed yesterday evening near the 90th degree, Aldebaran was taken with the revolving instrument and the equatorial armillae [Armillas æquatorias], as follows.

H. M.	Declination [Declin.]	Altitude [Altit.]	Azimuth from the meridian towards the east [Azim. a Mer. ad ort.]	Bright star of Orion's eastern shoulder [Luc. hum. Or. orient.]
8 3⅓	15 37 with one pinnule [vno pinn.]	49 13¼	12 0	28 6
8 8¼	15 36⅔ with one pinnule [vno pinn.]	49 21½	10	26 53
8 14	15 37½ 15 36⅔	49 29½	8	25 34
8 19½	15 36⅔ 15 37⅙	49 35¼	6	bright star in the foot of Orion, or. [Luc. pes] [Orion. or.]
8 25 0		49 39⅔	4	13 21

8 35¾	Aldebaran crossed the meridian, having the altitude [Tranſiuit Aldeboran per Merid. habens Altitudinem]		
	by the steel instrument	49 42½	
	by the revolving instrument	49 42⅔	
	Decl.	15 37⅙	10 15

	Aldeb.	15 37⅓
9 22⅔	The bright star in the foot of Erichthonius crossed the meridian, having the altitude [Tranſiuit Luc. pes Erichtonij per Merid. habens Altit.]	
	by the steel instrument	62 14¾
	by the revolving instrument	62 15⅓
	Its declination [Declin. eius]	28 14 28 14⅙

Afterwards the western limb of the ☾ was observed about the 90th degree and, to the meridian, approach- [Poſtea obſeruabatur ☾ limbus occid. circa 90 grad. & Meridiano appropin-] -ing, first from the lower foot of Erichthonius [quans, primo ab inferiori pede Erichtonij.]

H. M.	Distance of the ☾ from the lower foot of Erichthonius [Diſt. ☾ ab inf. pede Ericht.]	Declination of the ☾, inf./sup. [Declin. ☾ inf./ſup.]	Bright star of Orion's western shoulder [Luc. hum. Orion. occ.]
10 8¼	16 40	28 6½	3 30
10 6½ corr.		27 36½	
10 10½	16 40⅚		4 8
10 13⅙	16 41⅓		5 2½
10 14 35	16 41⅚	28 7	
		27 36⅔	
10 17¼	16 43⅓	28 8½	5 40
10 15⅙ corr.		27 35	

Conversely, the western limb of the ☾ from the lower Head of ♊ [Viceverſa occid. limbus ☾ ab infer. Capite ♊]:

H. M.	Distance	Declination	
10 25⅙	13 59½	28 6⅔	7 33
10 23⅔ corr.		27 35⅓	
10 28	13 58¾	28 6¼	8 14
		27 36⅙	
10 29⅚	13 57¼	28 7	8 47
		27 37⅙	

10 39 / 10 38⅓ corr. — the bright foot of Orion, west, 20 46½ [Lucidus pes Orionis occid. 20 46½]. The western limb of the ☾ crossed the meridian, having the altitude [Tranſiuit occident. limbus ☾ per Merid. habens Altit.]:

by the steel instrument [per Chalyb.]	upper [Supra]	62 10 20	
	at the centre [in centro]	61 54 30	doubtful [dubia]
	lower [infra]	61 39 40	

The central altitude was taken by the shadow of the ☾, the others through the slit, by sight [Altitudo centralis accepta eſt per vmbram ☾, reliquæ per rimulam ad viſum.].

N.B. The steel instrument was not in quite correct adjustment here, as was noticed afterwards; add 1⅚¹ [Chalybeus hic non ſe ſatis recte habuit, quod poſtea animaduerſum eſt, adde 1⅚¹.].

by the revolving instrument [per Volub.]	upper [ſupra]	62 11 0
	at the centre [in centro]	61 57 20
	lower [infra]	61 41 40

The declination was then [Declin. tunc erat] *28 8½ by the armillae, max.* [per Armill. max.] *27 35*

Repeated declination of the ☾ [Repetita Declinatio ☾]

10ʰ 46ᴹ	superior, with one pinnule [ſuper. vno pin.]	28 8⅓	*bright foot of Orion, then west* [Lucid. pes Orion. tunc occid.]
	with the other [altero]	28 8⅓	
	inferior, with one [inferius vno]	27 37⅓	
	with the other [altero]	27 36⅔	22 22½

Repeated declination of the ☾ [Repetita Declinatio ☾]

10 55¾	of the superior limb, with one [ſup. limbi vno]	28 6	*the same star, west* [Eadem ſtella occ.]
	of the inferior, with one [inferioris vno]	27 33⅓	24 49

The altitude of the ☾ was then [Fuit tunc Altitudo ☾]

of the superior limb [ſuperioris limbi]	62 5	*Azimuth*
of the inferior [inferioris]	61 31½	7 20

Repeated declination [Repetita Declinatio]

11 1¾	superior, with one [ſuperior. vno]	28 7	*Altit.*
	inferior, with one [inferior. vno]	27 34½	sup. [ſuper.] 61 58
	with the other [altero]	27 34⅓	inf. [infer.] 61 25

Azimuth 10 15. The same star 26 [Azimuth 10 15. Eadem ſtella 26].

Then the distance of the western limb of the ☾ from the bright foot of Erichthonius was observed again [Deinde obſeruabatur rurſus diſtantia occident. limbi ☾ a lucido pede Erichtonij.].

H. M.	Distance of the western limb of the ☾ from the bright foot of Or. [Diſt. occ. limbi ☾ a luc. pede Or.]	Declination, sup./inf. [Declin. ſup./inf.]	Lesser Dog, east [Canis min. orient.]
11 11⅓	17 3⅔	28 7	8 51
		27 35	
11 14⅙	17 5		7 32½
11 16⅓	17 5½	28 7⅙	7 45
		27 35⅙	
11 18½	17 7½		5 25

Conversely, the western limb of the ☾ from the lower Head of ♊ [Viceverſa occid. limb. ☾ ab infer. Cap. ♊]:

H. M.	Distance	Declination	
11 22¾	13 36	28 7	4 19
		27 35	Canicula
11 48⅚	13 26½	28 6⅓	west [occ.]
		27 34⅔	2 12

Meanwhile, at H. 11 M. 31⅙, the upper Head of ♊ crossed the meridian, having the altitude [Interim H. 11 M. 31⅙ Tranſiuit ſuperius Caput ♊ per Merid. habens Altit.]:

by the steel instrument [per Chalyb.]	66 45⅝
by the revolving instrument [per Volub.]	66 46

Its declination could not be taken because of the roof [Declinatio eius capi non potuit ob tectum.].

At 11 44¼ the lower Head of ♊ crossed, having the altitude [Tranſiuit inferius Caput ♊ habens Altitudinem]:

by the steel instrument [per Chalyb.]	63 0⅙	Declination [Declin.]	28 56
by the revolving instrument [per Volub.]	63 0¾	of the same [eiusdem]	28 56⅙

This evening it was quite clear and calm; after midnight clouds came up [Fuit hac veſpera ſatis ſerenum & tranquillum, poſt mediam noctem aſcenderunt nubes.].

Description of the halo seen around the ☾ on 3 January, when it had first crossed the meridian [Deſcriptio Halonis viſæ circa ☾am die 3 Januarij cum Meridianum primum tranſiuiſſet.].

The bright shoulder of Orion was in the arc of the halo itself, but by a fourth part next to the outermost circumference [ſed pro quarta parte iuxta vltimam circumferentiam]. The bright shoulder of Erichthonius was at the boundary of the outermost circumference, as was the Lesser Dog too, and the Moon was, as it were, midway between them — though not exactly [ſed tamen non ad vnguem].

The middle of the space between the two, from the shoulder of Erichthonius to the Lesser Dog, left the Moon in the middle, in a straight line [Medium ſpatium inter vtrumque Humerum Erichtonij ad Canem minorem relinquebat Lunam in medio in linea recta.].

[1] Added afterwards [Poſtea adſcriptum.].

For the place of the ☾ on the third day of January [Pro loco ☾ ad diem tertium Januarij.]:

10[H] 16[M]	Declination of the centre of the ☾ [Declin. centri ☾]	27 51
	Distance of the centre of the ☾ from the bright foot of Erichthonius [Diſt. centri ☾ a luc. pede Ericht.]	16 59
	Declination of the same foot [Declin. eiusdem pedis]	28 11 40 B.
	Right ascension of the same [Aſc. recta eiusdem]	75 11 10
	Angle of the ascensional difference [Ang. diff. aſcenſ.]	19 15 43
	Therefore the right ascension of the centre of the ☾ [Ergo aſc. recta centri ☾]	94 26 53
10 24	Distance of the centre of the ☾ from the lower Head of ♊ [Diſt. centri ☾ ab inf. cap. ♊]	13 43 30

	Declination of the lower Head of ♊ [Declin. inf. cap. ♊]	28 56 30 B.
	Right ascension of the same [Aſc. recta eiusdem]	110 7 25
	Angle of the ascensional difference [Ang. diff. aſcenſion.]	15 33 52
	Therefore the right ascension of the ☾ [Ergo aſc. recta ☾]	94 33 33
10 20	Right ascension, limited [Aſc. recta limitata]	94 30 15
	Corresponding longitude [Reſp. Longitudo]	4 5 30 ♋
	Latitude [Latitudo]	4 23 16 B.

4 January, evening [DIE 4 JANUARIJ, VESPERI.]

The ☾ in the 90th degree at H. 12 exactly [☾ in 90 grad. H. 12 exacte.].

The ☾ was observed nearly full, close to the greatest prosthaphaeresis of the first epicycle [maximam Proſtaphæreſin I Epicycli], and likewise to the greatest northern latitude. The clock was corrected from the Lesser Dog [Horologium corrigebatur a Cane min.].

I from the bright foot of Erichthonius [I a lucido pede Erichtonij]

H. M.	Distance of the western limb of the ☾ from the foot of Erichthonius [Diſt. occ. limbi ☾ a pede Ericht.]	Declination of the ☾ [Decl. ☾]	Altitude of the superior limb [Altit. ſup. limbi]	Lesser Dog, east [Can. min. orient.]
10 41 0	30 8	27 7	59 35	
10 45¾	30 10	27 6½ — superior limb, among running clouds [ſup. limbi, inter nubes currentes]		12 29
10 47⅚	30 11⅔			11 51
10 49⅔	30 12½		60 5	
			inf. 59 51	
11 1 0		27 7⅓		
		26 34½		
11 11¾	30 26		sup. [ſup.] 60 48	5 54
11 14⅓	30 23		60 55	5 29
11 22⅙	30 28			3 40
11 26⅚		27 6½		2 25
		26 33½		
11 37⅖	The western limb of the ☾ crossed the meridian [Tranſiuit occident. limbus ☾ per Merid.]			west [occ.]

H. M.	Distance of the western limb of the ☾ from the foot of Erichthonius [Diſt. occ. limbi ☾ a pede Ericht.]	Declination of the ☾ [Decl. ☾]	Altitude of the superior limb [Altit. ſup. limbi]	Lesser Dog, east [Can. min. orient.]
11 34⅔ corr.				0 18

having the altitude [habens Altit.]:

	by the steel instrument [per Chal.]	by the revolving instrument [per Vol.]
superior [ſuper.]	61 10	61 8½
inferior [infer.]	60 35⅙	60 39

11 43⅙	Declination [Declin.]	27 4 26 36

Afterwards the ☾ was taken again about the 90th degree, I from Capella [Poſtea rurſus ☾ circa 90 grad. capiebatur, I a Capella.].

H. M.	Distance of the western limb from Capella [Diſt. occ. limbi a Capella]	Declination, sup./inf. [Declin. ſup./inf.]	Altitude, superior [Altit. ſuper.]	Lesser Dog, west [Can. min. occ.]
11 52	35 26½	27 3		3 53
11 49⅙		26 34		

From the bright foot of Erichthonius [A lucido pede Erichtonij]

H. M.	Distance	Declination	Altitude
12 1⅚	30 44⅔		
12 3⅔	30 45½		
12 0⅚ corr.			

Conversely, the western limb of the ☾ from Cor ♌ [Viceverſa, occ. limb. ☾ a Corde ♌]

H. M.	Distance	Declination	Altitude
12 7 0	36 33¾ doubtful [dubia]	27 2½ 26 33½	60 41⅔
12 9⅙ 12 6 corr., better [corr. melior]	36 35		60 33

H. M.	Distance	Declination	Altitude	
12 14⅙	36 34½		60 28	9 45
12 15¾	36 33	27 1½	60 25	
		26 31⅓		

Afterwards from the bright star in the neck of ♌ [Poſtea a lucida Ceruice ♌]

H. M.	Distance	Declination	Altitude	
12 19¼	36 3		60 17⅚	10 2
12 15 corr.				
12 20⅚	36 1¼		60 13	
12 22⅚	35 59⅔	27 1	60 8½	11 34
12 19 50 corr.		26 29		

These observations were made for the most part among scudding clouds, with a very stormy west wind blowing [ſpirante Zephyro tempeſtuoſe admodum].

At noon on the following day the clock was running 5 M. slower than it should; this error had come upon it since the 10⅔th hour of the evening [qui error ei acceſſerat ab hora 10⅔ veſpertino].

Investigation of the place of the ☾ from the observations made on 4 January [Inquiſitio loci ☾ ex obſeruationibus die 4 Januarij habitis.]

H. 12 0	Distance of the centre of the ☾ from the northern horn of ♉ [Diſt. centri ☾ a boreali cornu ♉]	31 1
	Declination of the northern horn of ♉ [Declin. bor. cornu ♉]	28 11 40 B.
	Declination of the ☾ [Declin. ☾]	26 48½
	Angle of the ascensional difference [Ang. diff. aſc$^{a|i^s}$]	35 3 20
	Right ascension of the northern horn of ♉ [Aſc. r. bor. cornu ♉]	75 11 10
	Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	110 14 30
12 6	Distance of the ☾ from Regulus [Diſt. ☾ a Regulo]	36 19
	Declination of Cor ♌ [Declin. cordis ♌]	13 55
	Declination of the ☾ [Declin. ☾]	26 48 0
	Angle of the ascensional difference [Ang. diff. aſcenſ.]	36 24 15
	Right ascension of Cor ♌ [Aſc. recta cordis ♌]	146 41 0
	Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	110 16 45

Therefore, at Hour 12 M. 3 [Ergo Hora 12 M. 3]:

Fixed right ascension of the ☾ [Limitata Aſc. R. ☾]	110 15 40
Declination, B. [Declin. B.]	26 48¼
Corresponding longitude [Reſp. Longitudo]	18 3 51 ♋

Latitude [Latitudo]	4 32 38 B.

N.B.[1] H. 12 M. 4. Afterwards these distances were fixed better by setting the distance from the foot of Erichthonius at 30 48 and, at the same time, that from Cor ♌ at 36 34, with the semidiameter of the ☾ at M. 17. From this the right ascension is 110 20½ and the declination 26 45⅔ B. [N.B.[1] H. 12 M. 4. Poſtea diſtantiæ hæ melius limitatæ ſunt ponendo eam a pede Erichtonij 30 48 & eodem tempore a Corde ♌ 36 34, & ſemid. ☾ M. 17 vnde Aſcenſio Recta 110 20½, Declinatio 26 45⅔ B.]

Corresponding longitude [Reſp. Longitudo]	18 9 ♋
Latitude [Latitudo]	4 31 0 B.

— after careful comparison with the meridian altitude [habita diligenti collatione cum altitudine meridiana.].

At H. 12 M. 4 the ☾ was exactly in the 90th degree of the ecliptic [H. 12 M. 4 Fuit ☾ exacte in 90 gradu Eclipticæ.].

DIE 12 JANUARIJ, MANE.

[12 January, morning.]

The ☾ was observed near perigee and the last quarter, as follows [Obſeruabatur ☾ iuxta Perigæum & Quadraturam vltimam in hunc modum.].

H. M.	Distance of the eastern limb from Spica ♍ [Diſt. or. limbi a Spica ♍]	Declination [Declin.]		Cor ♌ on the equator, west [Cor ♌ in æquat. occ.]
6 59½	11 37¼	13 27		74 0
6 43 corr.		12 56		
	from the tail of ♌ [a cauda ♌]		*Spica* ♍, *west* [Spica ♍ occ.]	♄, *west* [♄ occid.]
7 5½	45 51⅓		28 41	66 20
6 49 corr.				
	from ♄ [a ♄]			
7 12⅔	52 59½	13 31		68 21
		12 58		
7 14⅚	53 2 better [melior]			69 0
7 22	53 4			70 45
7 26	53 5¼	13 35		71 37

H. M.	Distance of the eastern limb from Spica ♍ [Diſt. or. limbi a Spica ♍]	Declination [Declin.]	Cor ♌ on the equator, west [Cor ♌ in æquat. occ.]
7 9 corr.		13 5	

Conversely, from the bright star of Lyra, through the semicircle [Viceverſa a Lucida Lyræ per ſemicirculum.]:

H. M.	Distance	Declination		Eastern limb of the ☾ [Orient. limb. ☾]
7 39⅙	82 5½			
7 22 40 corr.				27 15
7 44½	82 5	13 7		28 26
		13 42		
7 48	82 4½			
7 51⅔	82 4		*Alt.*	30 18
7 35 corr.		inf.	*inf.*	
7 55		13 51½	15 42	

These were observed under a cloudy sky, the ☾ being in the 90th degree at H. 8 M. 6, according to computation [Hæc obſeruata ſunt cœlo nubiloſo, exiſtente ☾ in 90 gradu H. 8 M. 6 iuxta ſupputationem.].

For the place of the ☾ on the same day [Pro loco ☾ eodem die.]:

H. 7 M. 9: distance of the centre of the ☾ from ♄ [Diſt. centri ☾ a ♄]	52 50
Declination of the centre of the ☾ [Declin. centri ☾]	13 20 M.
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	206 57¼
Corresponding longitude [Reſp. Longitudo]	29 46 50 ♎
Latitude [Latitudo]	2 1 45 M.

Parallax of altitude M. 60⅙; corresponding parallax in longitude M. 8 0, to be subtracted [Parallaxis Alt. M. 60⅙, reſp. in Longit. M. 8 0 ſubt.].

(On revising these I found the parallax in longitude to be 7 M.; to these, for the latitude, add 2⅚. After comparison with what follows, I set the true place of the ☾ in its orbit at H. 7 M. 10 at 29 4 ♎ — on which you may rely)[1] [(Reuiſis hiſce deprehendi Parall. Long. 7 M., his pro Lat. 2⅚ add. Habita collatione cum ſequentibus poſui verum ☾ locum in orbita ſua H. 7 M. 10 29 4 ♎ cui te fundare poteris)[1].]

H. 6 M. 43: distance of the centre of the ☾ from Spica [Diſt. centri ☾ a Spica]	11 20
Declination of Spica ♍ [Declin. Spicæ ♍]	8 59½ M.
Declination of the centre of the ☾ [Declin. centri ☾]	13 13½

Angle of difference of ascension [Ang. diff. aſcenſ.]	10 43 0
Right ascension of Spica [Aſc. recta Spicæ]	196 0⅙
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	206 43 0
H. 6 M. 49: distance of the centre of the ☾ from the tail of ☋ [Diſt. centri ☾ a cauda ☋]	45 35
Declination of the centre of the ☾ [Declin. centri ☾]	13 15 M.
Declination of the tail [Declin. caudæ ☾]	16 50⅔
Right ascension of the tail of ☋ [Aſc. recta caudæ ☋]	172 5
Angle of difference of ascension [Ang. diff. aſcenſ.]	34 41 0
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	206 46
Set, at H. 6 M. 50, the right ascension of the ☾ [Pone H. 6 M. 50 Aſc. r. ☾]	206 47
True declination, M. [Declin. vero M.]	13 15
Corresponding longitude [Reſp. Longitudo]	29 36 4 ♎
Latitude [Latitudo]	2 0 40 M.
H. 7 M. 35: distance of the centre of the ☾ from the bright star of Lyra [Diſt. centri ☾ a lucida lyræ]	82 21
Declination of the centre of the ☾ [Declin. centri ☾]	13 33 M.
Declination of the bright star of Lyra [Declin. luc. lyræ]	38 28
Angle of difference of ascension [Ang. diff. aſcenſ.]	68 30
Right ascension of Lyra [Aſc. recta lyræ]	275 48 30
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	207 18 30
Corresponding longitude [Reſp. Longitudo]	0 11 9 ♏
Latitude [Latitudo]	2 6 36 M.

This observation is uncertain, because the ☾ was not well placed with respect to Lyra relative to the equator [Incerta obſeruatio hæc, quod ☾ non bene cum Lyra diſpoſita fuit reſpectu Æquatoris.].

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

DIE 27 JANUARIJ.

[27 January.]

The ☾ was observed among clouds around the meridian, at quadrature [Inter nubes circa meridianum in quadratura obſeruabatur ☾.].

☾ in the 90th degree at H. 4 M. 36 [☾ in 90 gr. H. 4 M. 36.].

H. M.	Distance of the western limb of the ☾ from ♃ [Diſt. occid. limbi ☾ a ♃]	♃, west [♃ occid.]
6 6⅔	46 8⅓	
6 9⅚		37 58
6 26½		42 7

At 6 29½ the western limb of the ☾ crossed the meridian among what were almost dense clouds, and the upper horn had an altitude on the revolving instrument of 54 15½, uncertain. Shortly afterwards, on the steel instrument, 54 18, also uncertain. Declination 19 42 inf., 20 14 sup. [6 29½ Tranſijt occidentalis limbus ☾ per Merid. inter nubes quaſi denſas, habuitque ſuperius cornu altitudinem in Volub. 54 15½, incerta. Paulo poſt in Chalyb. 54 18, incerta etiam. Declin. 19 42 inf. 20 14 ſuper.]

Place of the ☾ on 27 January [Locus ☾ die 27 Jan.]:

Distance of the western limb of the ☾ from ♃ [Diſt. occ. limbi ☾ a ♃]	46 8⅓
Distance of the centre of the ☾ from ♃ [Diſt. centri ☾ a ♃]	46 24 20
Declination of ♃ [Decl. ♃]	0 13 B.
Declination of the centre of the ☾, fixed [Decl. centri ☾ limitata]	19 58 B.
Angle of difference of ascension [Ang. diff. aſcenſion.]	42 55 20
Right ascension of ♃ [Aſc. recta ♃]	3 28 20
Right ascension of the centre of the ☾ [Aſc. recta centri ☾]	46 23 40
Corresponding longitude [Reſp. Longitudo]	19 30 15 ♉
Latitude [Latitudo]	1 26 43

DIE 29 JANUARIJ.

[29 January.]

As the ☾ approached the 90th degree, its western limb was taken, first from the bright star of ♈. The ☾ was in the 90th degree at H. 7 M. 2 [Cum ☾ appropinquaret 90 gradui capiebatur occid. eius limbus I a Lucida ♈. Erat ☾ in 90 gradu H. 7 M. 2.].

H. M. S.	Distance of the western limb from the bright star of ♈ [Diſt. occ. limb. a luc. ♈]	Declination [Decl.]	Altitude, sup./inf. [Altit. ſup./inf.]	Bright star of Orion's shoulder, east [Luc. hum. Orion. or.]
6 52 25	42 20½			
6 53½			60 18⅓	18 28
			59 48	
6 55⅓	42 25			18 14
6 57⅓	42 26			17 37
6 58¾			60 29½	17 20
			59 56½	
6 59⅔	42 27⅔	26 15½		*Canicula, east* [Canicula orient.]
		26 46		
7 1⅚	42 28	26 15½		42 50
7 0½ corr.		26 46½		
7 3⅓	42 30			42 30

H. M. S.	Distance of the western limb from the bright star of ♈ [Diſt. occ. limb. a luc. ♈]	Decli-nation [Decl.]	Altitude, sup./inf. [Altit. ſup./inf.]	Bright star of Orion's shoulder, east [Luc. hum. Orion. or.]
7 1 47 corr.				

[1] Perhaps 11⅓ [Fortaße 11⅓.]

Conversely, the same limb from the lower head of ♊ [Viceverſa idem limbus ab infer. capite ♊.]:

H. M. S.	Distance	Declination	Altitude	Sirius, east
7 6⅓	33 7⅔			41 46
7 4 47 corr.				
7 7⅔	33 6½	26 15	60 41½	41 23
		26 48	60 10	
7 9¾	33 5			40 51½
7 12⅚	33 4	26 15¼		40 22
7 10⅚ corr.		26 46		
7 14⅙	33 2½			39 46
7 15⅚			60 50	39 25
			60 18½	

H. M.	Azimuth west, from the meridian, toward the east [Azim. occ. / a Merid. / ad ort.]
6 53½	14
6 58¾	12
7 7⅔	8
7 15⅚	5

At 7 27⅓ the western limb of the ☾ crossed the meridian, having the altitude [7 27⅓ Tranſiuit occident. limbus ☾ per Merid. habens altitudinem]:

upper [ſup.]	by the steel instrument [per Chal.]	60 56⅓	by the revolving instrument [per Vol.]	60 54⅚
lower [inf.]		60 22½		60 23⅔

Declination of each limb [Declin. vtriuſque limbi]	26 49
	26 16
Canicula was then east [Fuit tunc canicula orient.]	36 46½

At 7 37⅔ the northern horn of ♉ crossed the meridian, having the altitude [7 37⅔ Tranſiuit boreale cornu ♉ per Merid. habens Alt.]:

by the steel instrument [per Chalyb.]	62 16⅙
by the revolving instrument [per Volub.]	62 15¼
Declination uncertain because of the nearness of the ☾ [Decl. incerta propter ☾ vicinitatem]	28 12⅓[1]
	28 11
Canicula was then east [Fuit tunc Canicula orient.]	34 10

For the place of the ☾ from the immediately preceding observations [Pro loco ☾ ex proxime præcedentibus obſeruationibus.]:

H. 7 M. 0⅝: distance of the centre of the ☾ from the bright star of ♈ [Diſt. centri ☾ a luc. ♈]	42 43
Declination of the centre of the ☾ [Declin. centri ☾]	26 30 30
Declination of the bright star of ♈ [Declin. luc. ♈]	21 31 33
Right ascension of the same [Aſc. recta eiuſdem]	26 9
Angle of difference of ascension [Ang. diff. aſcenſ.]	46 41 30
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	72 50 30

Conversely, from the lower head of ♊ [Viceverſa ab infer. cap. ♊.]:

7 10⅝: distance of the centre of the ☾ [Diſt. centri ☾]	32 49
Declination of the centre of the ☾ [Declin. centri ☾]	26 30 30
Declination of the lower head of ♊ [Declin. infer. cap. ♊]	28 55 7
Right ascension of the same [Aſc. recta eiuſdem]	110 8 18
Angle of difference of ascension [Ang. diff. aſcenſ.]	37 7 9
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	73 1 9

Fixed right ascension [Aſc. recta limitata]	72 55 50
Corresponding longitude [Reſp. Longitudo]	44 5♊
Latitude [Latitudo]	53 12 B.

DIE 30 JANUARIJ, VESPERI.

[30 January, evening.]

The ☾ was observed near the summer tropic, around the meridian, in order to determine its parallax and latitude. By computation the ☾ was in the 90th degree at H. 8 M. 22, in 29 ♊ [Obſeruabatur ☾ iuxta Tropicum æſtiuum circa Meridianum pro Parallaxi & latitudine cognoſcendis. ☾ erat in 90 grad. iuxta ſupput. H. 8 M. 22 in 29 ♊.].

H. M.	Distance of the western limb from the head of Andromeda [Diſt. occ. limbi a Cap. Androm.]	Declination [Declin.]	Canis Major, east [Can. maior orient.]
8 10	55 8	27 40	
		28 7	
8 19		27 40½	
		28 8½	
8 25		27 39½ }	
		28 10 } good [bonæ]	
8 29			14 25
	Western distance from Aldebaran [Diſt. occid. ab Aldeb.]		*Bright star of Orion's shoulder, west* [Luc. hum. Orion. occ.]
8 32½		27 40⅚	
		28 9	
8 37⅓	25 20		1 7
8 7⅙ corr.			
8 40	25 20¾		
	Western [limb of the] ☾ from the lower head of ♊ [☾ occ. ab inf. cap. ♊]		
8 41½			1 57
8 10½ corr.	20 6⅓		

At 8 50 the western limb of the ☾ crossed the meridian, and its altitude was: upper [limb], on the steel instrument 62 14¾, on the revolving instrument 62 16⅙; lower, 61 45½ and 61 45½ [8 50 Tranſijt occid. limbus ☾ per Merid. habuitque altitudinem ſup. in Chal. 62 14¾ in Vol. 62 16⅙ inf. 61 45½ 61 45½].

N.B. The clock is to be corrected [N.B. Horologium eſt corrigendum.].

Declination [Declin.]	28 9½		
	27 40⅔	Canis Major, east [Can. maior or.]	9 20

These were observed among rather thick clouds, but with the greatest care, so that, once fixed against one another, they will beyond doubt show very well what you wish to learn about the parallaxes at the altitude of the ☾ [Obſeruata ſunt hæc inter denſiores nubes, ſumma tamen diligentia, ita vt ad inuicem inter ſe limitata, quæ de parallaxibus ad altitudinem ☾ cupis cognoſcere, optime procul dubio manifeſtabunt.].

For the place of the ☾ from the observations immediately preceding [Pro loco ☾ ex obſeruationibus proxime præcedentibus.]:

H. 8 M. 7⅙: distance of the centre of the ☾ from Aldebaran [Diſt. centri ☾ ab Aldeb.]	25 35 45
Declination of the centre of the ☾ [Decl. centri ☾]	27 50
Declination of Aldebaran [Decl. Aldeb.]	15 37 30
Right ascension of the same [Aſc. recta eiuſdem]	63 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	24 18 57
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	87 30 57

Then from the lower head of ♊ [Poſtea ab infer. cap. ♊.]:

8 10½ Distance [Diſtantia]	19 51 20
Right ascension of the lower head of ♊ [Aſc. recta inf. cap. ♊]	110 8 18
Angle of the ascensional difference [Ang. diff. aſcenſ.]	22 34 30
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	87 33 48
8 8⅝ Fixed right ascension [Aſc. recta limitata]	87 32 22
Declination of the centre of the ☾ [Declinatio centri ☾]	27 50
Corresponding longitude [Reſp. Longitudo]	27 49 20♊
Latitude [Latitudo]	4 20 10B.

DIE 31 JANUARIJ.

[31 January.]

Afternoon. We observed the ☾ near the 90th degree of the horizon, since it was then more or less free of refraction, in order to work out the parallaxes by comparison with observations to be made afterwards around the 90th degree of the ecliptic [Poſt Meridiem. Obſeruabamus ☾am iuxta 90 Gr. Horizontalem, cum eßet quaſi a refractione libera pro enucleatione parallaxium collatis obſeruationibus poſtmodum, circa 90 gradum Eclipticæ habendis.].

N.B. The clock was corrected by the ☉ on the equator at exactly H. 3 [N. B. Horologium corrigebatur ad ☉ in Æquatore H. 3 exacte.].

H. M.	Western distance of the ☾ from the ☉ / Altitude of the ☉ [Diſt. occ. ☾ a ☉ / Altit. ☉]	Declination of the ☾ [Decl. ☾]	Altitude I [?] of the upper limb throughout, then of the lower [Altit. I ſup. limbi ſemper, deinde infer.]	Azimuth of the western limb from the meridian towards the east [Az. occ. limbi a Mer. ad ort.]
3 34	137 4½	27 55½		
		27 26½		
3 39⅔	137 4½	27 55⅙		
	6 25	27 25		
3 46½	137 9⅚	27 25⅔	27 45	99 0
	5 7	27 56	27 20	
3 52⅙	137 15	27 25½	28 28	98 0

H. M.	Western distance of the ☾ from the ☉ / Altitude of the ☉ [Diſt. occ. ☾ a ☉ / Altit. ☉]	Decli-nation of the ☾ [Decl. ☾]	Altitude I [?] of the upper limb throughout, then of the lower [Altit. I ſup. limbi ſemper, deinde infer.]	Azimuth of the western limb from the meridian towards the east [Az. occ. limbi a Mer. ad ort.]
	5 5	27 56	28 2⅙	
3 57⅔	…	27 26	29 9½	97 0
	4 44	27 55½	28 42	
4 3	…		29 50	96 0
	4 6		29 24	
4 8⅔	…	27 56½	30 32½	95 0
	3 33	27 25⅚	30 6	

From[1] a comparison of the altitudes of the ☉ on the revolving instrument and on the smaller quadrant, it is found that about 6′ are to be added to the altitudes ſuper. [?] taken with the smaller one [Ex[1] collatione altitudinum ☉ in Volubili & minori Quadrante addenda colliguntur 6 quaſi minuta Altitudinibus ſuper. per Minorem.].

Then the altitude and azimuth of the ☉ were taken with the revolving instrument, to give the time [Poſtea capiebatur Altitudo & Azimuth ☉ pro tempore per Volub.]:

H. M.	Declina-tion [Declin.]	Altitude of the ☉, by the revolving instrument [Altit. ☉ per Volub.]	Altitude of the ☉, by the small quadrant [per paruum Q.]	Azimuth of the ☉ [Azim. ☉]
4 15⅓	27 56	3 0		59 0
	27 26½		2 54	
4 20⅙	27 56¾	2 28		60 0
	27 26½			

[1] Written in the margin. See below, among the observations of Jupiter [In margine adſcripta. Vide infra inter obſervationes Iovis.].

Afterwards the ☾ was observed as before [Poſtea obſeruabatur ☾ vt ante.]:

4 31⅙	27 57	32 55	91 0
	27 26⅙	33 21⅔	
4 38½	27 26⅓	34 15	89 42
	27 57⅓	33 48	

The whole ☉ set at the visible horizon when the clock read 4 46, at which time the centre of the moon was in the 90th degree [In viſibili Horizonte occidit totus ☉ cum eßet Horolog. 4 46, quando centrum lunæ erat in 90 gradu.].

4 42½	27 57¼	34 45	89 0
	27 26½		
4 47⅚	27 57½	35 25⅔	88 0
	27 26⅙	34 57½	
5 2⅔	27 25½	good and carefully [bona & diligenter]	
	27 56⅔	observed [obſeruata.]	

To correct the time, ♃ in the west [Pro tempore corrigendo ♃ occid.]:

5 18⅙	36 16
5 19⅓	36 32

At 6 0, to correct the armillae, the declination of the lower head of ♊ was 28 56, good, and 28 57⅓, doubtful [6 0 Pro armillis corrigendis, Declinatio inferioris capitis ♊ 28 56 bona 28 57⅓ dubia].

The ☾ was in the 90th degree at H. 9 M. 35, by computation [☾ in 90 gradu H. 9 M. 35 iuxta ſupputationem.].

Further, the ☾ was observed while it stood near the meridian and was approaching the 90th degree of the ecliptic [Porro ☾ exiſtens iuxta Meridianum & 90 grad. Eclipticæ appropinquans obſeruabatur.]:

9 9¼	Declination [Decl.] 27 57½	*Left shoulder of Orion* [Sin. hum. Orion.]
9 10 corr.	27 23½	25 31

At 9 15 0 the western limb of the ☾ crossed the meridian, and its altitude was, by the steel instrument: upper 62 0; middle, by the shadow, 61 42¾; lower 61 26¼; by the revolving instrument: upper 62 1, lower 61 28⅚ [9 15 0 Tranſijt occidentalis limbus ☾ per Meridianum habuitque per Chalyb. ſup. 62 0 med. per vmbram 61 42¾ inf. 61 26¼ per Volub. ſup. 62 1, inf. 61 28⅚].

The left shoulder of Orion was, on the equator, west, 26 50 [Erat ſin. humerus Orionis in æquat. occ. 26 50].

Add: steel instrument 1⅚ M., revolving instrument 1 0 [Adde Chalyb. 1⅚ M., Volub. 1 0.].

See below the altitudes of the fixed stars for testing the quadrants[1] [Vide infra altitudines fixarum pro Quadrantibus examinandis[1].].

H. M.	Western distance of the ☾ from the bright star in the foot of Erichthonius [Diſt. ☾ occid. a Luc. pede Ericht.]	Declination [Declin.]	Left shoulder of Orion, west [Siniſter hum. Orion. occ.]
9 30⅝	24 12⅓		30 37
9 30⅓ corr.			
9 34	24 13⅝	27 21	
		27 56	
9 38	24 15⅙		32 19
9 37 corr.			

[1] Among the observations of Jupiter [Inter obſervationes Iovis.].

Conversely, from the bright star in the neck of ♌ [Viceverſa a lucida Ceruice ♌.]:

9 42½	42 32⅔		33 21
9 41 corr.			
9 45⅓	42 30⅝	27 21⅔	
		27 55½	
9 53	42 29		35 46
9 51½ corr.			
9 56⅔	42 27⅓	27 21 with one [vno]	36 33
9 54 corr.			
10 0		27 20⅓	
9 58 corr.		27 54	

For the place of the ☾ on the last day of January [Pro loco ☾ die vltimo Januarij.]:

9 33: distance of the centre of the ☾ from the northern horn of ♉ [Diſt. centri ☾ a boreali cornu ♉]	24 29 50
Declination of the centre of the ☾ [Declin. centri ☾]	27 37
Right ascension of the northern horn of ♉ [Aſc. recta bor. cornu ♉]	75 11 10
Declination of the same [Declin. eiuſdem]	28 11 36
Angle of the ascensional difference [Ang. diff. aſcenſ.]	27 46 25
Therefore the right ascension of the centre of the ☾ [Ergo aſc. recta centri ☾]	102 57 35
9 41: conversely, distance of the centre of the ☾ from the bright star in the neck of ♌ [Viceverſa, Diſt. centri ☾ a luc. ceruicis ♌]	42 12 40
Fixed declination of the centre of the ☾ [Decl. centri ☾ limitata]	27 37 40

Declination of the bright star in the neck of ♌ [Declin. luc. ceru. ♌]	21 51 36
Right ascension of the same [Aſc. recta eiuſdem]	149 21 48
Angle of the ascensional difference [Ang. diff. aſcenſ.]	46 18 30
Therefore the right ascension [Ergo Aſc. recta]	103 3 18
9 37: fixed right ascension [Aſc. recta limit.]	103 0 26
Declination [Declinatio]	27 37
Corresponding longitude [Reſp. Longitudo]	11 32 29♋
Latitude [Latitudo]	4 36 47B.

DIE 4 FEBRUARIJ, VESPERI.

[4 February, evening.]

Diagram. A small figure set at the left of the opening lines of the 4 February entry, right column: a hand-drawn circle containing the crescent sign ☾; to the right of the circle, a ♄ sign above and a starred (asterisk-shaped) mark below. No letters or other labels.

- ☾ (inside the circle)
- ♄ (right of the circle, upper)
- ∗ star mark (right of the circle, lower)

This was the position of ♄ relative to the ☾, as Lord Tycho himself observed it by eye [Talis poſitus fuit ♄ ad ☾, prout D. Tycho ipſe ad oculum obſeruauit.].

One hour after rising, the ☾ had visibly passed ♄ by the amount of its own body — that is, with respect to its western limb — and this at roughly a third or a quarter part of the lower limb. When the ☾ was rising, or a little before, about a quarter of an hour before ♄ rose, it must have eclipsed it almost centrally with respect to the horizon, so that, when it was rising, ♄ would have been found in the middle of the extreme western limb [Vna hora poſt ortum erat ☾ viſibiliter prætergreßa ♄ ad quantitatem ſui corporis, videlicet quo ad limbum occidentalem, idque quaſi in tertia vel quarta parte inferioris limbi. Oportuit ☾, cum in ortu eßet, vel paulo ante circa quartam horæ partem, antequam ♄ oriretur, centraliter quaſi ipſum quoad Horizontem eclipſaße, adeo vt cum in ortu eßet, in medio limbi extremi occidentalis reperiretur ♄.].

♄ was then observed in this way [Obſeruatus deinde fuit ♄ in hunc modum.]:

H. M.	Distance of ♄ from the western limb of the ☾, by the Radius [Diſt. ♄ ab occ. limb. ☾ per Rad.]	Altitude of the upper limb of the ☾ [Altit. ſup. limbi ☾]	Bright star in the foot of Orion, west [Luc. pes Orion. occ.]
7 45½	0 42	13 41	1 53

H. M.	Distance of ♄ from the western limb of the ☾, by the Radius [Diſt. ♄ ab occ. limb. ☾ per Rad.]	Altitude of the upper limb of the ☾ [Altit. ſup. limbi ☾]	Bright star in the foot of Orion, west [Luc. pes Orion. occ.]
	♄ *from the eastern limb of the* ☾ [♄ ab orient. limbo ☾]	Declination of the ☾, upper [Decl. ☾ ſuper.]	12 5
	1 15 about [quaſi]	lower [infer.]	11 34

The centre of the ☾ was also in a straight line with the bright star of the neck of ☋ and the upper one in the head of ☋, as far as the eye could judge [Erat etiam centrum ☾ in recta linea cum Lucida Ceruicis ☋ & ſuperiore in capite ☋ quantum ad viſum.].

DIE 8 FEBRUARIJ, MANE.

[8 February, morning.]

Among clouds the ☾ was observed in perigee and in trine with the ☉ [Inter nubes obſeruabatur ☾ in Perigæo & △ ☉lis.].

H. M.	Distance of the eastern limb of the ☾ from the northern scale-pan of ♎ [Diſt. or. limbi ☾ a Bor. lance ♎]	Declination [Declin.]	The Vulture, east, on the equator [Vultur orient. in æquatore]
6 26	20 44½		
5 57 corr.			
	Distance of the western limb from the preceding [star] in the hand of Oph[iuchus][1] [A præced. in manu Oph. diſt. occid. limbi [1]]		
6 31		12 0 } uncer-tain [incertæ]	
6 2 corr.		11 24 }	
6 41	35 52½		
6 11 corr.			
6 43½		11 58	48 12
6 13½ corr.		11 25 better [melior]	
6 49⅙ further, for the clock [vlterius pro horologio]			46 49

By computation the ☾ was in the ninetieth degree at exactly hour 6 [☾ in nonageſimo gradu iuxta ſupputationem hora 6 exacte.].

DIE 25 FEBRUARIJ.

[25 February.]

At H. 5 M. 15 the meridian altitude was taken. As its western limb crossed the meridian, it had on the steel instrument, upper [limb], 60 4⅙, and on the

revolving instrument 60 5½; lower, 59 36 and 59 35⅔. Declination: upper, 26 0; lower, 25 30⅓. The ☾, moreover, was near the end of the first ten-degree division [decuriæ] of ♊ [H. 5 M. 15 Altitudo Meridiana capiebatur, cum tranſiret occident. limbus eius per Meridianum habuit in Chal. ſup. 60 4⅙, in Vol. 60 5½ inf. 59 36 59 35⅔ Declin. ſup. 26 0 inf. 25 30⅓ Erat autem ☾ ſub finem primæ decuriæ ♊.].

DIE 26 FEBRUARIJ.

[26 February.]

Around sunset the ☾ was observed near the 90th degree and the meridian, in order to test its parallax and latitude against each other, as follows [Circa occaſum ☉ obſeruabatur ☾ circa 90 gradum & Merid. pro Parallaxi & Latitudine eius ad inuicem examinandis vt ſequitur.].

H. M.	Altitude of the ☾ by the revolving instrument, lower/upper [Alt. ☾ per Volub. inf./ſup.]	Azimuth of the western limb from the meridian towards the east, on the revolving instrument [Azim. occ. limbi a mer. ad ort. in Vol.]	Declination [Declin.]
5 28	61 7⅓	11 0	27 55⅓
	61 42⅙		27 25½
5 35	61 17	8 0	27 55+
	61 52		27 24
5 40½	61 23⅓	6 0	27 25½
	61 57⅙		27 57
5 45½	61 25½	4 0	27 24¾
	62 0¼		27 56¾
5 51	61 28½	2 0	*Canis Major on the equator, east* [Can. maior in æquat. or.]
	62 2½		17 5

5 56 } 6 9 corr. — The western limb of the ☾ crossed the meridian, having altitude [Tranſiuit occ. limbus ☾ per Merid. habens Altitud.]:

by the steel instrument [per Chal.]	62 1¾	by the revolving instrument [per Vol.]	62 4½
	61 30⅔		61 29⅚
Declination [Declin.]	27 57		*Canis Major, east* [Canis. mai. or.]
	27 25½		16 0

Add 1⅓′ to the steel instrument and 20″ to the revolving instrument [Adde Chalyb. 1⅓′, Volub. 20″.].

N.B. Here the revolving instrument is rather to be trusted, because this agrees well with the altitudes taken with the same instrument near the nineti-eth [degree] above, when they are compared [N.B. Fidendum eſt hic potius Volubili, quod collatis altitudinibus per eundem iuxta nonageſimum ſuperius habitis hæc bene conſentiat.].

Put the meridian altitude of the centre of the ☾ at 61 47 0 and you will err imperceptibly. But see the following. Put the declination of the centre of the ☾ at 27 42 0 B. [Pone Altitudinem Meridianam Centri ☾ 61 47 0 & inſenſibiliter aberrabis. Sed vide ſequentes. Pone declinationem Centri ☾ 27 42 0 B.]

Afterwards, to test the instruments, the transits of the following fixed stars were observed, together with their meridian altitudes and declinations [Poſtea pro inſtrumentis examinandis obſeruabantur tranſitus ſequentium fixarum & illarum Altitudines Meridianæ ac Declinationes.]:

8^H 0¼′ The upper head of ♊ crossed the meridian and had altitude [Tranſijt ſuperius caput ♊ per Meridianum habuitque Altitud.]:

by the steel instrument [per Chalyb.]	66 46½
by the revolving instrument [per Volub.]	66 47⅔

8 12½ Meridian altitude of the lower head of ♊ [Alt. Mer. inf. cap. ♊]:

by the steel instrument [per Chalyb.]	63 0⅔
by the revolving instrument [per Volub.]	63 1⅔
Declination of the lower head of ♊ [Declin. infer. cap. ♊]	28 56
	28 56¼

From these observations the quadrants can be checked for the observation of the ☾ above, at the meridian [Ex hiſce obſeruationibus poteſt examinatio Quadrantum fieri pro obſeruatione ☾ ſuperiori in Meridie.].

The same evening the ☾ was observed by distances from fixed stars, as follows [Eadem Veſpera obſeruabatur ☾ per diſtantias a fixis vt ſequitur.].

[1] In codex V. it is noted: »Without doubt it had been the eastern limb, but this observation was doubtful« [In codice V. adſcriptum eſt: »Procul dubio fuerat orient. limbus, ſed hæc obſeruatio fuit dubia«.].

H. M.	Distance of the western limb from the bright star in the foot of Erichthonius [Diſt. occid. limbi a luc. pede Ericht.]	Declination [Declin.]	Canis Major, east [Canis maior or.]
6 7½	4 54¾	27 25⅔	13 36
6 18⅓ corr.		27 57½	

H. M.	Distance of the western limb from the bright star in the foot of Erichthonius [Diſt. occid. limbi a luc. pede Ericht.]	Declination [Declin.]	Canis Major, east [Canis maior or.]
6 10	4 56½		13 1
6 21⅙ corr.			
6 13½	4 57		12 41
6 23 corr.			
	Conversely, distance from the lower head of ♊ [Viceverſa diſt. ab inferiore cap. ♊]		
6 17½	25 39¼	27 26¾	11 32
6 27 corr.		28 0	
6 20	25 37⅔		11 0
6 29 corr.			
6 22½	25 37⅓		10 26

The ☾, moreover, was in the 90th degree at H. 5 M. 59 [Fuit autem ☾ in 90 gradu H. 5 M. 59.].

For the place of the ☾ from the observations of 26 February [Pro loco ☾ ex obſeruationibus diej 26 Feb.]:

H. 6 M. 18⅓: distance of the centre of the ☾ from the foot of Erichthonius [Diſt. centri ☾ a pede Ericht.]	5 10 45
Declination of the centre of the ☾ [Declin. centri ☾]	27 42
Declination of the foot of Erichthonius [Declin. pedis Ericht.]	28 11 36
Right ascension of the same [Aſc. recta eiuſdem]	75 11⅙
Angle of the ascensional difference [Ang. diff. aſcenſ.]	6 7⅓
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	81 18½
6 27 Conversely: distance of the centre of the ☾ from the lower head of ♊ [Viceverſa: Diſt. centri ☾ ab inf. cap. ♊]	25 23¼
Right ascension of the same [Aſc. recta eiuſdem]	110 8 18
Angle of the ascensional difference [Ang. diff. aſcenſ.]	28 48⅙
Right ascension of the centre of the ☾ [Aſc. recta centri ☾]	81 20⅓
6 22⅔ Fixed right ascension [Aſc. recta limitata]	81 19⅓
Corresponding longitude [Reſp. Longitudo]	22 18 0 ♊
Latitude [Latitudo]	4 24⅓ B.

DIE 27 FEBRUARIJ, VESPERI.

[27 February, evening.]

The ☾ was observed for its latitude and parallax near the ninetieth degree and the meridian. It was, moreover, not far from the summer tropic and from its greatest latitude [Obſeruabatur ☾ pro Latitudine ac Parallaxi iuxta nonageſimum gr. & Meridianum. Erat autem non longe a Tropico æſtiuo & Latitudine maxima.].

H. M.	Distance of the western limb of the ☾ from the foot of Erichthonius [Diſt. occ. limbi ☾ a pede Ericht.]	Declination [Declin.]	Bright star in the foot of Orion, west [Luc. pes Orion. occid.]
6 31	17 40½	27 54	15 5
6 37⅚ corr.		28 21	
6 33	17 43¼		15 40
6 40⅓ corr.			
6 34⅚	17 44⅓	27 55	16 12
6 42 20 corr.		28 22½	
6 38	17 46½	27 55⅙	17 5
6 38⅚		28 23	

Conversely, from the lower head of ☊ [Viceverſa ab infer. Capite ☊]:

6 40½	12 55⅓		17 42
6 41⅙			
6 42½	12 55	27 55⅓	18 32
6 44⅓		28 22½	
6 44	12 55		18 42
6 45			
6 45½	12 54		

6 54½ The western limb of the ☾ crossed the meridian, having altitude [Tranſiuit occid. limbus ☾ Meridianum habens Altit.]:

	of the upper horn [ſuperioris cornu]	of the lower [inferioris]
by the steel instrument [per Chalyb.]	62 28⅔	61 56⅔
by the revolving instrument [per Volub.]	62 30	61 57⅔

From the bright star in the foot of Orion, west, 21 52, corresponding to H. 7 M. 2 [Lucido pede Orionis occ. 21 52, reſp. H. 7 M. 2].

Declination [Declin.]	upper [ſup.]	28 23 } see the 29th day below [vide 29 die infra]	
	lower [inf.]	27 55 }	
7 3		27 55⅙	*Bright star in the foot* [Luc. pes]
		28 22¾	24 19

Afterwards, because of clouds rising, it was not possible to observe more [Poſtea propter nubes exorientes plura obſeruare non licuit.].

Place of the ☾ from the observations of 27 February [Locus ☾ ex obſeruationibus diej 27 Feb.]:

6^H 42⅓′: distance of the centre of the ☾ from the bright star in the foot of Erichthonius [Diſt. centri ☾ a luc. pede Ericht.]	18 3 0
Declination of the centre of the ☾ [Declin. centri ☾]	28 8½ B.
Declination of the foot of Erichthonius [Declin. pedis Ericht.]	28 11½
Right ascension of the same [Aſc. recta eiuſdem]	75 11 10
Angle of the ascensional difference [Ang. diff. aſcenſ.]	20 29 57
Therefore the right ascension of the ☾ [Ergo aſc. recta ☾]	95 41⅙
Conversely, from the lower head of ♊ [Viceverſa ab inf. cap. ♊]	
6 51⅓ Distance of the centre of the ☾ [Diſt. centri ☾]	12 40
Declination of the lower head of ♊ [Declin. inf. cap. ♊]	28 56½
Right ascension of the same [Aſc. recta eiuſdem.]	110 8 18
Angle of the ascensional difference [Ang. diff. aſcenſ.]	14 23 58
Therefore the right ascension of the centre of the ☾ [Ergo aſc. recta centri ☾]	95 44⅓
$6^{H}\ 46\frac{5}{6}$M Fixed right ascension [Aſc. recta limitata]	95 42⅔
Corresponding longitude [Reſp. Longitudo]	5 3⅙ ♋
Latitude [Latitudo]	4 43 0 B.

DIE 29 FEBRUARIJ.

[29 February.]

To check on the quadrants the meridian altitude of the ☾ that was observed on the preceding days, the meridian altitudes of the heads of ♊ were observed [Pro altitudine ☾ in Quadrantibus examinanda, quæ ſuperioribus diebus obſeruata eſt meridiana, obſeruabantur altitudines Capitum ♊ Merid.].

7^H 21⅙′ Meridian altitude of the upper head of ♊ [Altit. Merid. ſuper. Cap. ♊]:

by the steel instrument [per Chalyb.]	66 45⅚
by the revolving instrument [per Volub.]	66 46⅚

7 32⅓ Altitude of the lower head of ♊ [Altit. inf. Cap. ♊]:

by the steel instrument [per Chalyb.]		63 0 5
by the revolving instrument [per Volub.]		63 1⅙
Declination [Declin.]	28 57 0	
	28 56⅓	

The same evening the ☾ was observed after it had passed its greatest northern latitude [Eodem Veſperi obſeruabatur ☾ maximam Latitudinem Boream prætergreßa.].

8 25½ The western limb of the ☾ crossed the meridian, having altitude [Tranſijt occid. limbus ☾ per Meridianum habens Altitud.]:

	upper [ſuper.]	lower [infer.]
by the steel instrument [per Chalyb.]	58 23⅓	57 49½
by the revolving instrument [per Volub.]	58 24⅚	57 51⅔
Declination [Declin.]	23 45	*Canis Major, west* [Can. mai. occ.]
by the armillae [per Armill.]	24 20	28 47

The ☾, moreover, was in the 90th [degree] at H. 9 M. 54 [Fuit autem ☾ in 90 H. 9 M. 54.].

Afterwards, while the ☾ was near the 90th degree, it was observed in the following way [Poſtea cum ☾ verſaretur iuxta 90 Gr. obſeruabatur in modum ſequentem.]:

H. M.	Distance of the western limb from the lower head of ♊ [Diſt. occ. ab infer. Cap. ♊]	Declination [Decl.]	Altitude, upper [Altit. ſuper.]	Bright star in the shoulder of Orion [Luc. hum. Orion.]
9 42½	14 53⅓	24 15	57 25	53 29
corr.		23 38⅙		
9 8	14 56			54 36
9 46⅓ corr.				
9 10½	14 57⅙	23 37		55 17

H. M.	Distance of the western limb from the lower head of ♊ [Diſt. occ. ab infer. Cap. ♊]	Declination [Decl.]	Altitude, upper [Altit. ſuper.]	Bright star in the shoulder of Orion [Luc. hum. Orion.]
9 49 corr.		24 12		
9 13	14 57½	23 36		55 56
9 52¾ corr.		24 10		
	Conversely, from the bright star of the neck of ♌ [Viceverſa a lucida Ceruicis ♌]			
9 15	21 40		57 7½	56 35
9 54⅓ corr.				
9 17⅔	21 39¼		56 33	57 24
9 58 corr.				
9 19½	21 37			57 56
9 59⅔ corr.				

Place of the ☾ on 29 February [Locus ☾ die 29 Feb.]:

$9^{H\ 52¾}$M Distance of the centre of the ☾ from the lower head of ♊ [Diſt. centri ☾ ab inf. cap. ♊]	15 13½
Declination of the centre of the ☾ [Declin. centri ☾]	23 52
Right ascension of the lower head of ♊ [Aſc. recta inf. cap. ♊]	110 8 18
Declination of the same [Declin. eiuſdem]	28 56½
Angle of the ascensional difference [Ang. diff. aſcenſ.]	16 2¾
Therefore the right ascension of the centre of the ☾ [Ergo aſc. recta centri ☾]	126 11 0
Conversely, from the bright star of the neck of ♌ [Viceverſa a luc. ceruice ♌]	
9 54⅓ Distance of the centre of the ☾ [Diſt. centri ☾]	21 21
Declination of the bright star of the neck [Declin. luc. ceruicis]	21 31 36
Right ascension of the same [Aſc. recta eiuſdem]	149 21⅚
Angle of the ascensional difference [Ang. diff. aſcenſ.]	23 6⅔
Therefore the right ascension of the centre of the ☾ [Ergo aſc. recta centri ☾]	126 15⅙
9 53½ Fixed right ascension [Aſc. recta limitata]	126 13 0
Corresponding longitude [Reſp. Longitudo]	2 48⅚ ♌
Latitude [Latitudo]	4 23⅓ B.
9 54¹ Distance of the centre of the ☾ [Diſt. centri ☾]	
from the lower head of ♊ [ab inf. cap. ♊]	15 19
from the neck of ♌ [a Ceruice ♌]	21 22

Note. The semidiameter is taken as 17½, because I recall that while observing I mostly took it larger than was correct [Nota. Aßumitur ſemidiam. 17½ quod recorder eandem inter obſeruandum vt plurimum maiorem iuſto me ſumpſiße.].

Hence, conversely, the right ascension of the ☾ [Hinc Aſc. R. ☾ viceverſa]	126 16
Declination [Declinatio]	23 52 B.
Corresponding longitude [Reſp. Longitudo]	2 52 ♌
Arc of latitude, subt. [Arcus Lat. ſubt.]	4
Therefore the ☾ in its own circle [Ergo ☾ in proprio circulo]	2 48 ♌

DIE 10 MARTIJ, MANE.

[10 March, morning.]

Meridian altitude of the ☾ [Altitudo ☾ Meridiana]:

	by the steel instrument [per Chal.]	by the revolving instrument [per Vol.]
upper [ſuper.]	5 50½	5 52⅔
lower [infer.]	5 22 0	5 20¼

Declination of the upper [limb] [Declinatio ſuperioris]	28 17
of the lower [inferioris]	28 46

When its eastern limb crossed the meridian, the bright star of the Vulture, east, was at 36 17¼ [Cum orient. eius limbus tranſiret Meridianum fuit Lucida Vult. or. 36 17¼.].

From this the time can be determined and the right ascension of the ☾ found [Hinc poteſt tempus inquiri & Aſcenſio recta ☾ indagari.].

Put the meridian altitude of the centre of the ☾ at 5 36 20, and the declination at 28 29⅙, or at most 29½ [Pone altitudinem Merid. centri ☾ 5 36 20 & Declinationem 28 29⅙ vel ad ſummum 29½.].

N. B. There were fairly dense vapours near the horizon on every side, so that the ☾ appeared quite reddish [N. B. Fuerunt ſatis denſi vapores iuxta Horizontem vndequaque, adeo vt rubicunda admodum ☾ appareret.].

DIE 22 MARTIJ.

[22 March.]

The ☾ was observed because of its conjunction ☌ with the Pleiades [Obſeruabatur ☾ ob ☌ cum Pleiadibus.].

H. M.	Distance of the northern limb of the ☾ [Diſt. Borei limbi ☾æ]	Declination of the lower limb of the ☾ [Decl. inf. limbi ☾]	Altitude of the lower limb of the ☾ [Altit. inf. limbi ☾]	Canis Minor, west [Can. min. occid.]
8 7⅔			22 10	24 17

The ☾ was then in visible conjunction with the easternmost of the Pleiades, passing the bright one of them; by the Radius it stood 38′ from the bright one, measured to the northern limb, the limb nearer the star [Fuit tunc ☾ in viſibili coniunctione cum orientaliſsima Pleiadum, præteriens lucidam earundem, diſtabat autem a lucida earundem per Radium quantum ad Borealem limbum ſtellæ viciniorem 38 Minutis.].

8 9 Declination of the ☾, taken again [Iterata Declinatio ☾]	21 43
by the armillae it was found [per Armillas inuenta eſt]	22 13

[1] From codex V.; they are lacking in codex G. [E codice V., deſunt in codice G.]

DIE 25 MARTIJ.

[25 March.]

The ☾ was observed near the 90th degree, as follows, both for the parallax and for the greatest altitude. For it was near the summer tropic and almost at its greatest northern limit [Obſeruabatur ☾ circa 90 gr. vt ſequitur tam pro Parallaxi tam Altitudine maxima. Erat enim iuxta Tropicum æſtiuum & Boream limitem fere maximam.].

H. M.	Distance of the western limb of the ☾ from the ☉ [Diſt. occid. limbi ☾ a ☉]	Declination of the ☾ [Decl. ☾]	Altitude of the ☉ [Altit. ☉]	☉ on the equator [☉ in æquat.]
4 12	74 24⅙	27 57½	20	62 57
		28 26		
4 19½	74 30 0	27 59½	19 0	64 57
		28 25½		
4 25⅙	74 31	27 59⅔		66 25
		28 26		
4 30 0	74 35	28 1⅙	17 10	67 40
		28 27		
4 32⅚	74 36⅔	*Declination of the* ☉ [Declin. ☉]	16 50	
4 36⅔	74 37	5 58	16 10	
		5 57⅙		

5 1⅓ Afterwards the western limb of the ☾ crossed the meridian, having altitude [Poſtea tranſiuit occid. limb. ☾ per Meridianum habens Altitud.]:

	by the steel instrument [per Chal.]	by the revolving instrument [per Vol.]
upper [ſup.]	62 31 0	62 32¼
lower [inf.]	62 3¾ or 5/6 [vel 5/6]	62 4½

Declination of the ☾, upper [Decl. ☾ ſup.]	28 28⅔	☉ *on the equator* [☉ in æquat.]
lower [inf.]	28 1½	76 3

When[1] the centre of the ☾ crossed the meridian it was H. 5 M. 6 corr. [Cum[1] centrum ☾ tranſiret Merid. fuit H. 5 M. 6 corr.]

DIE 2 APRILIS.

[2 April.]

Delineation of the eclipse of the ☾ which was observed here at Uraniborg on the evening of 2 April, in three different observatories, with the greatest accuracy that the clouds, mostly rather dense, allowed [Delineatio Eclipſeos ☾ quæ hic Vraniburgi 2 die Aprilis Veſperi in tribus diuerſis obſeruatorijs quantum inter denſiores vt plurimum nubes licuit, accuratißime obſeruata fuit.].

Shortly after the beginning of the obscuration (for, because of the clouds, it was not possible to see the beginning here), the altitude of the ☾ and the equatorial distance of its upper and western limb were taken at certain points to check the times. Therefore the true course of the ☾ has been reduced to the apparent in the following small table, both in longitude and in latitude, by the appropriate parallaxes and refractions corresponding to the altitudes set beside them; from these the times that follow are found on the great globe [Paulo poſt initium obſcurationis (nam illud neque ob nubes hic videre contigit) quoniam pro temporum examine locis quibuſdam ☾æ altitudo & diſtantia æquatoria ſuperioris & occidentalis limbi capiebatur, redactus eſt verus curſus ☾ ſubſequenti tabella in viſum, tum quoad longum tum latum per competentes Parallaxes & Refractiones appoſitis altitudinibus congruentes, vnde in globo magno tempora quæ ſequuntur innoteſcunt.].

Apparent altitude of the ☾ [Altit. ☾ appar.]	Our parallax of altitude [Parall. altit. noſtra]	Refraction [Refract.]	Remaining parallax [Reſiduum Parall.]	Parallax of longitude [Parall. Longitud.]	Parallax of latitude [Parall. Latitud.]	Our apparent longitude [Long. viſa noſtra]	Our apparent latitude [Lat. viſa noſtra]	Time of the altitude of the ☾ ἐν πλάτει [Greek: en platei, "in breadth"] [Tempus Altit. ☾ ἐν πλάτει]
10	65′ 0″	9′ 30″	55′ 30″	40′ 40″	38′ 50″	23° 24′ ♎	1° 24′ M.	8 22
11	64 30	9 0	55 30	39 45	39 45	23 28	1 26	8 28
12	64 0	8 30	55 30	38 0	40 40	23 32	1 28	8 34
13	63 45	8 0	55 45	36 30	42 15	23 36	1 30	8 44
14	63 15	7 30	55 45	35 0	43 0	23 40	1 33	8 55

The beginning of the obscuration, as far as it could be seen, was in nearly every one of the observatories at H. 8 M. 18 on the clock [Initium obſcurationis in ſingulis ferme obſeruatorijs quod videre licuit fuit H. 8 M. 18 in horologio.].

In the southern observatory: the centre of the ☾ on the equator, 52° 50′. Right ascension of the ☾ for that time, 201 3; right ascension of the ☉, 21 21. Corresponding time, H. 8 M. 27½ approximately [In obſeruatorio Merid. Centrum ☾ in Æquatore 52° 50′. Aſc. recta ☾ ad id tempus 201 3, Aſc. recta ☉ 21 21. Reſp. Tempus H. 8 M. 27½ ferme.].

Observation of the ☾ in the northern observatory: right ascension of the ☾, 201 8; ☾ west, 49 10. Corresponding time, H. 8 M. 42⅓ [Obſeruatio ☾ in obſeruatorio Septentrionali Aſc. recta ☾ 201 8, ☾ occid. 49 10. Reſp. Tempus H. 8 M. 42⅓.].

Appearances of the obscured ☾ in the subterranean observatory, with the times corrected by the stars [Apparentiæ ☾ obſcuratæ in obſeruatorio ſubterraneo, temporibus ad ſtellas emendatis.]:

	Clock [Horologium]	Time corrected from the stars [Tempus correctum ex ſtellis]	Stars on the equator [Stellæ in æquatore]
I.	8^{H18}M 0^S *Then, for the clock, Arcturus, east* [Deinde pro Horologio Arcturus orient.]	8^{H24}M 0^S	
	8 27	8 33⅓	59 40
	8 30	8 36⅓	58 55
	8 32	8 38½	58 22

Diagram. To the right of the table of the subterranean observatory stands a circle drawn in outline. A narrow segment along its left edge is hatched with oblique lines; the rest of the disc is blank. Inside the circle, right of the hatched segment, are four lines of lettering in a cursive hand, reproduced as drawn:

- Top, centre: "Horolog."
- Second line: "H" (left) and "M" (right)
- Third line: "8" (left) and "18" (right)

- Fourth line, centre: ”orr [?]” — three cursive letters, the first a small open loop
- Bottom line: ”8” (left) and ”24 [?]” (right) — the first figure of ”24” is a cursive stroke

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

			For the clock [Pro horologio]
II.	8 38	8 44⅝	Arcturus, east [Arcturus orient.]
	8 40	8 46⅝	56 17
III.	8 44⅓	8 51⅓	55 8

Further, for correcting the clock:

		the Lesser Dog, west [Canis min. occid.]
8 47	8 54	45 19
		♄ west [♄ occident.]
8 56		3 0
8 58½		3 44

Diagram. A circle (the Moon's disc) with its left part cut off by a curved boundary and hatched; the unhatched part carries lettering in a cursive hand, set to the right of the row II. values.

- Upper right, cursive: ”Horolog:” [?] — the letters are cramped and the middle sorts do not separate clearly
- Below: ”H” (left) and ”M” (right)
- Below these: ”8” and ”38”
- Next line, cursive: ”Corr” followed by ”ct:” [?] — a fifth letter between the r's and ”ct” is not separable
- Bottom line: ”8”, ”44” (the second 4 in a closed-loop cursive form), then the fraction ⅝ (numerator 5, denominator 6)

Diagram. A second circle of the same kind, the left part cut off by a curved boundary and hatched with horizontal lines, set to the right of the row III. values and the lines below it.

- Upper right, cursive: ”Horolog:”
- Below: ”H” (left) and ”M” (right)
- Below these: ”8”, ”44” (the second 4 in a closed-loop cursive form, as in the first figure), then the fraction ⅓ (numerator 1, denominator 3)
- Next line, cursive: ”Corr:”
- Bottom line: ”8”, ”51”, fraction ⅓ (numerator 1, denominator 3)

N.B. The sky was not clear, but the ☾ could at least be seen now and then through clouds that thinned out from time to time, especially at the beginning; afterwards, beyond the ninth hour, it scarcely appeared. At H. 10 M. 36 by

the clock, the ☾, showing through the clouds again, appeared entirely round, being of course long since free of the shadow.

Observations of the same eclipse made upstairs, in the southern observatory. [Animadverſiones ad eandem Eclipſin ſuperius in Meridionali obſeruatorio habitæ.]

Correct.	
8^{H}	Western limb of the ☾ on the equator 52 34 east [Occident. limbus ☾ in æquat. 52 34 or.].
$27½^{M}$	Altitude of the lower limb of the ☾ ἐν πλάτει [Greek: en platei, "in breadth"] 10⅙.
Correct.	Western ☾ on the equator 48 54 east [Occid. ☾ in æquatore 48 54 orient.]. Altitude of the
8 42⅓	lower limb of the ☾ 11⅝ ἐν πλάτει. Almost a quarter of the ☾ lay hidden in the shadow.
Correct.	The Lesser Dog, west, 43 42. Nearly a third of the ☾ was darkened.
8 47½	

Diagram. A circle with a narrow crescent at its left edge cut off by a curved boundary and hatched; to the right of centre a short curved stroke over the mark "·I·" (a single upright stroke between two dots). Set beside the first "Correct." entry.

- Right of centre: a short bar over "I" with a dot on each side

Diagram. A circle with a wider part at its left cut off by a curved boundary and hatched; to the right a short curved bar over "II", with a dot to the left of the numeral. Set beside the second "Correct." entry.

- Right of centre: a short bar over "II", a dot at its left

Diagram. A circle with a still wider part at its left cut off by a curved boundary and hatched with horizontal lines; to the right a short bar over "III", with a dot below and to the left of the numeral. Set beside the third "Correct." entry.

- Right of centre: a short bar over "III", a dot below-left

Correct.	
8 53½	The Lesser Dog, west, 45 13. A little more than a third of the ☾ was darkened.
8 58 approximately [quaſi]	The diametral size of the lit part of the ☾ was taken with the Radius [per Radium]: 19′ [19 Minut.].
Correct.	The Lesser Dog, west, 46 57. Nearly half of the ☾ was eclipsed, as far as could be seen
9 0⅖	between the clouds. Afterwards, however, the same darkened amount was seen for some while, or a little more; from this I conclude that this eclipse was of 6 digits.

Diagram. A circle whose left part is cut off by a curved boundary and hatched with horizontal lines; to the right of centre a short bar over two cursive strokes, an upright followed by a v- or r-shaped letter. Set beside the 8 53½ entry.

- Right of centre: a short bar over "IV" [?] — the second letter is open at the top and could be read as v or r

Diagram. A circle with a larger part at its upper left cut off by a curved boundary and hatched; to the right a short bar over a small cursive letter followed by a dot. Set beside the 9 0⅖ entry.

- Right of centre: a short bar over "V" [?] followed by a dot — the letter is a small open v- or r-shaped stroke

Observations of the eclipse in the northern observatory of the castle. [Obſeruationes Eclipſis in Septentrionali Obſeruatorio Arcis.]

Correct. $8^{H}\ 28^{M}$	The Lesser Dog, west, 38 50. Altitude of the lower limb of the ☾ with the smallest gilt quadrant [per minimum Quadrantem inauratum] 10 35.
Correct. 8 42¼	The left knee of Boötes, east [Siniſtrum genu Bootis orient.] 52 0. Altitude of the lower limb of the ☾ 12 0.
Correct. 8 48⅗	The Lesser Dog, west, 44 0. Altitude of the lower limb of the ☾ 12 30.
Correct. 8 54⅙	The Lesser Dog, west, 45 25. Altitude of the lower limb of the ☾ 13 10.

Diagram. A circle with a narrow crescent at its left edge cut off by a curved boundary and closely hatched; to the right a short curved bar over a single upright stroke. Set beside the $8^{H}\ 28^{M}$ entry.

- Right of centre: a curved bar over "I"

Diagram. A circle with a wider part at its left cut off by a curved boundary and cross-hatched; to the right a short heavy curved bar over two slanting strokes. Set beside the 8 42¼ entry.

- Right of centre: a heavy bar over "II"

Diagram. A circle with a still wider part at its left cut off by a curved boundary and cross-hatched; to the right a short bar over three slanting strokes. Set beside the 8 48⅗ entry.

- Right of centre: a bar over "III"

Diagram. A circle with roughly its left half cut off by a curved boundary and cross-hatched; to the right a short bar over an upright stroke and a v-shaped letter, with a dot to the left. Set beside the 8 54⅙ entry.

- Right of centre: a bar over "IV", a dot at its left

Correct. 9 7¾	Arcturus, east [Arcturus orient.] 50 58. Altitude of the lower limb of the ☾ [Altitudo infer. limbi ☾] 14 0.

Diagram. A circle with a large part at its left cut off by a curved boundary and cross-hatched; to the right a short curved bar over a single cursive letter shaped like a "v". Set beside the 9 7¾ entry.

- Right of centre: a curved bar over a cursive "v"-shaped letter

Mechanical inquiry into the true ☍ [opposition] of the luminaries in this eclipse, from the various foregoing observations as limited [Mechanica inquiſitio veræ ☍ luminarium in hac Eclipſi ex antecedentibus animadverſionibus diuerſis limitatis].

The semidiameter of the ☾ is 18 M., but the semidiameter of the shadow 49. Therefore, in the units in which the semidiameter of the ☾ is 6 digits [digit.], the shadow's will be 16⅓.

The place of the ☾ at the middle of the eclipse: 23 8 ♎. Motion of ☊ [Motus ☊]: 13 20 ♈.

Therefore our latitude of the ☾: M. 53 M. [Latitudo noſtra ☾ M. 53 M.] The half-duration according to this figure [iuxta hunc Typum] is H. 1 M. 25, and our hourly motion of the ☾ from the Sun 36. But the half-duration according to Copernicus, which at its greatest could be [quæ maxima eße potuit], is 1. 18. Therefore 7 is to be subtracted everywhere from the middle, and then 5 for the path of the ☾; in all, subtract Minut. 12 0.

Diagram. A hand-drawn construction set to the right of the paragraph above. A long upright line carries several overlapping circles of equal size stacked one below another along it; a band running down across these circles, slanting, is hatched, the hatching continuing into the lowest circle, whose shaded part is ruled with horizontal strokes. To the right, a much larger circle is drawn with a horizontal and a vertical diameter crossing at a dot at its centre; the horizontal line runs on to the left through the lower circles. An outer arc runs concentric with the large circle above and below it. Dots on the upright line carry handwritten labels.

- On the upright line, upper part: a small mark shaped like "F" at a dot
- Below it, at a dot: "8.28"
- Next dot down: a bar over "II", then "8 42", with two small cursive marks above the numerals [?]
- Next dot down: a bar over "III", then "8 48", with two small cursive marks above the numerals [?]

Obſeruatio	H. 8 28	dat medium iuxta viam ☾æ	9 25
	H. 8 42		9 24
	H. 8 48		9 22

1

Therefore set the middle of this eclipse at H. 9 M. 23.

N.B. The middle cannot be placed any later, for at H. 10 41 the ☾ was seen as if entirely full; see above.

This place of the ☾ exceeds our restitution [reſtitutionem] by 10′ in motion. This had happened either because of observations so doubtful among the clouds, or because the ☾ was so near the horizon and refraction had in addition introduced something [Refractio aliquid ingeßerat], as can be seen in the eclipse of the year 77 on the same day of April.

23 April [DIE 23 APRILIS.]

The ☾, standing at the end of ♋, was observed for altitude and parallax.

[1]The page sets this as one braced statement across three lines: Observation {H. 8 28 / H. 8 42 / H. 8 48} gives the middle according to the path of the ☾ {9 25 / 9 24 / 9 22}.

H. 4 M. 52½ — its meridian altitude [Altit. eius Merid.]	by the steel instrument [per Chalyb.]	by the revolving instrument [per Vol.]
	60 19⅓	60 20
	60 46	60 45⅙

Decl. ☾		
upper [ſup.]	26 41½	☉ in the equator [☉ in æquatore]
lower [inf.]	26 15½	...

The clock was right [Horologium recte ſe habuit].
Afterwards the western limb of the ☾ was observed from the ☉ in this way.

H. M.	Diſtantia	Declin.	Altit. ☉	☉ in æquat.
5 3		26 13		
		26 40		
5 26 0	68 9¾ ἐν πλάτει [Greek: en platei, "in breadth"]		18 0	81 27

Afterwards the ☾ was observed near the 90th [iuxta 90] as follows.

H. M.	Declinatio	Altitudo	Azimuth
6 7½	26 33	57 22½	32
	26 7	57 47	
6 13	26 5½	56 56⅔	34
	26 33	57 25	

5 May, morning [DIE 5 MAIJ, MANE.]
The ☾ was observed near the meridian at the beginning of ♍.
N.B. For parallax and refraction.

Pro Horologio H. M.	H. M. correct.	Arcturus occ. in æquat.
2 40¼	2 45⅙	63 46
2 43½	2 48	64 30

2 52 and 2 55 corr.[2]: the eastern limb of the ☾ crossed the meridian [Tranſijt orientalis limbus ☾ per Merid.], and had the upper horn's altitude, and the lower's [habuitque ſuperius cornu Alt., inferius]:

in Chalyb. [on the steel instrument]	5 0½	4 30 0
in Volub. [on the revolving instrument]	5 1⅓	4 30 0

[2]the two times are braced together

Arcturus was then west [occid.] 66 14.

2 57⅓ Declinatio	29 6⅝	
Declin. repetita [repeated]	29 35½ 29 7½ 29 35¾ melior [better]	

The sky was for the most part covered with clouds.

Ponatur alt. maxima [let the greatest altitude be set]	*5 1*	*ſuper.* [of the upper limb]
minima [the least]	*4 30*	*infer. limbi* [of the lower limb]
Differentia [difference]	*31′*	
Altitudo centri [altitude of the centre]	*4 45½*	
Altit. æquat. [altitude of the equator]	*34 5½*	
Decl. centri ☾ *Merid.* [declination of the centre of the ☾, south]	*29 20*	
	0	

The declination observed by the armillae gives a declination of the centre of the ☾ of 29 21, approximately. So if you set the apparent declination of the ☾ at 26 20½, you will err imperceptibly.

3 June, morning [DIE 3 JUNIJ, MANE.]

The bright star of the Vulture [Lucida Vulturis] was observed to correct the clock.

$2^{H}\ 48^{M}$	Vultur in æquatore [the Vulture on the equator]	5 30
2 50⅓		5 40 occid. [west]

Let the times be corrected from this transit.

2 56⅓: the eastern limb of the ☾ crossed the meridian, having altitude:

	per Chal.	per Vol.
ſup. [upper]	7 58	7 59
inf. [lower]	7 28	7 26⅔

Declinatio ☾	26 9	ſuper. [upper]
	26 39¼	infer. [lower]

Because of the obstruction of the clouds and the dawn [ob nubium & auroræ obſtaculum], it could not be observed for the time. Yet in the place where the Moon was seen it was moderately clear.

The ☾ was near 26 ♍, for it could not be had earlier, when it was nearer the tropic, because of the cloudy and rainy sky. The southern limit [limes auſtrinus] is in 10 ♍,

so it was 16° away from the greatest latitude; and it was 2½ days away from the ☍ [opposition] of the ☉.

Set the altitude of the centre at 7 43, as both quadrants agree in this; but the ☾ was not then in the 90th degree when it crossed the meridian.

27 June, evening [DIE 27 JUNIJ, VESPERI.]

We observed the ☾ crossing the meridian among clouds, for refraction and parallax, and its meridian altitude was found:

by the steel instrument [per Chalyb.]	upper [ſup.] 5 44	lower [inf.]	5 8⅝
by the revolving instrument [per Volub.]	5 43⅓		5 8

The sky was rainy and dark. The steel instrument is rather to be trusted, for an error in the revolving instrument was detected afterwards and corrected.

The ☾ was near the middle of ♐, not far from ☍ [opposition] with the ☉ [non procul ab ☍ ☉].

28 June, evening [DIE 28 JUNIJ, VESPERI.]

The ☾ was observed at the beginning of ♑, approaching the meridian and standing in ☍ with the ☉.

H. M.	Diſt. orient. limbi a dextro genu Oph. [distance of the eastern limb from the right knee of Ophiuchus]	Decl.	Vulturis Lucida orient. [the bright star of the Vulture, east]
11 0½	26 13¼	29 30½	19 29
		28 58	

The clock could not run, because it was broken.

The eastern limb of the ☾ crossed the meridian, having the altitude:

by the steel instrument [per Chalyb.]	upper [ſuper.]	5 7¼	
	lower [infer.]	4 38	
by the revolving instrument [per Volub.]	upper [ſuper.]	5 7¾	after correcting the revolving instrument [poſt corr. Volubilem]
	lower [infer.]	4 38⅓	
Decl. ☾	upper [ſup.]	29 31½	It was fairly clear [Erat ſatis ſerenum]
	lower [inf.]	28 59	

11 10½	the Vulture, east [Vultur orientalis]	17 6

Afterwards the ☾ was again observed from the right[1] knee of Ophiuchus.

H. M.	Diſt. or. limb. ☾ a ſiniſtro[2] genu Oph. [distance of the eastern limb of the ☾ from the left knee of Ophiuchus]	Decl. ☾	Vultur orient. [the Vulture, east]
11 33⅓	36 1¼		11 26
11 37½	36 3	29 31	10 20
		28 58⅙	

It was fairly clear.

To examine the quadrants, the meridian altitude of the bright star of the Vulture [Lucidæ Vulturis] was afterwards observed:

on the steel instrument [in Chalyb.]	41 58¼
on the revolving instrument [in Volub.]	41 58¾
True declination of the Vulture at this time [Vera declinatio Vulturis hoc tempore]	7 52 45
Therefore its meridian altitude [Ergo altitudo meridiana eius]	41 58¼

So it agreed exactly [ad amußim] with the steel instrument, which is also to be relied on most of all in the observation of the ☾.

Set the meridian altitude of the ☾, as limited by both quadrants [limitatam per vtrumque Quadrantem], at 4 52 40.

Therefore the declination of the ☾ [Ergo Declinatio ☾]	29 12 50 M.

11^H 33^M Distance of the centre of the ☾ from the left knee of Ophiuchus [Diſtantia centri ☾ a ſiniſtro genu Ophiuchi]	35 46
Decl. of the left knee of Oph. [Decl. ſiniſtri genu Oph.]	9 38¼ M.
Right ascension of the same [Aſc. recta eiuſdem]	243 45⅔
Angle of the ascensional difference [Ang. diff. aſcenſ.]	32 0 30
Therefore the right ascension of the centre of the ☾ [Ergo Aſc. recta centri ☾]	275 46⅙
Corresponding longitude [Reſp. Longitudo]	5 3⅗ ♍

Latitude [Latitudo]	5 46⅔ M.
Longitude of the ☾ reduced to the transit of the centre of the ☾ through the meridian [Longitudo ☾ reducta ad tranſitum centri ☾ per Meridianum] $11^{H}\ 9½^{M}$	4 50 ♍

From a computation according to the restored course of the ☾ [iuxta reſtitutum ☾ curſum], I found the ☾ at 4 49 ♍, so that the difference was scarcely 1 M. Even this can be saved if you make the semidiameter of the ☾ in the distance taken 16′, as was proper.

Examination of the latitude, parallax and refraction of the ☾ from the preceding observation [Examinatio Latitudinis, Parallaxis & Refractionis ☾ ex præcedente obſeruatione.]

Double distance [Duplex diſtantia]	148 8
from the vertex, true [a vertice vera]	ἐν πλάτει
For the meridian altitude [Nam altitudo merid.]	4 53
Double longitude of the ☾ from the ☉ [Duplex Longitudo ☾ a ☉]	10 29 8
Equated anomaly of the ☾ [Anomalia ☾ coæquata]	7 8 27
Corresponding parallax in the circle of altitude, from the Table of Parallaxes built on the restored hypothesis of the ☾ [Reſp. Parallaxis in circulo altitudinis ex Tabula Parall. ad reſtitutam hypotheſin ☾ extructa]	63′ 25″
Observed declination of the ☾ [Declinatio ☾ obſeruata]	29 12 50 12 45
Declination freed from refraction [Declin. libera a refractione]	29 25 35 1 3 25
True declination [Vera declinatio]	28 22 10

Longitude of the ☾ 4 50 ♍; corresponding declination of the ecliptic [Reſp. Declin. Eclipt.] 23 26 10; therefore the observed latitude of the ☾ [ergo Latitudo ☾ obſeruata] is 4 56 0.

From our table [Ex Tabula noſtra]:

Mean ☊, restored [Medius ☊ reſtitutus]	8 38 ♈
Prosthaphaeresis, add [Proſtaph. add.]	0 49

[1] Thus, but it should be ”left” [Sic, ſed debet eße »ſiniſtro«.].

[2] First written ”right” [Primum ſcriptum erat »dextro«.].

True motion of ☊ [Verus motus ☊]	9 27 ♈
Distance of the ☾ from the southern limit [Diſt. ☾ a meridionali limite]	4 37
Corresponding absolute latitude of the ☾ from our table [Reſp. Latitudo ☾ abſoluta ex Tabula noſtra]	4 58½
Difference between observation and calculation [Differentia inter obſeruationem et calculum]	2½

N.B. You will reconcile this observation, in the latitude and parallax of the ☾, with our hypothesis [noſtræ ſuppoſitioni] by setting the refraction for the ☾ at 14¼, and, for the small remaining difference, by reducing the meridian altitude by about half a minute; for in this way it agrees better with the observed declination.

23 August, evening [DIE 23 AUGUSTI, VESPERI.]

At 8^{H} 48^{M} the meridian altitude of the ☾ was observed [obſeruabatur Altit. ☾ Merid.]:

		by the steel instrument [per Chal.]	by the revolving instrument [Volub.]
	upper [ſup.]	7 2⅚	7 3
	lower [inf.]	6 28	6 33
8 56½	Decl. ☾ M.	27 1⅓	Vult. occid. [the Vulture, west]
		27 35	2 24

A little before, the western limb of the ☾ was taken from the left knee of Ophiuchus.

H. M.	Diſtantia [distance]	Declin. ☾	Vult. or. [the Vulture, east]
8 30⅔	51 33½	27 3½ upper [ſup.]	1 28
		27 35⅓ lower [inf.]	occ. [west]
8 38⅖			0 5

Then the ☾ was observed again in distances:

9 2⅔	51 43⅔	west [occ.] 6 10

24 October, evening [DIE 24 OCTOBRIS, VESPERI.]

The ☾ was observed near the 90th [circa 90], as follows. H. 9⅙.

Tempora correcta [corrected times]	Diſt. occid. limbi ☾ a prima alæ Pegaſi [distance of the western limb of the ☾ from the first star of the wing of Pegasus]	Declin. ☾	Os Pegaſi occ. [the mouth of Pegasus, west]
8 50	42 56⅔	12 22 30	

Tempora correcta [corrected times]	Diſt. occid. limbi ☾ a prima alæ Pegaſi [distance of the western limb of the ☾ from the first star of the wing of Pegasus]	Declin. ☾	Os Pegaſi occ. [the mouth of Pegasus, west]
		11 53 30	
8 53	42 57		
8 54	42 58	12 25⅙	31 32
		11 55	
8 56 50	42 59⅔		32 7½
9 3 0	43 0¼		33 49
Conversely, from the northern horn of ♉ [Viceverſa a boreali cornu ♉]			Prima alæ Peg. occid. [the first star of the wing of Pegasus, west]
9 12	49 5¼	12 25	16 6½
		11 54	
9 14	49 5⅙		16 41½
9 15	49 4¼ — doubtful [dubia]	12 25⅓ — with one pinnule [vno pinn.]	16 59½
9 20	49 4½		18 10

The same limb of the ☾ from Aldebora [Idem limbus ☾ ab Aldebora]:

9 22	36 46		18 40
9 24	36 45⅚		18 59
9 28	36 45½	12 29	20 1
		11 59½	
9 36	36 44		22 10
9 37	36 43⅚	12 33	22 20
		12 2½	

To correct the armillae, the declination of the bright star of ♈ [Lucidæ ♈] was observed:

10 51⅙	21 32 twice [bis]
	21 32⅓

The clock was corrected: hour 10 15^{m} 0^{s}, when Aldebora was east [orient.] 50 40.

The western limb of the ☾ crossed the meridian, having the altitude:

	by the steel instrument [per Chal.]	by the revolving instrument [per Vol.]
upper [ſup.]	46 55	46 55⅓

	by the steel instrument [per Chal.]	by the revolving instrument [per Vol.]
lower [inf.]	46 27½	46 28

H. 11 M. 5½ Declin.	upper [ſup.]	12 50½
by the armillae [per Armill.]	lower [inf.]	12 21 50
The bright star of Orion's shoulder, east [Lucidus hum. Orion. or.]		57 24

N.B. The ☾ was in the 90th degree at H. 9 M. 11.

Set, about hour 9⅙, when the ☾ was in the 90th, with everything referred to the centre of the ☾:

Distance of the centre of the ☾ from the 1st of the wing of Pegasus [Diſt. centri ☾ a 1 alæ Pegaſi]	*43 18*
from the northern horn of ♉ [a boreali cornu ♉]	*48 51*
from Aldebora [ab Aldebora]	*36 33*
Declination of the centre of the ☾ [Declinatio centri ☾]	*12 10 B.*

25 October, evening [DIE 25 OCTOBRIS, VESPERI.]

The ☾ was observed full, almost at the apogee of the epicycle [in Apogæo Epicycli fere]. The ☾ in the 90th degree at H. 10⅔.

H. M.	Tempus correc-tum [cor-rected time]	Diſt. occ. limbi ☾ a 1 alæ Peg. [distance of the western limb of the ☾ from the 1st of the wing of Pegasus]	Declin. ſup./inf. [declination, up-per/lower]	Diſt. æquat. primæ alæ Pegaſi [equatorial distance of the first star of the wing of Pegasus]
10 21 0	10 20	54 1½	17 43	33 48½
			17 10	occid. [west]
10 26⅚	10 26	54 4⅔		35 20
10 31⅓	10 31	54 5	17 46	36 30
			17 12	
10 35⅔	10 35 0	54 8½		37 39
Conversely, from Aldebora [Viceverſa ab Aldebora]				
10 38⅚	10 39	24 56½		38 28½
10 45⅔	10 46	24 53¼		40 9
10 49 0	10 48 40	24 51½	17 13½	40 55½
			17 47½	
10 56⅙		24 47 doubtful, among clouds [dubia inter nubes.]		

For the correction of the armillae, the declination of ♃ was observed [Pro correctione Armillarum obſeruabatur declinatio ♃]	11 47½
in the vicinity of the ☾ [in vicinia ☾]	11 48

When the western limb was crossing the meridian, the meridian altitude of the ☾ [Cum occidentalis limbus tranſiret Merid., Altit. ☾ Merid.]:

lower, by the steel instrument [inf. per Chal.]	51 32¼,	by the revolving instrument [Vol.]	51 34½
upper [ſup.]	52 4		52 3
Declination [Declin.]	17 28½ lower [inf.]		
by the armillae [per Armill.]	18 0 0 upper [ſup.]		
11 48⅔ Aldeb. east [Aldeb. orient.]			25 27

At 10 40, when the ☾ was near the 90th degree, set [10 40 Cum ☾ iuxta 90 gradum Pone]:

		centrally [centraliter]
Distance from the 1st of the wing [Diſt. a 1 alæ]	*54 9*	*54 24*
from Aldebora [ab Aldebora]	*24 55*	*24 40*
Declination of the centre [Declin. centri]		*17 29*

For the place of the ☾ on 25 October [Pro ☾ loco die 25 Octobris.]

At H. 10 M. 39, when the ☾ was in the 90th degree [H. 10 M. 39 cum ☾ eßet in 90 gradu]:

Declination of the centre of the ☾ [Declinatio centri ☾]	17 29
Distance of the centre of the ☾ from the 1st of the wing of Pegasus [Diſt. centri ☾ a 1 alæ Peg.]	54 24
Declination of the first of the wing [Declin. primæ alæ]	13 3 30
Right ascension of Markab [Aſc. recta Marchab]	341 10 40
Angle of the ascensional difference [Ang. diff. aſcenſ.]	56 23 40
Therefore the right ascension of the centre of the ☾ [Ergo aſc. recta centri ☾]	37 34 20
Conversely, from Aldebora [Viceverſa ab Aldebora]	
At the same time [Eodem tempore,]	
Distance from Aldeb. [Diſt. ab Aldeb.]	24 40
Declination of Aldeb. [Declin. Aldeb.]	15 38 0
Right ascension of the same [Aſc. recta eiuſdem]	63 13 0
Angle of the ascensional difference [Ang. diff. aſcenſ.]	25 40⅝
Therefore the right ascension of the centre of the ☾ [Ergo aſc. recta centri ☾]	37 32 10
Right ascension of the centre of the ☾, limited [Aſc. recta centri ☾ limitata]	37 33 15

Corresponding longitude [Reſp. Longitudo]	10 48 30 ♉
Latitude [Latitudo]	2 49⅔ B.

26 October, evening [DIE 26 OCTOBRIS, VESPERI.]

The ☾ was observed near the 90th degree, a little after ☍ [opposition] with the ☉, near the apogee of the first epicycle [circa Apogæum Epicycli primi]. It was in the ninetieth degree of the ecliptic [in nonag. gradu Eclipticæ] at H. 12 1′.

The clock was corrected immediately before these observations [Corrigebatur horologium ante has obſeruationes ſtatim].

H. M.	Diſt. orient. a Lucida ♈ [distance, east, from the bright star of ♈]	Declin. ☾ [declination of the ☾]	Aldeb. or. in æquat. [Aldeb., east, on the equator]
11 48⅓	22 20⅓	22 13 upper [ſup.]	23 38
11 49⅔	22 23¼	21 45	23 23
		22 12	Luc. hum. Orionis orient. [the bright star of Orion's shoulder, east]
11 51⅙	22 24⅔		
11 52⅔	22 25	21 46	42 38
		22 13½	
11 55⅚	22 26½		41 44
12 1 30 corrected [corr.]			
Conversely, from the lower head of ♊ [Viceverſa ab inferiori capite ♊]			
11 58½	53 52⅙	21 46½	41 4
12 4¼ corrected [corr.]		22 13	
12 0⅔	53 52		40 25
12 2½	53 51		39 51
12 4⅓	53 50		39 24
12 6⅔	53 48¾	21 47	38 52
		22 14	

The eastern limb of the ☾ crossed the meridian and had the altitude [Tranſijt orient. limb. ☾ per Merid. habuitque altitudinem]:

upper, by the steel instrument [ſup. per Chal.]	56 22	by the revolving instrument [per Vol.]	56 23⅙
lower [inf]	55 53		55 53¼
12 26⅚ Declination [Declin.]	22 19½		

by the armillae [per Armill.]	21 50½	
The bright star of Orion's shoulder was, east [Fuit. luc. humerus Orion. or.]		32 39

It was fairly clear and calm this evening [Erat hac veſpera ſatis ſerenum & tranquillum].

Around H. 12 M. 0, when the ☾ was in the 90th degree, set the distance [Circa H. 12 M. 0 cum ☾ eßet in 90 gradu Pone diſtantiam]:

from the bright star of ♈ [a Lucida ♈]	*22 25¼*	*22 10*
from the lower head of ♊ [ab infer. Cap. ♊]	*53 54*	*54 9*
the declination of the centre [Declinationem centri]		*22 0*

For the place of the ☾ on 26 October, from the observations recorded just above [Pro loco ☾ ad diem 26 Octobris ex obſeruationibus ſuperius proxime annotatis.]

At H. 12 exactly, when the ☾ was very nearly at the 90th degree of the ecliptic [H. 12 exacte, cum ☾ proxime eßet iuxta 90 gradum Eclipticæ]:

Distance of its centre [Diſt. centri eius]	
from the bright star of ♈ [a Luc. ♈]	22 10
from the lower head of ♊ [ab inf. cap. ♊]	54 9
Declination of the centre of the ☾ [Declin. centri ☾]	22 0
the bright star of ♈ [Luc. ♈]	21 31 45
the lower head of ♊ [inf. cap. ♊]	28 56 30
Right ascension of the bright star of ♈ [Aſc. recta Luc. ♈]	26 9¾
of the lower head of ♊ [inf. cap. ♊]	110 8¼
Angle of the ascensional difference [Ang. diff. aſcenſ.]	23 53⅙
	60 6 25
Therefore the right ascension of the ☾ [Ergo Aſc. recta ☾]	
from the bright star of ♈ [a Luc. ♈]	50 2 55
from the lower head of ♊ [ab inf. cap. ♊]	50 1 50
Right ascension of the ☾, limited [Aſc. recta ☾ limitata]	50 2⅓
Corresponding longitude [Reſp. Longitudo]	23 22 25 ♉
Latitude [Latitudo]	3 25¾ B.

2 November, morning [DIE 2 NOUEMBRIS, MANE.]

The ☾ was observed near quadrature [iuxta □ram], at the greatest digression of both epicycles [in maxima digreßione vtriusque epicycli].

By the calculation, the ☾ would be in the ninetieth degree at H. 6 M. 40 [Eßet ☾ in nonageſimo gradu iuxta ſupputationem H. 6 M. 40.].

H. M.	Dist. orient. limbi ab infer. Cap. ♑ [distance of the eastern limb from the lower head of ♑]	Declin. [declination]	
6 39½	21 33½ good [bona]	21 16	
		21 51	
Conversely, from the tail of ♌ [Viceversa a Cauda ♌]			
6 56½	37 23 doubtful [dubia]		
7 0⅕	37 21		
From the heart of ♌ [A Corde ♌]			Cor ♌ occid. [the heart of ♌, west]
7 2 0	15 14½ doubtful [dubia]		
7 3⅕			6 30
7 4½ corrected [corr.]			
			Can. min. occ. pro correct. horologij [the Lesser Dog, west, for the correction of the clock]
7 10⅓		21 11	
7 10⅖ corrected [corr.]		21 46	45 38

So the clock behaved moderately well [Ergo Horologium mediocriter se habuit]. These observations were made alternately between passing clouds, with the north wind blowing rather strongly [Factæ sunt hæ obseruationes alternatim inter transeuntes nubes flante Borea paulo vehementius].

For the place of the ☾ from the foregoing [Pro loco ☾ ex antecedentibus.]

H. 6 M. 40 Distance of the ☾ from the lower head of ♑ [Dist. ☾ ab inf. cap. ♑]	21 19
Declination of the Moon [Declin. lunæ]	21 32
Angle of the ascensional difference [Ang. diff. ascens.]	22 9
Therefore the right ascension of the ☾ [Ergo asc. recta ☾]	132 18 0
7 0 Distance of the ☾ from the tail of ♌ [Dist. ☾ a Cauda ♌]	37 37
Angle of the ascensional difference [Ang. diff. ascens.]	39 37⅓
Therefore the right ascension of the ☾ [Ergo asc. recta ☾]	132 28⅓
6 40 Right ascension, limited [Asc. recta limitata]	132 19
Declination B. [Declinatio B.]	21 32
Corresponding longitude[1] [Resp. Longitudo[1]]	8 52½ ♌
For the latitude subtract [Pro latitudine subtrahe]	6¾

24 November [DIE 24 NOUEMBRIS.]

The full ☾ was observed near the apogee, around the 90th degree, as follows [Obseruabatur ☾ plena iuxta Apogæum circa 90 Grad. vt sequitur]. The Moon in the ninetieth degree at H. 11 M. 41 [Luna in nonages. gr. H. 11 M. 41.].

H. M.	Dift. orient. limbi ☾ ab inf. Cap. ♑ [distance of the eastern limb of the ☾ from the lower head of ♑]	Declin. [declination]	Luc. pes Orion. or. [the bright foot of Orion, east]
11 12	33 33½ among clouds [inter nubes]		
11 16½		26 35 27 2⅓	17 57
11 19⅓	33 28½		
Conversely, from the bright star of ♈ [Viceverſa a Lucida ♈]			Luc. hum. Orion. or. [the bright star of Orion's shoulder, east]
	occ. limbi ☾ [of the western limb of the ☾]		
11 25¾	41 39		19 9
11 30⅔		27 5	Pes Orion. or. [the foot of Orion, east]
11 33 corrected [corr.]		26 33 good [bona]	8 20
11 40½	41 48		
11 44	41 50		4 0
11 52⅖ corrected [corr.]			
	From the lower head of ♑ [Ab inf. cap. ♑]		
11 45	33 14		3 32
11 54⅓ corrected [corr.]			

11 51 Meridian altitude, upper [Alt. Merid. ſuper.]	61 15 by the revolving instrument [per Vol.]	
lower [infer.]	60 39	
Declination [Declinatio]	26 40	
	27 6	Pes Orion. or. [the foot of Orion, east]
12 4 corrected: the eastern limb across the meridian [12 4 corr. Orient. limb. per Merid.]		1 6⅔

These were observed among clouds [Hæc ſunt obſeruata inter nubes].

For the place of the ☾ from the foregoing observations [Pro loco ☾ ex obſeruationibus antecedentibus.]

H. 11 M. 52 Distance of the centre of the ☾ from the bright star of ♈ [Dift. centri ☾ a luc. ♈]	
at the same time [eodem tempore]	42 5
distance from the lower head of ♑ [dift. ab inf. cap. ♑]	33 30
Declination of the centre of the ☾ [Declin. centri ☾]	26 50
Declination of the bright star of ♈ [Declin. luc. ♈]	21 31 45
Declination of the lower head of ♑ [Declin. inf. cap. ♑]	28 56 30

Further, for the place of the Moon [Porro pro loco ☾*]	
Right ascension of the bright star of ♈ [Aſc. recta lucidæ ♈]	26 9 45
of the lower head of ♊ [inf. cap. ♊]	110 8 15
Angle of the ascensional difference from the bright star of ♈ [Ang. diff. aſc. a luc. ♈]	46 0 35
from the lower head of ♊ [ab inf. cap. ♊]	37 59 15
Therefore at 11^{H} 52′ the right ascension of the ☾ [Ergo 11^{H} 52′ Aſc. recta ☾]	72 10⅓
	72 9 0
Set the right ascension of the ☾, limited [Pone Aſc. R. ☾ limitatam]	72 9⅔
Declination B. [Declin. B.]	26 50
Corresponding longitude [Reſp. Longitudo]	14 5½ ♊
Latitude [Latitudo]	4 18 B.
For the latitude add [Pro Latitudine adde]	3⅚
For the parallax of longitude, about [Pro Parallaxi Longit. quaſi]	1

The true place of the ☾ with respect to its own circle is therefore [Eſt itaque verus locus ☾ reſpectu proprij circuli] 14 10 ♊.

1 December [DIE 1 DECEMBRIS]

The ☾ was observed in the morning near the 90th degree, a little before □ [quadrature] and the greatest digression of *both epicycles* [Obſeruabatur ☾ mane iuxta 90 gradum paulo ante □ & maximam digreßionem *vtriusque Epicycli*].

H. M.	Diſt. orient. limbi a Corde ♌ [distance of the eastern limb from the heart of ♌]	Declinatio [declination]	Spica ♍ orient. [Spica, east]
6 59⅓	7 20¾	could not be obtained because of clouds suddenly arising [haberi non poterat ob nubes ſubito ex-orientes]	8 59½
7 2⅙	7 25		8 16
7 5⅓	7 26 good [bona] a Spica [from Spica]		7 28
7 9⅝	46 49 among clouds [inter nubes]		

At 7 36 the declination of the ☾ was observed among clouds [7 36 Inter nubes obſeruata eſt declin. ☾]: 12 12 lower [inf.], 12 51 upper [ſup.].

[1] The latitude is missing in the codex [Latitudo deeſt in codice.].

You will be able to reduce this observation to the time belonging to the distances above, when the ☾ was near the 90th degree, so as to have the place of the ☾ afterwards [Hanc obſeruationem reducere poteris ad tempus ſuperioribus diſtantijs competens, cum eßet ☾ iuxta 90 grad., vt poſtea ☾ locum habeas.].

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

The ☾ was observed *with respect to its western limb* [Obſeruabatur ☾ *quo ad occidentalem limbum*.].

H. M.	Diſt. a ♃ [distance from ♃]	Declinatio ☾ [declination of the ☾]	Aldeb.
6 50 0	26 29		25 57
6 53⅔	26 32		25 3
6 56⅙		22 57 lower [infer.]	
		23 29 upper [ſuper.]	

It was not very clear this evening, and the ☾ was surrounded by a halo, outside whose western edge ♃ was placed; *the observations made on* ♃ *are nevertheless fairly good* [Non erat ſatis ſerenum hac veſpera & fuit ☾ halone circumdata, extra cuius marginem occidentalem ♃ diſponebatur, *obſeruationes tamen in* ♃ *factæ ſatis bene ſe habent*.].

24 December, evening [DIE 24 DECEMBRIS, VESPERI.]

We observed the full ☾, not far from the apogee, around its rising, for the parallax, as follows [Obſeruabamus ☾ plenam & non longe ab Apogæo, circa ortum pro Parallaxi vt ſequitur.].

H. M.	Declin. [declination]	Altit. ☾ ſup./inf. [altitude of the ☾, upper/lower]	Azim. or. limbi a Mer. in Volub. [azimuth of the eastern limb from the meridian, on the revolving instrument]	In æquat. pro Hor. Aldeb. [Aldeb. on the equator, for the clock]
5 4⅔	good [bona]	15 22½	116 0	60 20
		14 52		
5 14½	26 42	16 42	114 0	57 34
	27 10	16 10⅙		
5 25	26 41½	18 4½	112 0	54 48
	27 10⅙	17 32		
To correct the instruments, the heads of ♊ were observed [Pro inſtrumentis corrigendis obſeruabantur Capita ♊.]				
5 34⅔	29 0 with one [vno]	18 48 good [bona]	114 0	52 20
Distance of the western limb of the ☾ from the eye of ♉ [Diſt. ☾ occid. limbi ab oculo ♉]				
5 43	41 52			50 0
5 45	41 53 nearly [fere]			49 28
5 47⅚	41 55			48 47

H. M.	Declin. [declination]	Altit. ☾ sup./inf. [altitude of the ☾, upper/lower]	Azim. or. limbi a Mer. in Volub. [azimuth of the eastern limb from the meridian, on the revolving instrument]	In æquat. pro Hor. Aldeb. [Aldeb. on the equator, for the clock]
5 49⅙	Declination of the ☾ [Declin. ☾]	26 35		48 15
		27 10		
Declination of the lower head of ♊ [Declin. infer. Cap. ♊]	28 59			
for the armillae [pro Armillis]	28 58½			

Conversely, from the lower head of ♊ [Viceverſa ab infer. Cap. ♊]

H. M.	Orient. limb. ☾ [eastern limb of the ☾]	Altit. [altitude]	
6 0⅔	3 21¾	23 7	45 25 Extr. alæ Pegaſi occ. [the end of the wing of Pegasus, west]
6 6½	3 21¾	23 36	21 25

At 6¼ the ☾ was seen in the following arrangement with both heads of ♊ with respect to the horizon. It was, moreover, not far from ☌ [conjunction] with the lower head of ♊, so that from this one may reason both for the greatest latitude and for the parallax, when the head of ♊, the lower one, was placed at nearly the same altitude as the ☾ [6¼ Viſa eſt ☾ in tali diſpoſitione cum vtroque Capite ♊ reſpectu Horizontis, fuit autem non longe a ☌ cum infer. Capite ♊, vnde tam pro Latitudine maxima quam Parallaxi hinc ratiocinari licebit, quando in conſimili altitudine Caput ♊ inf. cum ☾ fere eßet diſpoſitum.].

Diagram. A small line figure set at the left of the right column, beside the paragraph above. A vertical line runs between two star marks; a horizontal line runs from the lower star mark to the right and ends at a small circle. A crescent ☾ stands above the circle.

- Upper star mark (top of the vertical line): ”sup.”
- Lower star mark (foot of the vertical line, where the horizontal line begins): ”inf. ♊”
- Above the circle at the right end of the horizontal line: ”☾”

Afterwards the eastern limb of the ☾ was observed [Poſtea obſeruabatur ☾ limbus or.].

11 35⅙	around the meridian, having the altitude [circa Meridianum Altit. habens]			
	upper, by the steel instrument [ſup. per Chal.]	60 58½	by the revolving instrument [Vol.]	60 58 0
	lower [inf.]	60 25⅔		60 25⅔
11 38⅚	the Lesser Dog, west [Canis minor occid.]	1 38		
	between clouds [inter nubes.]			

More was not possible, for the sky was covered with dense clouds [Plura non licuit, erat enim cœlum denſis nubibus obductum.].

From these one may investigate the parallax around hour 6 and examine the latitude near the meridian. It was quite clear during the earlier observations, but as the ☾ was moving toward the meridian, clouds came up. On this day there was full moon in ♋, around the preceding noon [*Ex his licet Parallaxin exquirere circa Horam 6 & Latitudinem examinare iuxta Meridianum. Erat bene ſerenum in prioribus obſeruationibus, ſed ☾ tendente ad Meridianum nubes obortæ. Fuit hoc die plenilunium in ♋ circa Meridiem antecedentem.*].

For the place of the ☾ from the transit through the meridian [Pro loco ☾ ex tranſitu per Meridianum.]

H. 11 M. 34 S. 10	Transit of the centre of the ☾ through the meridian [Tranſit. centri ☾ per Merid.]
11 38 50	The Lesser Dog was, west [Fuit Canis minor occ.] 1 38

Observations of Saturn [OBSERUATIONES SATURNI.]

1 January, morning [DIE 1 JANUARIJ, MANE.]

♄ was observed as it approached ☍ [opposition] with the ☉, I [?] from Regulus [Obſeruabatur ♄ tendens ad ☍ ☉ I a Regulo.].

H. M.	Diſtantia ♄ a Regulo [distance of ♄ from Regulus]	Declinatio ♄ [declination of ♄]	Tertia alæ Auſtr. ♍ [the third of the southern wing of ♍]
4 47½	13 24¼	10 27⅔	0 41 east [or.]
		10 27½	
4 51	13 24½		0 47 west [occ.]

More could not be observed because of clouds rising from the south and the west [Non licuit plura obſeruare propter nubes a Meridie & occaſu exorientes.].

2 January, morning [DIE 2 JANUARIJ, MANE.]

For correcting the armillae [Pro corrigendis Armillis.]

H. 5 M. 54	Declination of Regulus [Declinatio Reguli]	13 55⅙ 13 54¾

Then ♄ was observed, I [?] from the lower head of ♊ [Deinde obſeruabatur ♄ I ab inf. Capite ♊.].

H. M.	Temp. corr. [corrected time]	Diſt. [distance]	Declin. ♄ [declination of ♄]	Spica ♍ occ. [Spica ♍, west]
6 4⅓	5 19	49 58⅓		3 57
6 8⅓	5 22 40	49 59½	10 29¾	4 56
			10 29¼	
6 10⅙	5 24	49 59½		5 18
Then from the heart of ♌ [Deinde a Corde ♌]				
6 12	5 27 4	13 25	10 29¾	5 59
			10 29⅓	
6 15⅓		13 24⅚		6 36
Conversely, from Spica ♍ [Viceverſa a Spica ♍]				
6 19½		40 48½		7 36
6 22		40 48⅔	10 29¾	8 9
			10 29¼	
6 25		40 48¼		

More could not be observed because of dense clouds [Plura obſeruari propter denſas nubes non poterant.].

For the place of ♄ on 2 January [Pro loco ♄ die 2 Januarij.]

5^{H} 22′ 40″ Distance of ♄ [Diſt. ♄]	
from the lower head of ♊ [ab inf. cap. ♊]	49 59½
Declination of ♄ [Declin. ♄]	10 29 45
Declination of the lower head of ♊ [Decl. infer. capit. ♊]	28 54 53
Right ascension of the same [Aſc. recta eiuſdem]	110 9 33
Angle of the ascensional difference [Ang. diff. aſcenſ.]	49 51 46
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	160 1 19
Afterwards from the heart of ♌ [Poſtea a Corde ♌]	
5 27 28 Distance of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	13 25
Declination of the heart of ♌ [Declin. Cordis ♌]	13 54 34
Right ascension of the same [Aſc. recta eiuſdem]	146 42 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	13 16 42
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	159 58 54
Conversely, from Spica ♍ [Viceverſa a Spica ♍]	
5 31 28 Distance from Spica ♍ [Diſt. a Spica ♍]	40 48½
Declination of Spica ♍ [Declin. Spicæ ♍]	8 59 42M.
Right ascension of the same [Aſc. recta eiuſdem]	196 0 54

Angle of the difference of the ascensions [Ang. diff. aſcenſionum]	36 2
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	159 58 54
Right ascension, limited [Aſcenſio recta limitata]	160 0 6
Corresponding longitude [Reſp. Longitudo]	7 35 21 ♍
Latitude [Latitudo]	1 52 46 B.

Rather, set the longitude at 7 35 and the latitude at 1 53 [*Pone potius long. 7 35, lat. 1 53.*].

13 January, morning [DIE 13 JANUARIJ, MANE.]

♄ was observed between clouds, for the observations of the ☾ of the previous day [Obſeruabatur inter nubes ♄ pro ☾ᵉ heſternæ diej obſeruationibus.].

H. 6 M. 20	Distance of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	12 47¾.

From the following observations, for 17 January [Ex ſequentibus obſeruationibus ad d. 17 Jan.]:

Day 12, H. 7 0′ [Die 12, H. 7 0′]	Right ascension [Aſc. recta]	159 32 doubtful [dubia]
	Declination [Declinatio]	10 41¾ B.
	Longitude [Longitudo]	7 4½ ♍
	Latitude [Latitudo]	1 53½ B.

17 January, morning [DIE 17 JANUARIJ, MANE.]

♄ was observed as it approached ☍ [opposition] with the ☉, and near the meridian, as follows [Obſeruabatur ♄ tendens ad ☍ ☉ˡⁱˢ & iuxta Meridianum vt ſequitur.].

H. M.	Diſt. a Corde ♌ [distance from the heart of ♌]	Declin. ♄ [declination of ♄]	Canis minor occid. [the Lesser Dog, west]
1 31⅔	12 37⅙		41 34
1 25 corrected [corr.]			
1 34	12 37⅙	10 49¾	42 10
1 27 corrected [corr.]		10 49½	
1 36	12 37½		
Conversely, from the third of the southern wing of ♍ [Viceverſa a tertia alæ auſtralis ♍]			
1 40⅚	27 45⅚	10 49⅚	43 55
1 34 corrected [corr.]		10 49½	
1 46⅙	27 45½	10 49¼	45 20
1 40 corrected [corr.]		10 49⅚	

H. M.	Diſt. a Corde ♌ [distance from the heart of ♌]	Declin. ♄ [declination of ♄]	Canis minor occid. [the Lesser Dog, west]
1 51	27 45⅓		46 29
1 53½	27 45⅓		47 11
1 47½ corrected [corr.]			

Afterwards ♄ crossed the meridian, having the altitude [Tranſiuit poſtea ♄ Meridianum habens Altitudinem]:

	by the steel instrument [per Chalyb.]	44 54⅔	
	by the revolving instrument [per Volub.]	44 54⅓	
2 3⅚	Declination [Declinatio]	10 49⅓	The Lesser Dog was, west [Fuit Canis minor occ.]
1 58 corrected [corr.]		10 49⅔	49 50.

For the place of ♄ on 17 January [Pro loco ♄ die 17 Jan.]

2^{H} 10^{M} corrected [corr.], distance of ♄ [Diſt. ♄]	
from the heart of the Lion [a corde leonis]	12 37⅙
Declination of ♄ [Declin. ♄]	10 49
Declination of the heart of the Lion [Declin. cordis leonis]	13 55½
Right ascension of the same [Aſc. recta eiuſdem]	146 42 12
Angle of the difference of the ascensions [Ang. diff. aſcenſionum]	12 31 12
Therefore the right ascension of ♄ [Ergo Aſc. recta ♄]	159 13 24
2 31 corrected [corr.], distance of ♄ [Diſt. ♄]	
from the third of the southern wing of ♍ [a tertia auſtr. alæ ♍]	…[1]
Declination of the third of the wing [Decl. tertiæ alæ]	0 47 B.
Right ascension of the same [Aſc. recta eiuſdem]	185 17
Angle of the ascensional difference [Ang. diff. aſcenſ.]	26 2 50
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	159 14 10
Right ascension, limited [Aſc. recta limitata]	159 13 47
Corresponding longitude [Reſp. Longitudo]	6 46 2 ♍
Latitude [Latitudo]	1 53 36

29 January [DIE 29 JANUARIJ.]

In the evening ♄ was observed as it approached ☍ [opposition] with the ☉, in this way [Veſperi obſeruabatur ♄ tendens in ☍ ☉ in hunc modum.].

H. M.	Diſt. ♄ a Corde ☋ [distance of ♄ from the heart of ☋]	Decl. ♄ vno [declination of ♄; *vno*, "one", sense not construed [?]]	Altit. ♄ [altitude of ♄]	Can. min. or. [the Lesser Dog, east]
9 28⅔	11 44		27 50	7 18
9 32⅓	11 44⅔	11 11½		6 27
9 34⅔	11 44½			
9 38	11 44⅙			5 8
Conversely, from the heart of ☋ [Viceverſa a corde ☋]				
9 41⅔	14 26	11 11⅔		4 14
9 46	14 25½	11 11⅔		3 7
9 50⅙	14 25⅔			2 5

Declination of the heart of ☋ for [Declinatio Cordis ☋ pro]	13 55⅙
examining the armillae [examinandis Armillis]	13 55¼

Investigation of the place of ♄ from the observations of 29 January [Inquiſitio loci ♄ ex obſeruationibus diej 29 Januarij.]

9 30½ Distance of ♄ from the heart of ☋ [Diſt. ♄ a corde ☋]	11 44¼
Declination of ♄ [Declin. ♄]	11 11⅔
Right ascension of the heart of ☋ [Aſc. recta cordis ☋]	146 42 12
Declination of the same [Declin. eiuſdem]	13 54 55
Angle of the ascensional difference [Ang. diff. aſcenſ.]	11 41 59
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	158 24 10
Conversely, from the tail of ☋ [Viceverſa a cauda ☋]	
9 40 Distance of ♄ from the tail of ☋ [Diſt. ♄ a cauda ☋]	14 25½
Declination of the tail of ☋ [Declin. caudæ ☋]	16 50 42
Right ascension of the same [Aſc. recta eiuſdem]	172 5 3
Angle of the ascensional difference [Ang. diff. aſcenſ.]	13 41 20
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	158 23 40
Right ascension, limited [Aſc. recta limitata]	158 23 55
Corresponding longitude [Reſp. Longitudo]	5 52 17 ♍
Latitude [Latitudo]	1 56 40 B.

4 February, evening [DIE 4 FEBRUARIJ, VESPERI².]

13 February [DIE 13 FEBRUARIJ.]

♄ was observed at its acronychal position, near ☍ [opposition] with the ☉, as follows [Obſeruabatur ♄ Acronychius prope ☍ ☉ vt ſequitur.].

H. M.	Dist. a Cauda ☋ [distance from the tail of ☋]	Declinatio [declination]	Dist. æquat. Cordis Hydræ vt putamus occid.[3] [equatorial distance of the heart of Hydra, as we suppose; west]
11 55	15 15⅓	11 39⅔	
	Dist. a Corde ☋ [distance from the heart of ☋]	11 39¾	
12 1⅓	10 34⅓	11 39½	18 24
	twice, good [bis, bona]		
12 7	10 35 doubtful [dubia]		

12 12⅓ ♄ crossed the meridian, having the altitude [Transiuit ♄ per Merid. habens Altitudinem]:

on the steel instrument [in Chal.]	45 44¾		
on the revolving instrument [in Vol.]	45 45		
Declination by the armillae [Declin. per Armillas]	11 39½	among clouds [inter nubes]	*45 44 50*
	11 39¾		*34 5 30*
			11 39 20 Declination [Declinatio]

	Dist. a Corde ☋ [distance from the heart of ☋]		
12 28	10 34½		
12 30⅚	10 35	11 39⅚	
		11 39½	
12 34	10 34½ good [bona]		
Conversely, from the tail of ☋ [Viceversa a Cauda ☋]			Spica ♍ or. [Spica ♍, east]
12 46	15 15¼		31 45
12 30½ corrected [corr.]			
12 49½	15 15⅓		31 20
12 32½ corrected [corr.]			
Afterwards from the lower head of ♊ [Postea ab inferiori Capite ♊]			
12 52	47 8⅓ better [melior]		
12 35 corrected [corr.]			
12 55⅔	47 8⅔	11 39⅔	

12 38⅔ corrected [corr.]		11 39¾	
12 58⅚	47 8½		29 23
12 39⅚ corrected [corr.]			
Afterwards from Arcturus [Poſtea ab Arcturo]			
1 4	50 35¾		28 26
1 7	50 35⅓		
1 10	50 35¾	11 39⅔	27 32
		11 39¾	

These were observed for the most part among rather sparse clouds passing across, but with great care, so that the position of ♄ [Obſeruata ſunt hæc vt plurimum inter rariuſculas tranſcurrentes nubes, ſed magna diligentia, adeo vt ♄ ſitum]

[1] Missing in the codex and in V. [Deeſt in codice & V.]

[2] See above, p. 11 ff., among the observations of the Moon [Vide ſupra p. 11 ſq., inter obſervationes lunæ.].

[3] Correctly [Recte.].

— the acronychal one — you can derive even from these alone, limited against each other, since it will have to be set opposite the simple course of the ☉ before the coming two days are out [acronychium vel ex ſolis hiſce inter ſe limitatis elicere poteris, ſiquidem is ante inſtans biduum ſimplici ☉[lis] curſui opponendus erit.].

N.B. Set the distance [*N.B. Pone diſtantiam*]:

from Regulus [*a Regulo*]	*10 34⅔*
from the lower head of ♊ [*ab inf. Capite* ♊]	*47 8½*
from Arcturus [*ab Arcturo*]	*50 35½*
Set the declination [*Pone Declinationem*]	*11 39½*

Investigation of the place of ♄ for 13 February [Inquiſitio loci ♄ ad diem 13 Feb.]

H. 12 M. 13 Declination of ♄, B. [Declin. ♄ B.]	11 39½
Distance from the heart of ♌ [Diſt. a Corde ♌]	10 34⅔
Right ascension of the heart of ♌ [Aſc. recta Cordis ♌]	146 42 12
Declination of the same, B. [Declin. eiuſdem B.]	13 54 55
Angle of the ascensional difference [Ang. diff. aſcenſ.]	10 35 55
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	157 18 7

Conversely, from the tail of ☋ [Viceverſa a Cauda ☋]	
12 30½ Distance of ♄ from the tail of ☋ [Diſt. ♄ a Cauda ☋]	15 15⅓
Declination of the tail of ☋ [Declin. Caudæ ☋]	16 50 42
Right ascension of the same [Aſc. recta eiuſdem]	172 5 3
Angle of the ascensional difference [Ang. diff. aſcenſ.]	14 48 48
Therefore the right ascension [Ergo aſc. recta]	157 16 15
Right ascension, limited [Aſc. recta limitata]	157 17⅙
Corresponding longitude [Reſp. Longitudo]	4 41 0 ♏
Latitude [Latitudo]	1 58 0 B.
Afterwards ♄ was observed from the lower head of ♊ [Poſtea obſeruabatur ♄ ab infer. cap. ♊]	
12 35 Distance of ♄ from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	47 8½
Declination of the lower head [Declin. inf. cap.]	28 55 7
Right ascension of the same [Aſc. recta eiuſdem]	110 8 18
Angle of the ascensional difference [Ang. diff. aſcenſ.]	47 11 35
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	157 19 53
Conversely, from Arcturus [Vice verſa ab Arcturo]	
12 43 Distance of ♄ from Arcturus [Diſt. ♄ ab Arcturo]	50 35½
Declination of Arcturus [Declin. Arcturi]	21 20 15
Right ascension of the same [Aſc. recta eiuſdem]	209 19 35
Angle of the ascensional difference [Ang. diff. aſcenſ.]	52 1½
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	157 18 5
Right ascension, limited [Aſc. recta limitata]	157 18 59
Corresponding longitude [Reſp. Longitudo]	4 42 39 ♏
Latitude [Latitudo]	1 58 41 B.

N.B. Set these distances afresh as follows [*N.B. Pone denuo has diſtantias ſic*]:

From the heart of ☋ [*A corde* ☋]	*10 35*	*From the tail of* ☋ [*A cauda* ☋]	*15 15½*
From the lower ♊ [*Ab infer.* ♊]	*47 8⅓*	*From Arcturus* [*Ab Arcturo*]	*50 35¾*
The declination as before [*Declinatio vt prius*]			*11 39½*

15 February [DIE 15 FEBRUARIJ.]

Around the following midnight ♄ was observed almost exactly in ☍ [opposition] with the simple ☉, as follows [Circa mediam noctem ſequentem obſeruabatur ♄ exacte quaſi in ☍ ſimplicis ☉^{lis} vt ſequitur.].

First, for the armillae and quadrants [Primum pro Armillis & Quadrantibus.]

H. 11 M. 27⅓ Meridian altitude of the heart of ☋ [Altit. meridiana Cordis ☋]	
by the steel instrument [Chalyb.]	48 0 nearly [fere]
by the revolving instrument [Volub.]	48 1 0
Declination [Declinatio]	13 55⅔

It should be 13 55 [*Debet eße 13 55*]	13 54⅝

H. M.	Diſt. ♄ a Corde ☌ [distance of ♄ from the heart of ☌]	Declin. ♄ [declination of ♄]	Canis minor occid. [the Lesser Dog, west]
11 34½	10 25¼	11 42¼	
11 10⅓ corrected [corr.]		11 42½	
11 39⅔	10 24⅝		39 27
11 15 corrected [corr.]			
11 41	10 25⅙		
11 16⅝ corrected [corr.]			Spica ♍ or. [Spica ♍, east]
11 43½	10 24⅝	11 42½	46 38
11 18½ corrected [corr.]		11 42⅓	
Conversely, from the tail of ☌, among clouds [Viceverſa a Cauda ☌ inter nubes.]			
11 57⅝	15 22		
12 0	15 21¼	11 42½	Canis min. occ. [the Lesser Dog, west]
		11 42⅔	
12 13⅔	15 21⅝		46 2
11 48⅓ corrected [corr.]			
12 19½	15 22⅝		46 56
11 51⅝ corrected [corr.]			
12 23½	♄ crossed the meridian, having the altitude [Tranſiuit ♄ Meridianum habens Altitud.]		
11 55⅝ corrected [corr.]			

by the steel instrument [per Chalyb.]	45 47⅝
by the revolving instrument [Volub.]	45 49⅙
Declination of ♄ [Declinatio ♄]	11 42⅔
	11 42⅝

The Lesser Dog was then west [Fuit tunc Canis minor occ.]: 47 40.

The mean between the two is more correct. Set, therefore, the altitude of ♄ at 45 48½ and the declination at 11 43, which can be confirmed from the heart of ☌ examined above [*Medium inter vtrumque rectius ſe habet. Pone itaque Altitudinem ♄ 45 48½, Declin. 11 43, quod probari poteſt e Corde ☌ ſupra examinato.*].

Distance of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	*10 25*
from the tail of ♌ [a Cauda ♌]	*15 22½*

H. M.	Diſt. ♄ a Cauda ♌ [distance of ♄ from the tail of ♌]	Declin. ♄ [declination of ♄]	Can. min. occ. [the Lesser Dog, west]
12 37	15 23 twice [bis]	11 42⅔	
		11 42⅚	
12 39⅚	15 22½		
Afterwards from the lower head of ♊ [Poſtea ab inferiori Capite ♊]			
12 44½			51 37
12 10⅔ corrected [corr.]			
12 47	46 58⅙	11 42½	52 7
12 12⅚ corrected [corr.]		11 42⅔	
12 49⅚	46 57¾		52 37

12 52⅔		46 58	11 42½	
			11 42⅔	
Conversely, from Arcturus [Viceverſa ab Arcturo]				
12 56⅙		50 43½		53 49
12 19½ corrected [corr.]				
12 59½		50 44¼		
1 1½		50 43½	11 42⅔	54 47
			11 42⅚	
1 7		50 44		
Afterwards from the bright star of the neck of ♌ [Poſtea a Lucida Ceruicis ♌]				
1 14½		12 33⅔		57 14
12 33 corrected [corr.]				
1 18⅔		12 33		58 6
1 23		12 33		

Set the distance [*Pone diſtantiam*]:

from the lower head of ♊ [*ab inf. cap.* ♊]	*46 58*
from Arcturus [*ab Arcturo*]	*50 43⅚*
from the bright star of the neck of ♌ [*a lucida Ceruicis* ♌]	*12 33⅙*

For the place of ♄ on 15 February [Pro loco ♄ die 15 Februarij.]

11^{H} $10½^{M}$ corrected [corr.], distance of ♄ [Diſt. ♄]	
from the heart of ♌ [a corde ♌]	10 25
Declination of ♄ [Declin. ♄]	11 43 B.
Angle of the ascensional difference [Ang. diff. aſcenſ.]	10 26 37
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	157 8 49
Conversely, from the tail of ♌ [Viceverſa a cauda ♌]	
11 48⅓ Distance of ♄ from the tail of ♌ [Diſt. ♄ a cauda ♌]	15 22½
Angle of the ascensions [Ang. aſcenſionum]	14 58
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	157 7 3
Right ascension, limited [Aſc. recta limitata]	157 7 56
Corresponding longitude [Reſp. Longitudo]	4 31 17 ♍
Latitude [Latitudo]	1 57⅚ B.

To investigate the same place, ♄ was observed the same evening: I from the lower head of ♊ [Pro eodem loco inquirendo obſeruabatur ♄ eodem veſperi, I ab infer. cap. ♊.].

12 12⅚ Distance of ♄ from the lower head of ♊ [Diſt. ♄ ab inf. cap. ♊]	46 58
Angle of the ascensional difference [Ang. diff. aſcenſ.]	47 1 18
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	157 9 36
Conversely, from Arcturus [Viceverſa ab Arcturo]	
12 19½ Distance from Arcturus [Diſt. ab Arcturo]	50 43⅚
Angle of the ascensional difference [Ang. diff. aſcenſ.]	52 11 43
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	157 7 52
Right ascension, limited [Aſc. recta limitata]	157 8 44
Corresponding longitude [Reſp. Longitudo]	4 32 0 ♍
Latitude [Latitudo]	1 58¼ B.
Afterwards ♄ from the bright star of the neck of ♌ [Poſtea ♄ a lucida ceruicis ♌]	
12 33 Distance of ♄ from the bright star of the neck of ♌ [Diſt. ♄ a luc. ceru. ♌]	12 33⅙
Declination of the bright star of the neck [Declin. luc. ceruicis]	21 51 36
Right ascension of the same [Aſc. recta eiuſdem]	149 21 48
Angle of the ascensional difference [Ang. diff. aſcenſ.]	7 45 30
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	157 7 18
Corresponding longitude [Reſp. Longitudo]	4 30 43 ♍
Latitude [Latitudo]	1 57 40

17 February, evening [DIE 17 FEBRUARIJ, VESPERI.]

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

H. M.	Diſt. ♄ a Corde ♌ [distance of ♄ from the heart of ♌]	Declinatio [declination]	Can. min. occid. [the Lesser Dog, west]
11 45½	10 13⅙		
11 53	10 13½	11 46½	41 35
11 22½ corrected [corr.]		11 46¾	
11 57		11 46½	42 28
11 27⅔ corrected [corr.]		11 46⅔	
12 4½			44 17
11 33½ corrected [corr.]			
12 20½	♄ crossed the meridian, having the altitude [Tranſijt ♄ per Meridianum habens Altit.]		
11 46⅓ corrected [corr.]			

by the steel instrument [per Chalyb.]	45 51⅔		
by the revolving instrument [per Volub.]	45 52		
Declination of ♄ [Declin. ♄]	11 46½	Can. min. occ. [the Lesser Dog, west]	
	11 46 3/3 [?]	was [erat] 47 27	

12 31	10 15⅓			
1 1 30	10 14⅚			56 38
12 23⅙ corrected [corr.]				
1 4½	10 15⅔			
1 15⅔	10 15½	11 46⅓		
		11 46½		
1 23½	10 15⅔			

To examine the quadrants, the meridian altitude of the tail of ♌ was taken [Pro examine Quadrantum capiebatur Altitudo Meridiana Caudæ ♌]:

by the steel instrument [per Chalyb.]	50 55⅙	Declination [Declin.]	16 51
revolving instrument [Volub.]	50 55⅓	of the same [eiuſdem]	16 50⅙

Afterwards from the third of the southern wing of ♍ [Poſtea a tertia auſtralis alæ ♍]

1 41	30 11⅙		Spica ♍ or. [Spica ♍, east]
1 43	30 11⅙	11 46⅔	20 57
		11 46½	
1 45	30 11⅙	11 47	20 27
		11 47	

To examine the sextant, the distance between the third of the wing of ♍ and the heart of ♌ was taken [Pro examine Sextantis capiebatur diſtantia inter tertiam alæ ♍ & Cor ♌]:

40 23⅚	Otherwise [Alias] 40 22
40 24¼	

And between the lower head of ♊ and the bright star of the neck of ♌ [Et inter inferius Caput ♊ & Lucidam colli ♌]:

36 1⅙	Otherwise [Alias] 35 59
36 1⅙	
36 1⅙	

It appears here that the old sextant, with which we measured the present and the earlier distances of ♄, shows these same distances about 2^m larger than the correct ones [Apparet hic Sextantem veterem, quo cum diſtantias præſentes & ſuperiores in ♄ dimenſi ſumus, 2^m quaſi eaſdem iuſtis ampliores exhibere.].

For the place of ♄ from the observations of 17 February [Pro loco ♄ ex obſeruationibus diej 17 Februarij.]

12^H 23⅙^M Distance of ♄ from the heart of ♌, limited [Diſt. ♄ a corde ♌ limit.]	10 14
Declination of ♄ [Declin. ♄]	11 46½
Angle of the ascensional difference [Ang. diff. aſcenſ.]	10 15 54
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	156 58 6
Conversely, from the third of the southern wing of ♍ [Viceverſa a tertia alæ auſtr. ♍.]	
1 11 Distance of ♄ from the third of the wing [Diſt. ♄ a tertia alæ]	30 9¾
Declination of the third of the wing, B. [Declin. tertiæ alæ B.]	0 47 57
Right ascension of the same [Aſc. recta eiuſdem]	185 16 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	28 18 44
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	156 57½

Right ascension of ♄, limited [Aſc. rccta ♄ limitata]	156 57 45
Corresponding longitude [Reſp. Longitudo]	4 21¼ ♍
Latitude [Latitudo]	1 57½ B.

22 February, evening [DIE 22 FEBRUARIJ, VESPERI.]

We observed ♄ when it had passed beyond ☍ [opposition] with the ☉ [Obſeruabamus ♄ prætergreßum ☍ ☉.].

H. 11 M. 52 the heart of ♌ crossed the meridian, having the altitude [H. 11 M. 52 Tranſiuit Cor ♌ per Meridianum habens Altit.]:

by the steel instrument [per Chalyb.]	48 0⅙	
by the revolving instrument [per Volub.]	48 0⅔	
Declination by the armillae [Decl. per Armillas]		13 55
		13 54⅓

For correcting the old sextant [Pro Sextante veteri corrigendo]	35 33¾
Between the bright star of ♈ and Aldebaran [Inter Lucidam ♈ & Aldeb.]	35 33½
	35 33⅔
The true distance would be 35 32⅙ [Vera diſtantia eßet 35 32⅙]	35 33⅔

It is therefore clear that the sextant gave the distance 1½′ more than it should, and this error has to be corrected in the acronychal observations of ♄ [Patet itaque Sextantem 1½ Minutis plus iuſto in diſtantia præbuiße, qui error circa obſeruationes acronychias ♄ corrigendus venit.].

H. M.	Diſt. ♄ a Corde ♌ [distance of ♄ from the heart of ♌]	Declin. ♄ [declination of ♄]	Canis minor occid. [the Lesser Dog, west]
12 4	9 52⅔		39 37
10 56½ corrected [corr.]			
12 10	9 51½	11 55⅙	40 10
10 59 corrected [corr.]		11 56	
12 22	9 51½		40 37
11 0½ corrected [corr.]			
12 28	9 52		41 18
11 3 corrected [corr.]			
From the third of the wing of ♍ [A tertia alæ ♍.]			
12 32	30 33⅚		
11 7 corrected [corr.]			
12 35⅔	30 33⅚		

H. M.	Diſt. ♄ a Corde ♌ [distance of ♄ from the heart of ♌]	Declin. ♄ [declination of ♄]	Canis minor occid. [the Lesser Dog, west]
12 39½	30 33½	11 55⅓ 11 55⅙	
12 49½	♄ crossed the meridian, having the altitude [Tranſiuit ♄ per Meridianum habens Altit.]		

by the steel instrument [per Chalyb.]	46 0⅙
by the revolving instrument [per Volub.]	46 1¼
Declination [Declin.]	11 55½
by the armillae [per Armillas]	11 56

For the place of ♄ on 22 February [Pro loco ♄ die 22 Februarij.]

10 56½ Distance of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	9 51⅙
Angle of the ascensional difference [Ang. diff. aſcenſ.]	9 54⅙
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	156 36⅓
Afterwards, conversely, from the third of the southern wing of ♍ [Poſtea viceverſa a tertia alæ auſtr. ♍.]	
11 7 Distance of ♄ from the third of the wing [Diſt. ♄ a tertia alæ]	30 32⅓
Angle of the ascensional difference [Ang. diff. aſcenſ.]	28 40
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	156 36⅙
Right ascension of ♄, limited [Aſc. recta ♄ limitata]	156 36¼
Corresponding longitude [Reſp. Longitudo]	3 58⅙ ♍
Latitude [Latitudo]	1 57⅚ B.

Reduction of the place of ♄ from the observations above, and from those following, collected here below, at ☍ [opposition] with the ☉, in order to find its acronychal position [Reductio loci ♄ ex ſuperioribus obſeruationibus & ſequentibus hic inferius collectis in ☍ ☉ pro eius ſitu acronychio perquirendo.].

	Dies [day]	H. M.	Longitudo [longitude]	Latitudo B. [latitude, north]
Fe-	13	12 40	4 42 ♍	1 58¼
bru-	15	12 0	4 31⅔	1 58
arij [February]	17	12 45	4 21¼	1 57½
	22	11 0	3 58⅙	1 57 50

	Dies [day]	H. M.	Longitudo [longitude]	Latitudo B. [latitude, north]
	25	11 30	3 43⅓	1 57 50

On 15 February, H. 12 [Die 15 Februarij H. 12]:

Our simple ☉ [Simplex ☉ noſter]	4 59 20 ♓
Observed longitude of ♄ [Obſeruata Longit. ♄]	4 31 40 ♍

The ☍ [opposition] of ☉ and ♄ had therefore already passed, in antecedence [in anteced.], by M. 27 40″. The diurnal motion of ♄ is set from the observations at M. 5¼; therefore the diurnal motion of the two together is M. 64 23″ [Præterierat itaque ☍ ☉ ♄ in anteced. M. 27 40″, Motus ♄ diurnus ex obſeruationibus ponitur M. 5¼, ergo motus diurnus vtriuſque aggregati M. 64 23″.].

M. 64 23″... H. 24... M. 27⅔

Result [Reſp.]: H. 10 M. 20. ♄ therefore receded into opposition to the ☉ this year in the month of February, on day 15 at H. 1⅔, and its place was [Receßit igitur in oppoſitum ☉^{lis} ♄ hoc anno menſe Februario Die 15 H. 1⅔, eratque locus Lon-] in longitude [-git.] (with the arc of inclination added, M. 2 5″) 4 33⅚, or at most 34′ ♍ [(arcus inclinationis add. M. 2 5″) 4 33⅚ vel ad ſummum 34′ ♍]; latitude 1 58 B. [Latit. 1 58 B.]

Mean motions at ☍ [Motus medij ad ☍]		
	Simple longitude [Simpl. long.]	2 0 56 56
	Apogee [Apog.]	4 1 15 51
Our precession of the equinoxes [Noſtra præceßio æqu.]		28 11 42

25 February, evening [DIE 25 FEBRUARIJ, VESPERI.]

♄ was observed near the meridian after its ☍ [opposition] with the ☉ [Obſeruabatur ♄ poſt ☍ ☉ iuxta Merid.].

H. 11 M. 29 ♄ crossed the meridian, having the altitude [H. 11 M. 29 Tranſiuit ♄ per Merid. habens Altit.]:

by the steel instrument [per Chalyb.]	46 6½.		
Declination [Declinationem]	12 0½	Can. min. occ. [the Lesser Dog, west]	
	12 0⅔		47 54

H. M.	Diſt. ♄ a Corde ☌ [distance of ♄ from the heart of ☌]	Declin. ♄ [declination of ♄]	Canis minor occ. [the Lesser Dog, west]
11 41½	9 38¼		50 6
11 27 corrected [corr.]			
11 43½	9 38	12 0¾	50 31
11 29 corrected [corr.]		12 0¼	
11 44⅓	9 38		51 9
Afterwards, conversely, from the third of the southern wing of ♍ [Poſtea viceverſa a tertia alæ auſtr. ♍]			
11 46	30 47¾		51 49
11 34 corrected [corr.]			
11 48	30 47½	12 0¾	52 30
11 37 corrected [corr.]		12 0⅓	
11 49½	30 47¾		

For the place of ♄ from the observations immediately preceding [Pro loco ♄ ex obſeruationibus proxime præcedentibus.]

11 27 Distance of ♄ from the heart of ☌ [Diſt. ♄ a Corde ☌]	9 38
Angle of the ascensional difference [Ang. diff. aſcenſ.]	9 41½
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	156 23⅔
Conversely [Viceverſa]	
11 34 Distance of ♄ from the third of the wing [Diſt. ♄ a tertia alæ]	30 47¾
Angle of the ascensional difference [Ang. diff. aſcenſ.]	28 55 0
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	156 21⅙
Right ascension, limited [Aſc. recta limitata]	156 22⅓
Declination [Declinatio]	12 0½
Corresponding longitude [Reſp. Longitudo]	3 43⅓ ♍
Latitude [Latitudo]	1 57⅚ B.

7 March, evening [DIE 7 MARTIJ, VESPERI.]

♄ was observed from the heart of ☌ [Obſeruabatur ♄ a Corde ☌.].

Diſt. ♄ a Corde ☌ [distance of ♄ from the heart of ☌]	Declinatio ♄ [declination of ♄]	Canis minor occid. [the Lesser Dog, west]
8 49½		
8 50	12 18	26 48
	12 17¼	

9 March, evening [DIE 9 MARTIJ, VESPERI.]

♄ was observed near the meridian, as follows [Obſeruabatur ♄ iuxta Meridianum vt ſequitur.].

H. 9 M. 50 the heart of ☌ crossed the meridian [H. 9 M. 50 Tranſijt Cor ☌ per Merid.].

Altitude by the steel instrument [Altit. in Chalyb.]	48 0	Declination [Declin.]	13 55
by the revolving instrument [in Volub.]	48 0½		13 55⅓

H. M.	Dist. ♄ a Regulo [distance of ♄ from Regulus]	Declinatio [declination]	Cor Hydræ [the heart of Hydra]
10 0½	8 42	12 21	12 29
10 2 corrected [corr.]		12 21	
10 4	8 42⅙		13 12
10 6½ corrected [corr.]			
Conversely, from Vindemiator ♍ [Viceversa a Vindemiatore ♍]			
10 6½	34 7⅓		13 49
10 9 corrected [corr.]			
10 7½	34 8¼		
10 9⅔	34 8	12 21	
		12 21	

10 29 ♄ crossed the meridian [10 29 Transiuit ♄ per Meridianum.].

Its altitude by the steel instrument [Altitudo eius per Chalyb.]	45 26⅙
by the revolving instrument [per Volub.]	45 26½
Declination [Declinatio]	12 21½
	12 21⅙

H. 10 M. 2 Right ascension of ♄ [H. 10 M. 2 Asc. recta ♄]	155 30½
Declination [Declinatio]	12 21 B.
Corresponding longitude [Resp. Longitudo]	2 48⅔ ♍
Latitude [Latitudo]	1 58½ B.

25 April, evening [DIE 25 APRILIS, VESPERI.]

♄ was observed near quadrature with the ☉, for correcting the annual orb [Obseruabatur ♄ circa quadratum ☉ pro annuo orbe corrigendo.]. *N.B.* ♄ *stationary [N. B. ♄ stationarius.]*

H. M.	Dist. ♄ ab inf. Cap. ♑ [distance of ♄ from the lower head of ♑]	Decl. ♄ [declination of ♄]	Spica ♍ or. [Spica ♍, east]
8 49⅙	43 40⅙	12 52	6 40
9 45½ corrected [corr.]		12 51½	

H. M.	Diſt. ♄ ab inf. Cap. ♑ [distance of ♄ from the lower head of ♑]	Decl. ♄ [declination of ♄]	Spica ♍ or. [Spica ♍, east]
8 51⅔	43 40⅙		5 53½
9 49 corrected [corr.]			
8 53⅓	43 40⅙	12 52	5 20
9 51½ corrected [corr.]		12 51½	
Conversely, ♄ from Vindemiatrix ♍ [Viceverſa ♄ a Vindemiatrice ♍]			
8…	35 35	12 51½	4 40½
9 53½ corrected [corr.]		12 52	
8 58	35 35		4 2
9 56½ corrected [corr.]			
9 0½	35 35¼		3 25
9 59½ corrected [corr.]			

For correcting the armillae [Pro Armillis corrigendis]	13 56
the declination of the heart of ♌ was taken [accipiebatur Declin. Cordis ♌]	13 55½

The place of ♄ from the immediately preceding observations of 25 April [Locus ♄ ex obſeruationibus proxime præcedentibus diej 25 Aprilis.]

H. 9 45½ Distance of ♄ from the lower head of ♑ [H.9 45½ Diſt. ♄ ab inf. cap. ♑]	43 40⅙
Declination of the lower head of ♑ [Declin. inf. cap. ♑]	28 56½
Right ascension of the same [Aſc. recta eiusdem]	110 8 18
Declination of ♄ [Declin. ♄]	12 52
Angle of the ascensional difference [Ang. diff. aſcenſ.]	43 49⅙
Therefore the right ascension of ♄ [Ergo Aſc. Recta ♄]	153 57½
Corresponding longitude [Reſp. Longitudo]	1 13⅓ ♍
Latitude [Latitudo]	1 54 50 B.
Conversely, from Vindemiatrix [Viceverſa a Vindemiatrice.]	
9 53½ Distance of ♄ from Vindemiatrix [Diſt. ♄ a Vindem.]	35 35
Declination of Vindemiatrix [Declin. Vindem.]	13 9⅔
Right ascension of the same [Aſc. recta eiusdem]	190 32⅙
Angle of the ascensional difference [Ang. diff. aſcenſ.]	36 33⅙
Therefore the right ascension of ♄ [Ergo Aſc. recta ♄]	153 59 0
Right ascension of ♄, limited [Aſc. recta ♄ limitata]	153 58⅙

10 May [DIE 10 MAIJ.]

♄ was observed from the heart of ♌, as follows [Obſeruabatur ♄ vt ſequitur a Corde ♌.].

H. M. S.	Dift. [distance]	Declin. ♄ [declination of ♄]	Altit. [altitude]	Spica ♍ occid. [Spica ♍, west]
10 14 0	7 23½	12 45¼	30 0	13 8
		12 44		
10 18 0	7 23 0	12 45¼		14 2
		12 44		
10 21	7 23¾ better [melior]			14 35
10 23⅙	7 23¾	12 45		15 5
		12 44		
Conversely, from Vindemiator ♍ [Viceverſa a Vindemiatore ♍]				
10 27½	35 20⅔	12 45½		16 1
		12 44½		
10 33⅙	35 20⅚			17 15

For the correction of the armillae: the declination of the heart of ♌, 13 55½, with one pinnule. The altitude of the heart of ♌ was about 29° [Pro correctione Armillarum Declin. Cordis ♌ 13 55½ vno pinnacidio. Altitudo Cordis ♌ erat 29° quaſi.].

1 December, morning [DIE 1 DECEMBRIS, MANE.]

♄ was observed near quadrature with the ☉ [Obſeruabatur ♄ iuxta Quadratum ☉lis.].

H. M.	Dift. ♄ a Corde ♌ [distance of ♄ from the heart of ♌]	Declin. ♄ B. [declination of ♄, north]	In æquatore Spica ♍ [on the equator, Spica ♍]
5 22⅙	26 38		33 24
5 24½	26 37⅔		32 40
5 27⅔	26 38⅙	5 33	31 45
		5 32½	
Conversely, from Spica ♍ [Viceverſa a Spica ♍]			
5 36 0	27 41⅓		29 46
5 39⅙	27 40½	among clouds [inter nubes]	28 58
5 41 0	27 40⅓		28 30
From the lower star of the left wing of ♍ [Ab inferiori alæ ſiniſtræ ♍]			
5 53⅓	13 51	uncertain because of [incertæ ob]	25 31
5 58⅙	13 50	the brightness of the ☾ [☾ ſplendorem]	24 17
6 1 0	13 50	uncertain because of the nearness of the ☾ [incerta ob vicinitatem ☾.]	

♄ crossed the meridian, having the altitude [Tranſijt ♄ per Meridianum habens Altitud.]

by the revolving instrument [per Volubilem]	39 38⅔

6 2 0 It had passed beyond the meridian by about ⅔ gr. [6 2 0 Fuit transgreßus Merid. quaſi ⅔ gr.]

Declination [Declinatio]	5 32⅙
	5 32½

Set, at about hour 5½, the distance of ♄ from the heart of ♌ at 26 38, from Spica at 27 41, and the declination at 5 33 B. Then test what distance from the lower star of the wing results, and whether it agrees or not. [Pone iuxta Horam 5½ Diſt. ♄ a Corde ♌ 26 38, a Spica 27 41, Declinationem 5 33 B. Et fac poſtea periculum, qualis proueniat diſtantia ab inferiore alæ, an conueniat nec ne.]

12 December, morning [DIE 12 DECEMBRIS, MANE.]

♄ was observed in □ [quadrature] with the ☉ [Obſeruabatur ♄ in □ ☉.].

H. M.	Diſt. ♄ a Spica [distance of ♄ from Spica]	Declinatio [declination]	In æquat. Spica ♍ occid. [on the equator, Spica ♍, west]
7 30	27 25⅚		8 5
7 36	27 26	5 29¾	9 37
		5 29	
Conversely, from the bright star of the neck of ♌ [Viceverſa a Lucida Ceruice ♌]			
7 40⅔	27 51 0		10 47
7 43⅔	27 51 0	5 29⅓	11 30
		5 30	

It was not possible to observe more, because of both the dawn and the rising clouds [Plura obſeruare non licuit tum propter auroram tum nubes exorientes.].

Set, at H. 7⅔, the distance of ♄ from Spica ♍ at 27 26, from the bright star of the neck at 27 51, and the declination at 5 29½ B. [Pone H. 7⅔ Diſt. ♄ a Spica ♍ 27 26, a lucida Ceruice 27 51, Declin. 5 29½ B.]

N.B. These observations of ♄ are good for establishing its greatest parallax, especially since the centre of its orb then lay near the perigee of the ☉ and the apogee of ♄ itself. Consult also the observations of the 1st and the 14th. [N. B. Hæ obſeruationes in ♄ bonæ ſunt pro eius parallaxi maxima conſtituenda, præſertim cum verſaretur centrum orbis eius iuxta perigæum ☉ & ipſius ♄ apogæum. Conſule etiam obſeruationes diej 1 & 14.]

14 December, morning [DIE 14 DECEMBRIS, MANE.]

♄ was observed near the meridian [Obſeruabatur ♄ iuxta Meridianum.].

Meridian altitude by the steel instrument [Altitudo Meridiana per Chalyb.]	39 34½
by the revolving instrument [per Volub.]	39 34⅔
Spica ♍ east [Spica ♍ orient.]	22⅓ [Greek: ἐν πλάτει (en platei, "in breadth")]
The southern scale-pan of ♎, east [Merid. Lanx ♎ or.]	45 49 good [bona]

Diſt. a Spica ♍ [distance from Spica ♍]	Declinatio [declination]	Altitudo [altitude]	In æquat. ſub 1 alæ Corui orient. [on the equator, the star under the 1st of the wing of Corvus, east]
26 57⅓			5 0
26 57⅙	5 30		4 0
	5 29		
26 56½			
26 57	5 30		3 20
	5 29⅓		
26 57			2 59
Conversely, the distance of ♄ from the star that is under the first of the wing of Corvus [Viceverſa diſt. ♄ a ſtella quæ ſub prima alæ Corui eſt.]			**Spicæ locus in Æquat. or. [the place of Spica on the equator, east]**
27 24⅚[1]			14 49
27 23	5 30⅓		13 20
	5 29⅚		
27 23			12 32
27 22⅚	5 29		
	5 29⅔		
27 22½			10 17
27 22½			9 0

Set the distance of ♄ from Spica at 26 57, from the star under the wing of Corvus at 27 23, and the declination at 5 29 to the north. From this you will have the greatest parallax of the orb, with the Sun near its perigee; and there will also be a fitting consideration for investigating its latitude at the middle limits of the annual orb. [Pone diſt. ♄ a Spica 26 57, a ſtella ſub ala Corui 27 23, Decl. in 5 29 Boream. Hinc habebis parallaxin orbis maximam, Sole iuxta Perigæum verſante, erit etiam pro Latitudine eius ſcrutanda in terminis medijs annui orbis oportuna conſideratio.]

OBSERVATIONS OF JUPITER [OBSERUATIONES IOUIS.]

3 January, evening [DIE 3 JANUARIJ, VESPERI.]

H. 4 M. 19⅔: transit of ♃ across the meridian, having the altitude [H. 4 M. 19⅔ Tranſitus ♃ per Merid. habentis Altitud.]:

by the steel instrument [per Chalyb.]		32 29½
by the revolving instrument [per Volub.]		32 29⅚
Declination [Declinatio]	1 36¾ M.	
	1 36⅚	

Afterwards ♃ was observed in distances and declinations as follows; I [?] from the mouth of Pegasus [Poſtea obſeruabatur ♃ in diſtantijs & declinationibus vt ſequitur, I ab ore Pegaſi.].

H. M.	Diſtantia [distance]	Declin. ♃ M. [declination of ♃, south]	Aldebora orient. [Aldebaran, east]
5 4 0	39 25⅚		53 29
5 7½	39 25⅔	1 36½	52 29
		1 36⅔	
5 9⅚	39 25⅔		
5 13 0	39 26		51 6
5 16 0	39 25¾	1 36½	50 20
		1 36⅓	
Conversely, ♃ from the bright star of the jaw of Cetus [Viceverſa ♃ a Lucida Mandib. Cete]			
5 22⅖	41 5⅔		48 47
5 24¾	41 4⅚	1 36¼	
		1 36⅓	
5 27 0	41 5		47 40
5 30 0	41 4⅔	1 36⅔	46 49⅚
		1 36½	

To test the quadrants and the armillae, the meridian altitude and the declination of the bright star of ♈ were observed [Pro examinandis Quadrantibus ac Armillis obſeruabatur Altitudo Meridiana & Declinatio Lucidæ ♈.].

6 8½ Meridian altitude by the steel instrument [Altit. Merid. per Chalyb.]	55 26⅓
by the revolving instrument [per Volub.]	55 26⅚
Declination [Declinatio]	21 31⅓
by the armillae [per Armillas]	21 31

15 January, evening [DIE 15 JANUARIJ, VESPERI.]

♃ was observed approaching its ☌ [conjunction] with the ☉ [Obſeruabatur ♃ tendens ad ☌ ☉.].

H. M.	Dist. ♃ a Scheat Peg. [distance of ♃ from Scheat of Pegasus]	Decl. ♃ [declination of ♃]	Alt. ♃ [altitude of ♃]	Luc. pes Orion. or. [the bright star of Orion's foot, east]
6 22	33 2	0 43⅙ M. 0 43¼		30 48
6 31	33 3		23 28	28 48½
6 33	33 3	0 43 0 43⅙	23 17	28 20
Conversely, from the bright star of ♈ [Viceversa a Lucida ♈]				
6 38	32 53½		23 0	27 7
6 40¾	32 53		22 41	26⅓
6 43	32 53⅙	0 42⅚ 0 42⅔	22 3	
6 48⅔	32 53¼		21 0	24 22

In seeking the place of ♃ from the present observations, you can set up the calculation by the usual triangular practice, without using the declination. The sky was moderately clear while these observations were being made, but there was a rather strong wind from the west [Potes in perquirendo loco ♃ e præsentibus obseruationibus calculum ad praxin Triangularem vsitatam instituere absque declinatione adhibita. Erat autem mediocriter serenum dum hæc obseruabantur, sed ventus validior ab occasu.].

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

16 January, evening [DIE 16 JANUARIJ, VESPERI.]

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

H. M.	Dist. ♃ a prima alæ Peg. [distance of ♃ from the first of the wing of Pegasus]	Decl. [declination]	Altit. [altitude]	Aldebora [Aldebaran]
5 48	24 23		28 21	31 42
5 32 22 corrected [corr.]				
5 51⅓	24 22⅔	0 38⅚	28 9	30 49
5 36 6 corrected [corr.]		0 39½		
5 53½	24 23		27 55	30 28
Conversely, from the bright star of the jaw of Cetus [Viceversa a Lucida Mandib. Cete]				
5 58½	38 56		27 34	29 6
5 42 58 corrected [corr.]				
6 1½	38 56¼	0 38⅚ 0 39⅓	27 14	28 29
6 4⅓	38 56⅙		27 2	27 43

To correct the armillae, the extreme star of the wing of Pegasus was observed [Pro corrigendis Armillis obseruabatur extrema alæ Pegasi]: 12 58; 12 57⅓.

For the place of ♃ on 16 January [Pro loco ♃ die 16 Januarij.]

$5^{H}32'22''$ Declination of ♃, south [Declin. ♃ M.]	0 38⅚
Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Peg.]	24 23
Declination of Markab [Declin. Marchab]	13 3 42
Its right ascension [Aſc. recta eiuſdem]	341 10
Angle of the ascensional difference [Ang. diff. aſcenſ.]	20 20 8
Right ascension of ♃ [Aſc. recta ♃]	1 30 8
Conversely [Viceverſa]	
5 42 58 Distance of ♃ from the bright star of the jaw of Cetus [Diſt. ♃ a luc. mand. Cete]	38 56⅙
Declination of the jaw of Cetus [Declin. mandib. Cete]	2 27 30
Its right ascension [Aſc. recta eiuſdem]	40 21 17
Angle of the ascensional difference [Ang. diff. aſcenſ.]	38 49 20
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	1 31 57
Right ascension, limited [Aſc. recta limitata]	1 31 2
Corresponding longitude [Reſp. Longitudo]	1 7 49 ♈
Latitude [Latitudo]	1 11 51 M.

26 January, evening [DIE 26 JANUARIJ, VESPERI.]

♃ was observed near its ⚹ [sextile] with the ☉ [Obſeruabatur ♃ circa ⚹ ☉.].

H. M.	Diſt. ♃ a Cap. Androm. [distance of ♃ from the head of Andromeda]	Declin. Bor. [declination, north]	Altit. [alti-tude]	Sin. hum. Orion. or. [the left shoulder of Orion, east]
6 5½	27 24		26 18	41 49
	from Scheat of Pegasus [a Scheat Pegaſi]			
6 10	33 31	0 8¼	25 55	40 48
		0 9		
6 12⅔	33 30		25 30	40 13
6 15⅓	33 31	0 8⅓	25 20	39 37
		0 9		
Conversely, from the bright star of ♈ [Viceverſa a Lucida ♈]				
6 18⅚	30 55¼			38 38
6 22	30 55¼		24 40	37 58
6 24⅙	30 55⅓	0 8½	24 30	37 24
		0 9½		

For the place of ♃ on 26 January [Pro loco ♃ ad diem 26 Januarij.]

$5^{H}29^{M}30^{S}$ Declination of ♃ [Declin. ♃]	0 9 B.
Distance of ♃ from Scheat of Pegasus [Diſt. ♃ a Scheat Pegaſi]	33 31
Declination of Scheat [Declin. Scheat]	25 54 15

Its right ascension [Aſc. recta eiuſdem]	341 5 24
Angle of the ascensional difference [Ang. diff. aſcenſ.]	22 14 38
Right ascension of ♃ [Aſc. recta ♃]	3 20 2
Conversely, from the bright star of ♈ [Viceverſa a lucida ♈]	
5 49 Distance [Diſtantia]	30 55¼
Declination of the bright star of ♈ [Declin. luc. ♈]	21 31 33
Its right ascension [Aſc. recta eiuſdem]	26 9
Angle of the ascensional difference [Ang. diff. aſcenſ.]	22 54 57
Right ascension of ♃ [Aſc. recta ♃]	3 14 3
Right ascension, limited [Aſcenſio recta limitata]	3 17 2
Corresponding longitude [Reſp. Longitudo]	3 5 32 ♈
Latitude [Latitudo]	1 9 25 B.

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

♃, from which ♀ was observed, was observed in this way [Obſeruabatur ♃ a quo ♀ obſeruata fuit in hunc modum.].

H. M.	Diſt. ♃ a Luc. Mand. Cete [distance of ♃ from the bright star of the jaw of Cetus]	Decl. ♃ Bor. [declination of ♃, north]	Altit. ♃ [altitude of ♃]	Aldeb. or. [Aldebaran, east]
6 7⅙	36 31½		23 44	
6 10 0	36 32½	0 24½	23 34	13 37
	better [melior]	0 24		
6 13	36 31⅔		23 15	13 19
Here the clock was corrected, because it was running 19 minutes more than it should [Hic corrigebatur Horolog. quod 19 Min. plus iuſto mouebatur]				**Luc. hum. Orion. or. [the bright star of Orion's shoulder, east]**
5 56½	36 31⅚	0 24		
		0 24⅚		32 36

For the place of ♃ on 29 January [Pro loco ♃ die 29 Januarij.]

5 48 Distance of ♃ from the bright star of the jaw of Cetus [Diſt. ♃ a luc. mandib. Cete]	36 31⅔
Declination of the bright star of the jaw of Cetus [Declin. luc. mand. Cete]	2 27 B.
Declination of ♃ [Declin. ♃]	0 24 B.
Angle of the ascensional difference [Ang. diff. aſcenſ.]	36 29
Right ascension of the bright star of the jaw [Aſc. recta luc. mand.]	40 21 17
Therefore the right ascension of ♃ [Ergo Aſc. recta ♃]	3 52 20
Corresponding longitude [Reſp. Longitudo]	3 42 42 ♈
Latitude [Latitudo]	1 10 4 B.

31 January [DIE 31 JANUARIJ.]

♃ was observed as follows, on account of ♀ [Obſeruabatur ♃ vt ſequitur propter ♀.].

H. M.	Diſt. a Luc. Mandib. Cete [distance from the bright star of the jaw of Cetus]	Declin. Bor. [declination, north]	Luc. hum. Orion. or. [the bright star of Orion's shoulder, east]
6 28	36 8		26 39
6 31½	36 8⅓	0 35½	25 53
		0 36	
6 34	36 8½		25 29

8 5½: Again, to test the quadrants, the meridian altitude of the bright star of Orion's shoulder was observed [Denuo pro examinandis Quadrantibus obſeruabatur Lucidi humeri Orion. Altit. Merid.].

by the steel instrument [per Chalyb.]	41 20¾
by the revolving instrument [per Volub.]	41 22

8 48⅔: Meridian altitude of the bright star of the foot of ♊ [Altit. Merid. lucidi pedis ♊].

by the steel instrument [per Chalyb.]	50 45⅙
by the revolving instrument [per Volub.]	50 45½
The true declination, reduced, would be [Vera declinatio reducta eßet]	16 40¼
Hence the altitude [Vnde Altitudo]	50 45¾

9 2½: Meridian altitude of Canis Major [Altit. Merid. Canis maioris].

by the steel instrument [per Chalyb.]	17 55 about [fere]
by the revolving instrument [per Volub.]	17 54⅚

9 47⅔: Meridian altitude of the lower head of ♊ [Altit. Merid. inferioris Capitis ♊].

by the steel instrument [per Chalyb.]	63 0⅙
by the revolving instrument [per Volub.]	63 1 0
Its declination [Declinatio huius]	28 56 doubtful [dubia]
	28 57

N.B. These altitudes were observed in order to test the meridian altitude of the ☾ with the various quadrants; see the observations of the ☾ above [N.B. Hæ altitudines obſeruatæ ſunt pro ☾ altitudine Meridiana per Quadrantes diuerſos examinanda, vide ſupra obſeruationes ☾.].

True declination of the lower head of ♊ [Decl. vera infer. Cap. ♊]	28 56½
of the bright star of the foot of ♊ [luc. pedis ♊]	16 40

3 February [DIE 3 FEBRUARIJ.]

♃ was observed as follows; I. [?] from the bright star of the jaw of Cetus [Obſeruabatur ♃ vt ſequitur, I. a Luc. Mand. Cete.].

H. M.	Diſtantia [distance]	Decl. B. [declination, north]	Altit. ♃ [altitude of ♃]	Dexter & luc. hum. Orion. or. [the right and bright shoulder of Orion, east]
5 20⅓	35 32⅚	0 51	22 55	
		0 50½		
5 21⅔	35 34			30 22
5 23⅓	35 35	0 51		30 2
		0 50½		
5 25	35 35			29 36
5 27	35 35	0 51⅚		29 6
		0 51		

23 February [DIE 23 FEBRUARIJ.]

Near its setting, ♃ was observed together with ♀, as follows [Obſeruabatur iuxta occaſum cum ♃ tum ♀ vt ſequitur.].

H. M.	Diſt. ♃ & ♀ [distance of ♃ and ♀]	Declin. [declination]	Altit. [altitude]
5 59⅚	5 46½		♀ 9 24
6 3	5 46¼	♃ 2 41 B.	♃ 13 50
		2 40½	
6 10		♀ 0 27 B.	♀ 8 16
6 14½		0 27⅓	♀ 7 30
	Diſt. ♃ a Luc. ♈ [distance of ♃ from the bright star of ♈]		
6 25⅙	25 17¼	♃ 2 41⅚ vno [with one]	♀ 6 30
6 29⅙	25 16½	2 42¼ vno [with one]	♀ 5 57
6 35⅓		2 42	♃ 10 0

H. M.	Dist. ♃ & ♀ [distance of ♃ and ♀]	Declin. [declination]	Altit. [altitude]
		2 42⅓	

These distances were observed with the old sextant after its correction. The sky was fairly clear, but a rather gusty east wind was blowing [Hæ distantiæ obseruatæ sunt per Sextantem veterem post eius correctionem. Erat autem satis serenum, sed ventus flatulentior subsolanus.].

Afterwards we tested the same sextant by taking the distance between the bright star of ♈ and Aldebaran [Postea examinabamus eundem Sextantem capiendo distantiam inter Lucidam ♈ & Aldeb.]:

35 32⅓	
35 32⅓	

To correct the clock: the bright star of Orion's foot, west, 14 11, when the clock stood at H. 6 M. 49 [Pro horologio corrigendo Lucidus pes Orionis occid. 14 11 cum eßet Horologium H. 6 M. 49.].

The place of ♃ from the immediately preceding observations [Locus ♃ ex obseruationibus proxime præcedentibus.].

H. 6 25 Distance of ♃ from the bright star of ♈ [Dist. ♃ a lucida ♈]	25 17¼
Limited declination of ♃ [Declin. ♃ limitata]	2 42 25
Altitude of ♃ [Altit. ♃]	11½
Declination of the bright star of ♈ [Declin. luc. ♈]	21 31 30
Its right ascension [Asc. recta eiusdem]	26 9
Angle of the ascensional difference [Ang. diff. ascens.]	17 22
Therefore the right ascension of ♃ [Ergo asc. recta ♃]	8 47
Corresponding longitude [Resp. Longitudo]	9 7⅔ ♈
Latitude [Latitudo]	0 59⅚ M.

24 February, evening [DIE 24 FEBRUARIJ, VESPERI.]

H. M.	Dist. ♃ ab Aldebora [distance of ♃ from Aldebaran]	Decl. ♃ [declination of ♃]	Alt. ♃ [altitude of ♃]	Luc. hum. Orion. occ. [the bright star of Orion's shoulder, west]
6 37	54 46½		8 55	3 56
6 41⅙	54 46⅙	2 48½	8 29	
		2 48⅔		
6 45½	54 45½	2 48¾	8 0	5 40
		2 49		

To correct the declinations in the armillae [Pro corrigendis Declinationibus in Armillis]:

Declination of Orion's left shoulder [ſiniſtri humeri Orionis Declinatio]		6 0
		5 59½
Its altitude [Altitudo eiusdem]	8 26	

Of Orion's right shoulder [Dextri humeri Orionis]		7 19½
Declination [Declinatio]		7 19⅚
Altitude [Altitudo]	13 0	

25 February, evening [DIE 25 FEBRUARIJ, VESPERI.]

H. M.	Diſt. ☿ ab oculo ♉ [distance of ☿ from the eye of ♉]	Decl. ☿ [declination of ☿]	Alt. ☿ [altitude of ☿]	Luc. hum. Orion. occ. [the bright star of Orion's shoulder, west]
6 36½	54 32¼	2 53	9 2½	4 8
		2 52½		
6 40	54 32⅙	2 54 vtroque [with both]	8 35	4 55
6 44⅓	54 32⅙	2 53½	7 56	6 6
		2 54		

26 February [DIE 26 FEBRUARIJ.]

☿ was observed [Obſeruabatur ☿.].

H. M.	Diſt. ab oculo ♉ [distance from the eye of ♉]	Declin. B. [declination, north]	Altit. [altitude]	Can. mai. orient. [Canis Major, east]
6 38½	54 17⅓			6 21
6 41	54 17⅙		7 39	
6 49	54 17	3 0⅓	6 44	
		3 0		
6 58½		3 1½	5 40	
		3 2		

This evening the sky was exceptionally clear and fairly calm [Erat hac veſpera apprime ſerenum ac ſatis tranquillum.].

27 February [DIE 27 FEBRUARIJ.]

H. 5 M. 45: ♃ was distant from ♀, by the Radius, 1 46. Declination of ♀ 2 30 B.; altitude of ♀ 10 0 [H. 5 M. 45 Diſtabat ♃ a ♀ per Rad. 1 46 / Declin. ♀ 2 30 B. Altit. ♀ 10 0].

29 February [DIE 29 FEBRUARIJ.]

As ♃ and ♀ were coming into very close conjunction, they were observed in this way [Cum ♃ & ♀ proxime coniungerentur, obſeruabantur in hunc modum.].

H. M. S.	Diſt. æquat. ♃ & ♀ [equatorial distance, ♃ and ♀]	Can. mai. in Æquat. or. [Canis Major on the equator, east]	Altit. [altitude]	Declin. [declination]
6 8 35	♃ 76 50⅔	10 10⅓	♀ 10 26	♀ 3 31
6 8 57	♀ 76 38⅙	9 53¾	♀ 10 22	vno [with one]
6 14 28	♀ 78 10½	8 41	♀ 9 30	
6 15 3	♃ 78 30	8 15½	♃ 9 6	♃ 3 15⅙ 3 15½
6 20 7	♃ 79 52	6 47⅔	♃ 8 35	♀ 3 33⅙
6 20 20	♀ 79 52	6 42½	♀ 8 39	vtroque [with both]
6 24 10	♃ 81 0	5 38¾	♃ 7 57	♃ 3 16 3 17
6 24 30	♀ 81 0	5 33¼	♀ 8 3	
6 27 11	♃ 81 51½	4 46	♃ 7 35	
6 27 36	♀ 81 51½	4 40½	♀ 7 38	
6 31 19	♃ 82 56¾	3 40⅚	♃ 6 59	
6 31 35	♀ 82 56¾	3 35⅙	♀ 7 4	♀ 3 35 3 35¼

	Diſt. ♃ ab oculo ♉ [distance of ♃ from the eye of ♉]	Can. mai. occ. [Canis Major, west]	Altit. ♃ [altitude of ♃]	Declin. ♃ [declination of ♃]
7 47½	53 30⅙	3 7	2 43	
6 59 7 50	53 29	3 47	1 46	3 23⅔ vtroque [with both]

To correct the armillae and to determine the refraction, the declination of Orion's left shoulder near the horizon was observed: 6 0 0 and 6 0⅔, at about H. 10½ [Pro Armillis corrigendis cognoſcendaque Refractione obſeruabatur Declinatio ſiniſtri humeri Orionis Horizonti vicini 6 0 0 / 6 0⅔ H. 10½ quaſi].

Its altitude was then 7⅓. The armillae are in excess by about one minute [Erat tunc Altit. eius 7⅓. Abundant Armillæ vno quaſi minuto.].

Quite often it could not be observed because of the brightness of the ☾ [Sæpius ob ☾æ ſplendorem obſeruari haud poterat.].

For the place of ♃ on 29 February [Pro loco ♃ die 29 Feb.].

H. 6 M. 30 Right ascension of ♃ [Aſcenſio recta ♃]	10 13
Declination [Declinatio]	3 16 B.
Corresponding longitude [Reſp. Longitudo]	10 39 50 ♈
Latitude [Latitudo]	1 3⅓ M.
7 47½ Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	53 29½
Declination of ♃ [Declin. ♃]	3 23
Declination of Aldebaran [Declin. Aldeb.]	15 37½
Its right ascension [Aſc. recta eiusdem]	63 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	52 57 50
Right ascension of ♃ [Aſcenſio recta ♃]	10 14⅙
Corresponding longitude [Reſp. Longitudo]	10 43⅔ ♈
Latitude [Latitudo]	0 57⅓ M.

The place of ♃ from the observations immediately following, of 6 March [Locus ♃ ex obſeruationibus proxime ſequentibus diej 6 Martij.].

H. 6 39⅙ Distance from Aldebaran [Diſt. ab Aldeb.]	52 9
Declination of ♃ [Declin. ♃]	3 53 B.
Angle of the ascensional difference [Ang. diff. aſcenſ.]	51 42⅔
Therefore the right ascension of ♃ [Ergo Aſc. recta ♃]	11 29⅓
Corresponding longitude [Reſp. Longitudo]	12 4⅔ ♈
Latitude [Latitudo]	0 59⅙ M.

6 March [DIE 6 MARTIJ.]

In the evening ♃ was observed approaching the ☉ [Veſperi obſeruabatur ♃ ☉ appropinquans.]. These times are not from the clock but were computed from the equatorial distances [Hæc tempora non ſunt ex horologio, ſed per Æquatorias diſtantias ſupputata.].

H. M.	Diſt. ♃ ab oculo ♉ [distance of ♃ from the eye of ♉]	Decl. ♃ [declination of ♃]	Altit. [altitude]	Can. mai. orient. [Canis Major, east]
6 39⅙	52 9		6 1	0 23
6 42⅓	52 10½	3 53⅓	5 36	occ. [west]
		3 52		0 24
6 44⅔	52 9½			0 59

H. M.	Dift. ♃ ab oculo ♉ [distance of ♃ from the eye of ♉]	Decl. ♃ [declination of ♃]	Altit. [altitude]	Can. mai. orient. [Canis Major, east]
6 46⅓	52 9	3 52½		1 24
		3 53½		

18 July, morning [DIE 18 JULIJ, MANE.]

♃ was observed as follows, being near □ ☉ [Obſeruabatur ♃ vt ſequitur circa □ ☉ exiſtens.].

H. M.	Dift. ♃ a 1 alæ Pegaſi [distance of ♃ from the first of the wing of Pegasus]	Decl. ♃ [declination of ♃]	Altit. [altitude]	Luc. Vult. occid. [the bright star of the Vulture, west]
1 42	54 10¾	13 23⅔	23 12	35 47
		13 24		
1 45	54 11¼	13 24⅓		36 45
		13 23⅔		
1 48	54 11¼	the same [eadem]	24 0	37 2
Conversely, from the northern horn of ♉ [Viceverſa a Boreali cornu ♉]				
2 3		13 24⅓		41 41
		13 23¾		
2 8	33 54⅚	13 24⅓		42 49
	twice [bis]	13 23¾		
2 19	33 54⅔			

25 July, morning [DIE 25 JULIJ, MANE.]

♃ was observed near □ ☉ as follows [Obſeruabatur ♃ circa □ ☉ vt ſequitur.].

H. M.	Dift. ♃ a 1 alæ Pegaſi [distance of ♃ from the first of the wing of Pegasus]	Declin. [declination]	Altit. [altitude]	Dift. æquat. Vult. occ. [equatorial distance, the Vulture, west]
1 42		13 35⅙	21 0	
		13 34		
1 48	54 48			
1 53	54 48½	13 35		35 30
		13 34		
1 57	54 47⅔			36 30
Conversely, from the northern horn of ♉ [Viceverſa a boreali cornu ♉]				
2 7½	37 48½			39 15
2 11	37 45½	13 35		40 5½
		13 34⅓		
2 15	37 46 0			41 8

H. M.	Diſt. ♃ a 1 alæ Pegaſi [distance of ♃ from the first of the wing of Pegasus]	Declin. [decli-nation]	Altit. [alti-tude]	Diſt. æquat. Vult. occ. [equatorial distance, the Vulture, west]

The place of ♃ from the observations of 25 July [Locus ♃ ex obſeruationibus 25 Julij.].

Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Pegaſi]	54 48½
Declination of ♃ [Declin. ♃]	13 34½ B.
Declination of the first of the wing [Declin. primæ alæ]	13 3¾
Its right ascension [Aſc. recta eiusdem]	341 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	56 27⅓
Therefore the right ascension of ♃ [Ergo Aſc. recta ♃]	37 39⅓
Conversely, from the northern horn of ♉ [Viceverſa a boreali cornu ♉]	
Distance of ♃ from it [Diſt. ♃ ab eo]	37 45½
Declination of the northern horn of ♉ [Declin. bor. cornu ♉]	28 11⅔
Its right ascension [Aſc. recta eiusdem]	75 12⅙
Angle of the ascensional difference [Ang. diff. aſcenſ.]	37 29⅚
Right ascension of ♃ [Aſc. recta ♃]	37 42¼

But the northern horn of ♉ was not entirely free of refraction, and so we limited it thus [Sed boreale Cornu ♉ non fuit plane a Refractione liberum, itaque ita limitauimus:]:

Right ascension, limited [Aſc. recta limitata]	37 40⅓
Corresponding longitude [Reſp. Longitudo]	9 40½ ♉
Latitude [Latitudo]	1 14⅚ B.

But according to the calculation [Iuxta calculum vero]:

Alfonsine [Alphonſinum]	11 24⅚ ♉
Of Copernicus, however [Ad Copernici autem]	11 19⅙ ♉

8 August, morning [DIE 8 AUGUSTI, MANE.]

♃ was observed as follows; I [?] from the first of the wing of Pegasus [Obſeruabatur ♃ vt ſequitur, I a prima alæ Pegaſi.].

N.B. ♃ is near its first retrogradation and its quadrature with the ☉ [N.B. ♃ circa primam retrogradationem & □ram cum ☉.].

H. M.	Tempus correctum [corrected time]	Diſt. ♃ a I alæ Peg. [distance of ♃ from the first of the wing of Pegasus]	Declin. ♃ [declination of ♃]	Oculus ♉ orient. [the eye of ♉, east]
4 0⅔	3 7⅙	55 37⅔		48 20
4 4¼	3 10	55 37⅔	13 48 13 46½	47 35
4 7 Conversely, ♃ from Aldebaran [Viceverſa ♃ ab Aldebora.]	3 12	55 38		47 6
4 20	3 19	23 56		45 18
4 23	3 21	23 56⅙		44 49
4 26⅙	3 25	23 56½		44 19
5 3			13 45½ with one [vno]	

To test the sextant, the distance of the bright star of ♈ from Aldebaran was observed [Pro examine Sextantis obſeruabatur diſtantia Lucidæ ♈ ab Aldebaran]: 35 31; 35 31. Uncertain, because of the dawn [Incertum propter Auroram.].

To test the great armillae there was observed [Pro examine Armillarum maximarum obſeruabatur] 21 31⅓; declination of the bright star of ♈ [Declin. Lucidæ ♈] 21 31.

Afterwards ♃ was observed, declination 13 46¼, 13 47½, when the time on the clock was H. 5 23 [Poſtea obſeruabatur ♃ Decl. 13 46¼ / 13 47½ cum tempus eßet in horologio H. 5 23.].

At H. 6 M. 12 ♃ crossed the meridian, with altitude [H. 6 M. 12 Tranſijt ♃ per Meridianum habens Altit.]:

on the steel instrument [in Chalyb.]	47 50⅔ good [bona]
on the revolving instrument [in Volub.]	47 51½ less certain [incertior]

Correct the clock from the above [Corrige Horologium ex ſuperioribus.].

N.B. At this time the ☉ had risen about one degree above the horizon [N.B. Erat hoc tempore ☉ ſupra Horizontem eleuatus circiter vnum gradum.].

The place of ♃ from the observations of 8 August [Locus ♃ ex obſeruationibus diej 8 Aug.].

3^H 7^M Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Peg.]	55 37⅔
Declination of the first of the wing [Declin. primæ alæ]	13 3 45
Its right ascension [Aſc. recta eiusdem]	341 12
Declination of ♃ [Declin. ♃]	13 47¼
Angle of the ascensional difference [Ang. diff. aſcenſ.]	57 19 42
Therefore the right ascension of ♃ [Ergo Aſcenſio recta ♃]	38 31 42

Conversely, from Aldebaran [Viceverſa ab Aldebora.]:

3 19 Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	23 56
Declination of Aldebaran [Declin. Aldeb.]	15 37 45
Its right ascension [Aſc. recta eiusdem]	63 13¼
Angle of the ascensional difference [Ang. diff. aſcenſ.]	24 42⅙
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	38 31⅙
Ascension, limited [Aſcenſio limitata]	38 31½
Corresponding longitude [Reſp. Longitudo]	10 32⅓ ♉
Latitude [Latitudo]	1 18⅚ M.
Place of ♃ at the same time, from the Alfonsine Tables [Locus ♃ ad idem tempus ex Tabul. Alph.]	10 54 ♉
But from the calculation of Copernicus [Ex Copernici autem calculo]	9 51.

1 October, evening [DIE 1 OCTOBRIS, VESPERI.]

♃ was observed approaching opposition to the ☉, in the manner that follows [Obſeruabatur ♃ oppoſitioni ☉ appropinquans in modum qui ſequitur.].

H. M.	Diſt. ♃ ab extr. alæ Peg. [distance of ♃ from the end of the wing of Pegasus]	Declin. ♃ [declination of ♃]	Diſt. æquat. oris Peg. occ. [equatorial distance, the mouth of Pegasus, west]
10 46	36 53⅓	12 50½	27 56
		12 50	
10 53⅓	36 53		29 59½
♃ conversely, from Aldebaran [♃ viceverſa ab Aldebora.]			
10 58⅓	26 27		31 10
11 0⅓	26 28		32 0
11 3½	26 27½	12 50½	32 36
		12 50	

This evening was exceptionally clear and calm, but the brightness of the ☾ somewhat hindered the observations [Erat hac veſpera apprime ſerenum & tranquillum, ſed ſplendor ☾ obſeruationibus nonnihil obfuit.].

For the place of ♃ on 1 October [Pro loco ♃ ad diem 1 Octobris.]:

Distance of ♃ from the end of the wing of Pegasus [Diſt. ♃ ab extrema alæ Pegaſi]	36 53⅙
Declination of ♃ [Declin. ♃]	12 50¼
Declination of the end of the wing of Pegasus [Decl. extr. alæ Pegaſi]	12 56⅔
Its right ascension [Aſc. recta eiusdem]	358 11 0
Angle of the ascensional difference [Ang. diff. aſcenſ.]	37 52½
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	36 3½

Conversely, from Aldebaran [Viceverſa ab Aldebora.]	
Distance from Aldebaran [Diſt. ab Aldeb.]	26 27½
Declination and right ascension of Aldebaran as before [Decl. Aldeb. & aſc. recta vt ante]	
Angle of the ascensional difference [Ang. diff. aſcenſ.]	27 9 35
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	36 3⅔
Right ascension, limited [Aſcenſio recta limitata]	36 3 35
Corresponding longitude [Reſp. Longitudo]	7 59⅔ ♉
Latitude [Latitudo]	1 26 50M.

9 October [DIE 9 OCTOBRIS.]

Around the following midnight ♃ was observed, moving towards ☍ ☉, as follows [Circa mediam noctem ſequentem obſeruabatur ♃ tendens in ☍ ☉ vt ſequitur.].

H. M.	Diſt. ♃ a 1 alæ Pegaſi [distance of ♃ from the first of the wing of Pegasus]	Declin. [declination]	Diſt. æquat. extr. alæ Peg. [equatorial distance, the end of the wing of Pegasus]
11 43⅚	52 24⅙ +		
11 52 0	52 25	12 30	24 0
		12 29½	
11 54½	52 24⅚		24 45

Meridian altitude of the bright star of ♈ [Altitudo Meridiana Lucidæ ♈.]:

12 8½ by the steel instrument [per Chalyb.]	55 37
by the revolving instrument [per Volub.]	55 37⅚

Here the revolving instrument, tested precisely, behaved quite well [Hic Volubilis ad amußim exploratus ſatis bene ſe habuit.].

Conversely, from Aldebaran [Viceverſa ab Aldebora.]:

12 16½	27 30⅙		30 30
12 26⅓	27 31½ doubtful [dubia]		
12 28⅓	27 30		33 50
12 30⅙	27 30	12 29⅓	34 20
		12 29	
12 39⅓	Meridian altitude of ♃ [Altid. ♃ Merid.]		36 45

by the steel instrument [per Chalyb.]	46 33⅚
by the revolving instrument [per Volub.]	46 34⅚

Rather, use the revolving instrument, setting the meridian altitude of ♃ at 46 34¾. Set the distance from the first of the wing [?] at 52 24⅚, from Aldebaran at 27 30¼, and the declination at 12 29¼ [Vtere potius Volubili ponendo Altitudinem Merid. ♃ 46 34¾ Pone diſtantiam a 1 alæ 52 24⅚ ab Aldebora 27 30¼ declinationem 12 29¼].

To test the old sextant, which we used in observing ♃, the distance between the bright star of ♈ and Aldebaran was taken [Pro examinando Sextante veteri quo vſi ſumus in ♃ obſeruando capiebatur diſtantia inter Lucidam ♈ & Aldeboran]: 35 32½; 35 32⅓. It is therefore clear that the sextant is in quite good order [Patet itaque quod Sextans ſatis bene ſe habeat.].

This evening was very clear and fairly calm [Erat admodum ſerenum & ſatis tranquillum hac veſpera.].

For the place of ♃ on 9 October [Pro loco ♃ die 9 Octobris.]:

Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldebora]	27 30
Declination of ♃ [Declin. ♃]	12 29½ B.
Right ascension and declination of Aldebaran as before [Aſc. recta & decl. Aldeb. vt ante.]	
Angle of the ascensional difference [Angulus diff. aſcenſ.]	28 11
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	35 2¼

Conversely, from Markab [Vice verſa a Marchab.]:

Distance [Diſtantia]	52 25
Right ascension of Markab [Aſc. recta Marchab]	341 10 35
Its declination [Declin. eiusdem]	13 3 20
Angle of the ascensional difference [Ang. diff. aſcenſ.]	53 57 0
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	35 3 0
Right ascension, limited [Aſcenſio recta limitata]	35 2⅔
Corresponding longitude [Reſp. Longitudo]	6 54 40 ♉
Latitude [Latitudo]	1 27½ M.
From the Alfonsine Tables, for the same time [Ex Tab. Alph. ad idem tempus]	6 42 ♉
From the calculation of Copernicus [Ex calculo Copernici]	5 41 ♉

12 October [DIE 12 OCTOBRIS.]

Around midnight ♃ was observed, moving towards ☍ ☉, as follows [Circa mediam noctem obſeruabatur ♃ tendens in ☍ ☉ vt ſequitur.].

H. M.	Dist. a bor. cornu ♉ [distance from the northern horn of ♉]	Declin. [declination]	Dist. æquat. luc. pedis Orion. orient. [equatorial distance, the bright star of Orion's foot, east]
11 1⅝	40 55		
From the eye of ♉ [ab oculo ♉]			
11 3½	27 53		
11 11⅙			62 30
From the first of the wing of Pegasus [a prima alæ Pegasi]			
11 49⅔	52 1 among the clouds [inter nubes]		
11 53⅙	52 2½	12 20	
12 2 0	52 2⅔		
From the eye of ♉ [ab oculo ♉]			
12 12⅝	27 53⅔ among the clouds [inter nubes]		
12 15⅝	27 53	12 20	
		12 20⅓	

The meridian altitude of ♃ was taken around midnight [Altitudo ♃ Meridiana circa mediam noctem sumebatur.]:

12 39 by the steel instrument [per Chalyb.]	46 26	after the correction of the steel instrument [post correctionem Chalybei]
by the revolving instrument [per Volub.]	46 25⅝	
Equatorial distance of the eye of ♉, east [Dist. æquat. oculi ♉ orient.]	28 7	

This evening ♃ was observed mostly among passing clouds, while a somewhat stronger east wind was blowing [Obseruatus est ♃ vt plurimum hac vespera inter transcurrentes nubes, flante vento subsolano aliquanto vehementiori.].

For the place of ♃ on 12 October [Pro loco ♃ die 12 Octobris.]:

Distance of ♃ from Aldebaran [Dist. ♃ ab Aldeb.]	27 53⅓
Declination of ♃ [Declin. ♃]	12 20½
Angle of the ascensional difference [Ang. diff. ascens.]	28 33 47
Therefore the right ascension of ♃ [Ergo asc. recta ♃]	34 39 28
Conversely, from the first of the wing of Pegasus [Viceversa a prima alæ Pegasi]	
Distance [Distantia]	52 2½
Declination and right ascension of Markab as before [Decl. & asc. recta Marchab vt ante]	
Angle of the ascensional difference [Ang. diff. ascens.]	53 30 0
Therefore the right ascension of ♃ [Ergo asc. recta ♃]	34 40 35

Right ascension, limited [Aſcenſio recta limitata]	34 40
Corresponding longitude [Reſp. Longitudo]	6 30⅔ ♉
Latitude [Latitudo]	1 27
	27M.

15 October [DIE 15 OCTOBRIS.]

Around midnight ♃ was observed approaching ☍ ☉, in this manner. These times are corrected [Obſeruabatur ♃ circa mediam noctem ☍ ☉ appropinquans in hunc modum. Hæc tempora ſunt correcta.].

H. M. S.	Diſt. 1 alæ Pegaſi [distance from the first of the wing of Pegasus]	Declin. ♃ [declination of ♃]	Diſt. æquat. 1 alæ Peg. [equatorial distance, the first of the wing of Pegasus]
10 32½	51 45 doubtful [dub.]		27 30
10 34 30	51 42½		28 8
10 37 0	51 42	12 13	28 39
		12 13½	
Conversely, from Aldebaran [Viceverſa ab Aldebora.]			
10 45 0	28 15½		30 56½
10 50 0	28 15⅔		32 0
10 53 0	28 15⅔	12 13½	32 29
	Diſt. ab extrema alæ Pegaſi [distance from the end of the wing of Pegasus]	12 14⅙	Extr. alæ Peg. [the end of the wing of Pegasus]
11 22⅔	35 13		23 3
11 27	35 13	12 13½	24 7½
		12 14	
11 59⅔	35 12½		
From the northern horn of ♉ [A boreali cornu ♉]			
11 34	41 21½	12 14½	25 58½
		12 15	
11 39	41 21		27 8
11 41	41 22	12 15	
		12 15	Aldeb. orient. [Aldebaran, east]
12 16 Meridian altitude of ♃ [Altitudo ♃ Meridiana]			
by the steel instrument [per Chalyb.]	46 19		29 5
by the revolving instrument [per Volub.]	46 19½		

The sky was cloudy this evening [Erat hac veſpera cœlum nebuloſum.].

Around hour 10¾ set the distance of ♃ from the first of the wing of Pegasus at 51 42½, from Aldebaran at 28 15½; at hour 11½, from the end of the wing of Pegasus at 35 13, from the northern horn of ♉ at 41 21½. But in both cases take the declination of ♃ as 12 14 B. [Pone circa horam 10¾ diſtantiam ♃ a prima alæ Pegaſi 51 42½ ab Aldebora 28 15½ Hora 11½ ab extrema alæ Pegaſi 35 13 a boreali cornu ♉ 41 21½ Aßume vero vtrobique Declin. ♃ 12 14 B.]

For the place of ♃ on 15 October [Pro loco ♃ ad diem 15 Octobris.]:

10^{H} $34½^{M}$ Distance from the first of the wing of Pegasus [Diſt. a prima alæ Peg.]	51 42½
Declination of ♃ [Declin. ♃]	12 13½
Angle of the ascensional difference [Ang. diff. aſcenſ.]	53 5 35
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	34 16 10

Conversely, from Aldebaran [Viceverſa ab Aldebora.]:

10 45 Distance [Diſtantia]	28 15½
Angle of the ascensional difference [Ang. diff. aſcenſ.]	28 55⅔
Right ascension of ♃ [Aſc. recta ♃]	34 17 35
Right ascension, limited [Aſcenſio recta limitata]	34 16 35
Corresponding longitude [Reſp. Longitudo]	6 6 50 ♉
Latitude [Latitudo]	1 27⅓ M.
Later the same evening [Poſtea eadem Veſpera.]	
11 22⅔ Distance from the end of the wing of Pegasus [Diſt. ab extr. alæ Peg.]	35 13
Declination of the end of the wing [Declin. extr. alæ]	12 56⅔
Its right ascension [Aſc. recta eiusdem]	358 11
Angle of the ascensional difference [Ang. diff. aſcenſ.]	36 6 24
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	34 17 24
Conversely, from the northern horn of ♉ [Viceverſa a bor. cornu ♉.]	
11 34 Distance [Diſtantia]	41 21½
Declination of the northern horn [Declin. bor. cornu]	28 11⅔
Its right ascension [Aſc. recta eiusdem]	75 12⅙
Angle of the ascensional difference [Ang. diff. aſcenſ.]	40 56 30
Right ascension of ♃ [Aſc. recta ♃]	34 15⅔
Right ascension, limited [Aſcenſio recta limitata]	34 16 30
Corresponding longitude [Reſp. Longitudo]	6 6⅚ ♉
Latitude [Latitudo]	1 27⅓ M.
From the Alfonsine Tables, for the same time, ♃ was [Ex Tab. Alphonſ. ad idem tempus erat ♃]	6 24 ♉
From the calculation of Copernicus [Ex calculo Copernici]	5 17 ♉

There can be no doubt about these values, since by triangular computation from the assumed right ascension and declination the longitude and latitude are also found in the same way as from the table [De his dubium nullum eße

poteſt, quod etiam per ſupputationem Triangularem ex ſuppoſita aſcenſione recta & declinatione inuenitur Longitudo & Latitudo eodem modo atque ex tabula.].

22 October [DIE 22 OCTOBRIS.]

Around midnight ♃ was observed as follows [Circa mediam noctem obſeruabatur ♃ vt ſequitur.].

H. M.	Diſt. a prima alæ Pegaſi [distance from the first of the wing of Pegasus]	Declin. [declination]	Diſt. æquat. Markab. Peg. [equatorial distance, Markab of Pegasus]
10 9⅓	50 50	11 56	37 59
10 48 corr.		11 55½	
10 51⅙	50 50⅔ doubtful [dubia]		
10 53 0	50 50⅙	11 56	
		11 55⅔	
10 58½	50 49⅚		
Conversely, from Aldebaran [Viceverſa ab Aldebora]			Lucidus pes Orion. orient. [the bright foot of Orion, east]
10 22 0	29 13½		
10 24⅓	29 14	11 56	51 40
11 0 30 corr.		11 55⅔	
10 26⅚	29 14		
11 2 corr.			
Afterwards, from the northern horn of ♉ [Poſtea a boreali cornu ♉]			
10 36⅚	42 17	11 55½	47 14
11 17½ corr.		11 56	
10 39½	42 16½ doubtful [dubia]		46 24
11 21 corr.			
10 41⅓	42 17⅙	11 56⅙	45 53
11 23 corr.		11 55⅔	
10 43⅔	42 17⅙		45 15
11 25 corr.			

Meridian altitude of ♃ [Altitudo ♃ Merid.]:

by the steel instrument [per Chalyb.]	46 1⅓
by the revolving instrument [per Volub.]	46 1¼
11 1⅙ Equatorial distance, or. [?] Aldebaran [Diſt. æquat. or. Aldeb.]	29 51

when ♃ was crossing the meridian [*cum ♃ tranſiret per Meridianum.*]

Declination [Declinatio]	11 56

	11 55⅔

This evening was not especially clear [Erat hac veſpera non apprime ſerenum.].

At hour 10½ set the distance of ♃ from the first of the wing at 50 50, from Aldebaran at 29 14, and a little later from the northern horn at 42 17. But let the declination be taken as 11 55⅚ [Pone ad H. 10½ Diſtantiam ♃ a prima alæ 50 50 ab Aldebora 29 14 Et paulo poſt a boreali cornu 42 17 Aßumatur autem Decl. 11 55⅚].

The place of ♃ on 22 October [Locus ♃ die 22 8^{bris}.]:

10^{H} 48^{M} Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Peg.]	50 50
Declination of ♃ [Declin. ♃]	11 55⅚ B.
Right ascension of the first of the wing [Aſc. recta primæ alæ]	341 12
Its declination [Declin. eiusdem]	13 3 20
Angle of the ascensional difference [Ang. diff. aſcenſ.]	52 8¾
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	33 20 45
Conversely, from Aldebaran [Viceverſa ab Aldebora.]	
11 0 30 Distance of ♃ [Diſtantia ♃]	29 14
Angle of the ascensional difference [Ang. diff. aſcenſ.]	29 53 5
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	33 20 10
Right ascension, limited [Aſcenſio recta limitata]	33 20 30
Corresponding longitude [Reſp. Longitudo]	5 8⅔ ♉
Latitude [Latitudo]	1 26⅓ B.
Later the same evening, ♃ from the northern horn of ♉ [Poſtea eadem veſpera ♃ a boreali cornu ♉.]	
11 17 30 Distance from the northern horn [Diſt. a bor. cornu]	42 17
Angle of the ascensional difference [Ang. diff. aſcenſ.]	41 52 3
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	33 20 10
Corresponding longitude [Reſp. Longitudo]	5 8⅓ ♉
Latitude [Latitudo]	1 26 15M.

24 October [DIE 24 OCTOBRIS.]

H. M.	Diſt. ab extr. alæ Peg. [distance from the end of the wing of Pegasus]	Declin. [declination]	Luc. humer. Orion. or. [the bright shoulder of Orion, east]
11 17½	34 10⅙	11 51 11 50⅓	54 20
11 19⅙	34 10		53 49½
11 22⅔	34 9½	11 51 11 51⅓	52 54

H. M.	Dist. ab extr. alæ Peg. [distance from the end of the wing of Pegasus]	Declin. [declination]	Luc. humer. Orion. or. [the bright shoulder of Orion, east]
Afterwards ♃ crossed the meridian, having an altitude [Tranſijt poſtea ♃ per Meridianum habens Altit.]			
by the steel instrument [per Chalyb.]	45 55⅔		
by the revolving instrument [per Volub.]	45 55¾		
11 32⅓ Declination [Declin.]	11 50⅚		
by the armillae [per Armillas]	11 51		
Aldebaran was east [Fuit Aldebora orient.]			30 10
Conversely, from Aldebaran [Viceverſa ab Aldebora.]			Aldeb. or. [Aldebaran, east]
11 35⅚	29 29⅚		29 11
11 36⅔	29 30½	11 50½	29 0
		11 51	
11 37⅔	29 31		28 41

The evening was exceptionally clear [Erat hac veſpera apprime ſerenum.].

Around hour 11½ P.M., set the distance of ♃ from the end of the wing of Pegasus at 34 10, from Aldebaran at 29 30½, and the declination at 11 50¼ [Pone circa Horam 11½ P. M. Diſtant. ♃ ab extrema alæ Pegaſi 34 10 ab Aldebora 29 30½ Declinationem 11 50¼].

The place of ♃ on 24 October [Locus ♃ die 24 Octobris.]:

Distance from the end of the wing of Pegasus [Diſtant. ab extrema alæ Peg.]	34 10
Declination of ♃ [Declin. ♃]	11 50 15
Right ascension and declination of the end of the wing as before [Aſc. & decl. extr. alæ vt ante.]	
Angle of the ascensional difference [Ang. diff. aſcenſ.]	34 55 30
Therefore the right ascension of ♃ [Ergo Aſc. recta ♃]	33 6 15
Conversely, from Aldebaran [Viceverſa ab Aldebora.]	
Distance from Aldebaran [Diſt. ab Aldeb.]	29 30 30
Angle of the ascensional difference [Ang. diff. aſcenſ.]	30 9 10
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	33 4 0
Right ascension, limited [Aſcenſio recta limitata]	33 5¼
Corresponding longitude [Reſp. Longitudo]	4 52 20♉
Latitude [Latitudo]	1 26¼ M.

25 October, in the evening [DIE 25 OCTOBRIS, VESPERI.]

♃ was observed in this manner [Obſeruabatur ♃ in hunc modum.].

H. M.	Diſt. ♃ a 1 alæ Peg. [distance of ♃ from the first of the wing of Pegasus]	Declin. [declination]	Extr. alæ Pegaſi occ. [the end of the wing of Pegasus, west]
11 7⅚	50 29	11 48	29 8
11 9 30 corr.		11 48½	
11 15 0	50 28⅚		30 48
11 16 corr.			
Conversely, from Aldebaran [Viceverſa ab Aldebora.]			
11 18 0	29 38	11 48⅙	31 42
11 20 corr.		11 48½	
11 19½	29 38		
11 21			
♃ crossed the meridian, having an altitude [Tranſijt ♃ per Meridianum habens Altitud.]			
by the steel instrument [per Chalyb.]	45 52⅚		
by the revolving instrument [per Volub.]	45 53⅙		
11 30 0 Declination [Declin.]	11 48¼		Extr. alæ Peg. [the end of the wing of Pegasus]
by the armillae [per Armillas]	11 48		34 36½

Around hour 11¼, set the distance of ♃ from the first of the wing of Pegasus at 50 29, from Aldebaran at 29 38, and the declination at 11 47¾ B. [Pone circa Horam 11¼ Diſt. ♃ a prima alæ Pegaſi 50 29, ab Aldeb. 29 38, Declinationem 11 47¾ B.]

The place of ♃ on 25 October [Locus ♃ ad diem 25 8^{bris}.]:

Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Peg.]	50 29
Declination of ♃ [Declin. ♃]	11 47¾
Angle of the ascensional difference [Ang. diff. aſcenſ.]	51 46 0
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	32 58 0
Conversely, from Aldebaran [Viceverſa ab Aldebora.]	
Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	29 38
Angle of the ascensional difference [Ang. diff. aſcenſ.]	30 16 20
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	32 57 45
Right ascension, limited [Aſcenſio recta limitata]	32 57⅚
Corresponding longitude [Reſp. Longitudo]	4 45 10ϑ
Latitude [Latitudo]	1 26 10M.

26 October [DIE 26 OCTOBRIS.]

Around midnight ♃ was observed in this manner [Circa mediam noctem obſeruabatur ♃ in hunc modum.].

H. M.	Dist. ab extr. alæ Peg. [distance from the end of the wing of Pegasus]	Decl. [declination]	Extr. alæ Pegasi occ. [the end of the wing of Pegasus, west]
10 56 0	33 49		28 58
10 58⅙	33 49	11 45½ 11 46	29 47
11 1⅔	33 49⅓		30 40
11 3 0	33 49⅚	11 45⅔ 11 46¼	31 8
Conversely, from Aldebaran [Viceverſa ab Aldebora.]			Aldeb. or. [Aldebaran, east]
11 7⅓	29 45⅔		32 57
11 8½	29 46		32 39
11 9⅓	29 46		32 23
11 16½ ♃ crossed the meridian, having an altitude [Tranſijt ♃ per Meridianum habens Altit.]			
by the steel instrument [per Chalyb.]	45 50⅚		
by the revolving instrument [per Volub.]	45 50⅓		
Declination [Declinatio]	11 45⅔		Aldeb. orient. [Aldebaran, east]
by the armillae [per Armillas]	11 46		30 24

At 11 h 5 m, set the distance from the end of the wing of Pegasus at 33 49½, from Aldebaran at 29 46, and the declination at 11 45 [H. 11 M. 5 Pone diſt. ab extrema alæ Pegaſi 33 49½, ab Aldebora 29 46, Declinationem 11 45.]

5 December [DIE 5 DECEMBRIS.]

♃ was observed a little before its last station and △ ⊙. For the time: since we had no use of the clock this evening, we observed Aldebaran, on the equator, as it was about to cross the meridian at H. 10 M. 50½, from which the times can be obtained [Obſeruabatur ♃ paulo ante ſtationem vltimam & △ ⊙. Pro tempore, quia Horologij hac veſpera vſus nobis nullus fuit, obſeruabamus Aldeboram in Æquatore tranſituram per Meridianum H. 10 M. 50½, vnde tempora haberi poßunt.].

Emendatum ab Aldebora H. M. [corrected from Aldebaran, H. M.]	Dist. ♃ a 1 alæ Pegaſi [distance of ♃ from the first of the wing of Pegasus]	Declinatio [declination]	Aldebora orient. [Aldebaran, east]
7 46½	47 1		46 0
7 49	47 2½		45 20
7 52½	47 1½		44 27
7 56½	47 1	10 38½ 10 38 doubtful [dubia]	43 30

Emendatum ab Aldebora H. M. [corrected from Aldebaran, H. M.]	Diſt. ♃ a 1 alæ Pegaſi [distance of ♃ from the first of the wing of Pegasus]	Declinatio [declination]	Aldebora orient. [Aldebaran, east]
Conversely, from Aldebaran [Viceverſa ab Aldebora.]			Extrema alæ Pegaſi occid. [the end of the wing of Pegasus, west]
Corrected from the end of the wing of Pegasus [*Emendatum ab extr. alæ Pegaſi*]	33 24 +		26 24
	33 26		27 19
	33 25½		28 44
	33 26	10 40	30 0
Meridian altitude of ♃ [Altit. ♃ Merid.]		10 40½	
by the revolving instrument [per Volub.]		44 45	31 15

Assume, around the completed hour 8, the distance of ♃ *from the first of the wing of Pegasus as 47 1½, from Aldebaran as 33 25½, and the declination of* ♃ *as 10 39½, or at most 10 40.* [Aßume circa horam 8 completam Diſtantiam ♃ a prima alæ Pegaſi 47 1½ ab Aldebora 33 25½ Declin. ♃ 10 39½ vel ad ſummum 10 40]

A good observation, to be examined for the parallax of the orb of ♃. [Bona obſeruatio pro parallaxi orbis ♃ examinanda.]

For the place of ♃ from the observations of 5 December [Pro loco ♃ ex obſeruationibus diej 5 Decembris.]:

Declination of ♃ [Declin. ♃]	10 39 30
Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Peg.]	47 1 30
Declination of the first of the wing [Declin. primæ alæ]	13 3 30
Its right ascension [Aſc. recta eiusdem]	341 10 40
Angle of the ascensional difference [Ang. diff. aſcenſ.]	48 3 21
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	29 14 1
Conversely, from Aldebaran [Viceverſa ab Aldebora]	
Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	33 25 30
Declination of Aldebaran [Declin. Aldeb.]	15 38 0
Its right ascension [Aſc. recta eiusdem]	63 13 0
Angle of the ascensional difference [Ang. diff. aſcenſ.]	33 58 53
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	29 14 7
Corresponding longitude [Reſp. Longitudo]	0 55 50♉
Latitude [Latitudo]	1 15 38M.

12 December [DIE 12 DECEMBRIS.]

♃ was observed near its trine with ☉, as follows [Obſeruabatur ♃ iuxta trigonum ☉ vt ſequitur.].

H. M.	Dist. a prima alæ Pegasi [distance from the first of the wing of Pegasus]	Declin. [declination]	Aldebora orient. [Aldebaran, east]
7 4⅓	46 54		45 0
7 7⅓	46 53⅙		44 14
7 10⅔	46 53¾	10 38	43 23
		10 38¼	

I judge that these observations are too large by at least two minutes, as is clear from the later ones. [Existimo has obseruationes duobus Minutis ad minimum abundare vt ex posterioribus patet.]

Conversely, from Aldebaran [Viceversa ab Aldebora.]			Extr. alæ Peg. occ. [the end of the wing of Pegasus, west]
7 25⅔	33 34⅚		25 50
7 28½	33 36 0 twice [bis]		26 36
7 32⅔	33 36 0		27 40
7 45 0 Meridian altitude of ☿ [Altit. ☿ Merid.]			31 0
by the steel instrument [per Chalyb.]		44 43 nearly [fere]	
by the revolving instrument [per Volub.]		44 42⅔	
Declination of ☿ [Declinatio ☿]		10 38	
		10 37⅚	

The distances from Aldebaran are in order, but those from the first of the wing should perhaps be limited. [Distantiæ ab Aldeb. rite se habent, sed illæ a prima alæ forte sunt limitandæ.]

Good observations of ☿ for its greatest parallax, especially because ☉ is near its perigee; so if its eccentricity contributes anything, that can be disentangled by comparing other observations. The centre of the orb of ☿, moreover, is in □ of its apogee, near the mean difference. [Bonæ obseruationes in ☿ pro ipsius maxima Parallaxi, præsertim quia ☉ versatur iuxta suum Perigæum, vnde si quid eccentricitas eius infert, collatis alijs obseruationibus extricari poterit, est autem centrum orbis ☿ in □ sui Apogæi iuxta mediam differentiam.]

The place of ☿ on 12 December [Locus ☿ ad diem 12 Decembris.]:

Distance of ☿ from the first of the wing of Pegasus [Dist. ☿ a prima alæ Peg.]	46 53 30
Declination and right ascension of Markab as before [Decl. & asc. recta Marchab vt ante.]	
Angle of the ascensional difference [Ang. diff. ascens.]	47 54 50
Therefore the right ascension of ☿ [Ergo asc. recta ☿]	29 5 30
Conversely [Viceversa.]	

Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	33 36
Angle of the ascensional difference [Ang. diff. aſcenſ.]	34 9 20
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	29 3 40
Right ascension, limited [Aſcenſio recta limitata]	29 4 20
Declination [Declinatio]	10 37 30
Corresponding longitude [Reſp. Longitudo]	0 46 15♉
Latitude [Latitudo]	1 14 10M.

13 December, in the evening [DIE 13 DECEMBRIS, VESPERI.]

♃ was observed in its second station [Obſeruabatur ♃ in ſtatione *ſecunda*.]. *N.B.* ♃ *stationary in the evening* [*N. B.* ♃ *ſtationarius Veſperi*.].

H. M.	Diſt. a prima alæ Pegaſi [distance from the first of the wing of Pegasus]	Declin. ♃ [declination of ♃]	Aldebora orient. [Aldebaran, east]
6 31⅝	46 51⅓¹		50 58
6 33⅔	46 51		50 32
6 37⅔	46 51⅙	10 36⅙	49 24
		with one pinnule [vno pinnac.]	
Conversely, from Aldebaran [Viceverſa ab Aldebora.]			
6 44⅝	33 35⅓		47 58
6 47½	33 36	10 36½	46 0
		10 36	
6 50 0	33 35⅝		
Meridian altitude of ♃ by the steel instrument [Altitudo ♃ Merid. per Chalyb.]			44 43⅙
by the revolving instrument [per Volub.]			44 42⅔
Declination of ♃ [Declin. ♃]		10 37⅙	
		10 36⅔	
7 35⅔ Aldebaran east [Aldebora orient.]			34 0

Around these days ♃ *was entirely stationary. For that reason the observations of the preceding day, namely 12 December, compared with this one of the 13th, do not agree well enough as regards the distance from the first of the wing of Pegasus, since the difference comes out at about 2 M. In the distance from Aldebaran, however, they agree well enough, and also in the meridian altitude. One must therefore see in which observation from the first of the wing this small error lies; and that will become clear either from the following observations or from distances examined through triangles* [Erat ♃ circa hos dies plane ſtationarius, quare obſeruationes diej antecedentis videlicet 12 Decembris collatæ cum hac 13 non ſatis quadrant quo ad diſtantiam

a prima alæ Pegaſi, ſiquidem differentia prouenit 2 M. circiter, at in remotione ab Aldebora ſatis bene ſe habent, tum quoque in altitudine meridiana: quare videndum in qua obſeruatione a prima alæ lateat error iſte puſillus, idque vel e ſequentibus obſeruationibus vel diſtantijs per Triangulos examinatis patebit.].

For the place of ♃ on 13 December [Pro loco ♃ die 13 Decembris.]:

Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Peg.]	46 51⅙
Angle of the ascensional difference [Ang. diff. aſcenſ.]	47 52 20
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	29 3 0
Conversely [Viceverſa.]	
Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	33 36 0
Angle of the ascensional difference [Ang. diff. aſcenſ.]	34 9 20
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	29 3 40
Right ascension, limited [Aſcenſio recta limitata]	29 3 20
Declination of ♃ [Declinatio ♃]	10 37 20
Corresponding longitude [Reſp. Longitudo]	0 45 15♉
Latitude [Latitudo]	1 14 0M.

[1] Perhaps 52⅓ [Forſitan 52⅓.].

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

♃ was observed *shortly after its second station, when it was beginning to become direct* [Obſeruabatur ♃ *paulo poſt ſtationem ſecundam cum inciperet fieri directus.*].

H. M.			Luc. humer. Orion. orient. [the bright shoulder of Orion, east]
6 20 Meridian altitude of ♃ [Altit. ♃ Merid.]			54 26
by the steel instrument [per Chalyb.]	44 46⅙		
by the revolving instrument [per Volub.]	44 45¾		
	Diſt. a prima alæ Pegaſi [distance from the first of the wing of Pegasus]	Declin. ♃ [declination of ♃]	Extr. alæ Peg. [the end of the wing of Pegasus]
6 31⅓	46 55⅙		34 37 } doubtful [du-biæ]
6 34 0	46 54¾		34 53 }
Conversely, from Aldebaran [Viceverſa ab Aldebora.]			
6 39⅚	33 33⅓		
6 42	33 32	10 41	
		10 42	Aldeb. orient. [Aldebaran, east]
6 45⅙	33 32⅙		27 17

The sky was not clear enough this evening, and the ☾ was surrounded by a halo, outside whose western edge ♃ was placed; *the observations made on ♃, however, are satisfactory enough* [Non erat ſatis ſerenum hac veſpera & fuit ☾ halone circumdata, extra cuius marginem occidentalem ♃ disponebatur, *obſeruationes tamen in ♃ factæ ſatis bene ſe habent.*].

From these it is clear that the later observations of ♃, taken on the 13th, are truer than those made on the 12th of this month, since the distance from the first of Pegasus agrees better with its motion [Ex his patet poſteriores ♃ obſeruationes die 13 habitas veriores eße ijs quæ die 12 huius menſis acceptæ ſunt, ſiquidem diſtantia a prima Pegaſi rectius motui eius conſentit.].

The place of ♃ on 20 December [Locus ♃ ad diem 20 Decembris.]:

Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Pegaſi]	46 56 30
Declination of ♃ [Declin. ♃]	10 44 15
Angle of the ascensional difference [Ang. diff. aſcenſ.]	47 58 53
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	29 9 30
Conversely [Viceverſa.]	
Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	33 28 20
Angle of the ascensional difference [Ang. diff. aſcenſ.]	34 2 55
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	29 10 0
Right ascension, limited [Aſcenſio recta limitata]	29 9 45
Corresponding longitude [Reſp. Longitudo]	0 53½ ♉
Latitude [Latitudo]	1 9¾ M.

24 December, in the evening [DIE 24 DECEMBRIS, VESPERI.]

♃ was observed near the meridian [Obſeruabatur ♃ iuxta Meridianum.].

H. M.	Diſt. ab extr. alæ Peg. [distance from the end of the wing of Pegasus]	Decl. [declination]	Æquat. diſt. [equatorial distance]
6½	20 35⅔		27 41
6 36	A prima alæ Pegaſi [from the first of the wing of Pegasus]	10 43½	Aldeb. orient. [Aldebaran, east]
		10 43½	
6 38 0	46 57¼		35 17
6 42⅔ Meridian altitude of ♃ [Altit. ♃ Merid.]			34½
by the steel instrument [per Chalyb.]		44 49⅔	
by the revolving instrument [per Volub.]		44 49⅚	
6 46 0	46 56⅓		33 6
6 49	46 56⅚		32 19
Conversely, from Aldebaran [Viceverſa ab Aldebora.]			
6 51⅔	33 28⅔	10 43½	31 32
		10 44	

H. M.	Dift. ab extr. alæ Peg. [distance from the end of the wing of Pegasus]	Decl. [declination]	Æquat. dift. [equatorial distance]
6 53⅔	33 28¼		31 0
6 55½			30 30

Reduction of ♃, observed on the 15th at hour 11 of October, to the opposition of the Sun [Reductio ♃ ad oppoſitum Solis ad diem 15 Hora 11 Octobris obſeruati.]:

Simple motion of the ☉ at the 15th, H. 11, October [Motus ☉ ſimplex ad 15 H. 11 8^{bris}]	7^{s} 4° 27′
Place of ♃ at the same time [Locus ♃ ad idem tempus]	6 6 50″ ♉
Diurnal motion of the ☉ [Motus diurnus ☉]	59 8
Diurnal motion of ♃ from the observations of 15 and 22 October [Motus diurnus ♃ ex obſeruationibus diej 15 & 22 Octobris]	8 15
Diurnal motions of the ☉ and ♃ combined [Motus diurni ☉ & ♃ coniuncti]	1 7 23
Difference between the simple motion of the ☉ and the place of ♃ [Differentia motus ſimplicis ☉ & ♃ loci]	1 39 12
Proportional time corresponding to the difference [Tempus proportionale reſpondens differentiæ] 1^{D}11^{H}20^{M}	
The opposition of ♃ and the ☉ was therefore [Fuit ergo oppoſitio ♃ & ☉] 16^{D}22⅓^{M} October [Octobris]	
Simple motion of the Sun at the same time [Motus ☉^{lis} ſimplex ad idem tempus]	7 5 54 40

The same results from the motion of ♃ reduced to the same time [Idem prouenit ex motu ♃ ad idem tempus reducto.].

Therefore the acronychal ♃ [Fuit igitur ♃ Acronychij] had:

Longitude [Longitudo]	♉ 5° 54⅔′
Latitude [Latitudo]	M. 1 27⅓

For the latitude, subtract 40″ [Pro latitudine ſubtrahe ſecunda 40.].

Therefore the true acronychal ♃ [Ergo verus ♃ Acronychius]	5 54 0.

OBSERVATIONS OF MARS [OBSERUATIONES MARTIS.]

2 January [DIE 2 JANUARIJ.]

♂ was observed approaching the meridian, I [?] from Aldebaran [Obſeruabatur ♂ appropinquans Meridiano, I ab Aldebora.].

H. M.	Diſt. ♂ ab oculo ☿ [distance of ♂ from the eye of ☿]	Declin. ♂ [declination of ♂]	Aldebora orient. [Aldebaran, east]
6 52½	20 10⅙		
6 56⅔	20 8½	18 15	24 54
6 59⅓	20 10⅓	in both [vtroque]	24 16
7 1⅓	20 9	18 14⅚	23 43
		18 15⅙	
{ 7 3⅙	20 9		23 17
{ 7 4½ corr.			
7 11 0	20 10⅓		
7 12½ ♂ crossed the meridian [Tranſiuit ♂ per Meridianum]			
having an altitude by the steel instrument [habens Altit. per Chalyb.]			52 18¾
by the revolving instrument [per Volub.]			52 19½
Declination of ♂ [Declin. ♂]		18 15	
		18 14¾	
Repeated observations of ♂ from Aldebaran [Repetitæ obſeruationes ♂ ab Aldeb.]			
7 18⅔	20 10½		
7 23⅙	20 10½		

These observations were made among clouds, and no stars other than ♂ and Aldebaran were seen [Hæ obſeruationes inter nebulas habitæ ſunt, neque aliæ ſtellæ præter ♂ & Aldeboram viſæ.].

3 January [DIE 3 JANUARIJ.]

♂ was observed approaching the meridian, I [?] from the bright star of ♈ [Obſeruabatur ♂ appropinquans Meridiano, I a Lucida ♈.].

H. M.	Diſtantia [distance]	Declin. ♂ [declination of ♂]	Aldeb. or. [Aldebaran, east]
6 16	15 46⅓		35 15
6 18¾	15 46¼	{ 18 19⅚	34 33
		{ with one pinnule [vno pinnac.]	
6 21⅚	15 46⅓	18 20 with one [vno]	33 46
Conversely, ♂ from Aldebaran [Viceverſa ♂ ab Aldebora]			
6 37 0	19 53¼		29 53
6 39 0	19 52½ doubtful [dubia]		29 20
6 40 0	19 53¼	18 20	
		18 19½	

H. M.	Diſtantia [distance]	Declin. ♂ [declination of ♂]	Aldeb. or. [Aldebaran, east]
6 42⅙	19 53⅙		28 27
7 5⅔ The Head of Medusa crossed the meridian, having an altitude [Tranſiuit Caput Meduſæ per Meridianum habens Altitudinem]			
by the steel instrument [per Chalyb.]			73 24⅔
by the revolving instrument [per Volub.]			73 25

The declination of the Head of Medusa could not be taken because of its excessive altitude [Declinatio Capitis Meduſæ ob nimiam altitudinem capi non potuit.].

7 13⅖ ♂ crossed the meridian [Tranſiuit ♂ per Meridianum]		
having an altitude by the steel instrument [habens Altit. per Chalyb.]		32 24¼
by the revolving instrument [per Volub.]		32 25
Declination of ♂ [Declin. ♂]	18 19½	
	18 20	
The bright star of Orion's shoulder, east, was then at [Fuit tunc Luc. hum. Orion. or.]		40 48½

12 January, in the evening [DIE 12 JANUARIJ, VESPERI.]
♂ was observed as follows [Obſeruabatur ♂ vt ſequitur.].

H. M.	Diſtan-tia[1] [dis-tance]	Declinatio [declina-tion]	Luc. ſeu ſequens hum. Orion. or. [the bright, or following, shoulder of Orion, east]
6 7	18 26⅙		39 54
6 9½	18 26½		39 18
6 12⅔	18 26⅙	19 14⅚ in both [vtroque]	38 19
Conversely, from Aldebaran [Viceverſa ab Aldebora]			
6 17⅓	17 4½ doubtful [dubia]		
6 20½	17 5⅓		
6 24½	17 5⅙	19 15	
		19 15⅓	
6 28 0	17 5¼		32 39
♂ was crossing the meridian, having an altitude [Tranſibat ♂ per Meridianum habens Altitudinem]			

H. M.	Diſtantia[1] [distance]	Declinatio [declination]	Luc. ſeu ſequens hum. Orion. or. [the bright, or following, shoulder of Orion, east]
in the steel instrument [in Chalyb.]			53 19⅙
in the revolving instrument [in Volub.]			53 19⅔
Declination [Declin.]		19 15	Luc. pes Orion. or. [the bright star in Orion's foot, east]
		19 15½	28 4

This evening it was exceptionally clear, and calm enough while these observations were being made; afterwards clouds arose [Fuit hac veſpera apprime ſerenum & tranquillum ſatis dum hæc obſeruarentur, poſtea nubes obortæ ſunt.].

16 January [DIE 16 JANUARIJ.]

We observed ♂ near the meridian in the following way [Obſeruabamus ♂ iuxta Meridianum in ſequentem modum.].

H. M.	Diſt. a Lucida ♈ [distance from the bright star of ♈]	Declin. [declination]	Luc. pes Orion. [the bright star in Orion's foot]
{ 6 21⅓	19 48¼	19 40	33 38
{ 6 8 corr.		19 40⅙	
6 24	19 48		
6 26	19 48⅓		32 53
Conversely, from the eye of ♉ [Viceverſa ab oculo ♉]			Luc. Orion. hum. or. [the bright star of Orion's shoulder, east]
{ 6 31	15 45	19 39⅚	41 9
{ 6 18 corr.		19 40	
6 33⅙	15 45		40 54
6 34	15 45⅙		
6 51⅙ Afterwards ♂ crossed the meridian, having an altitude [Tranſiuit poſtea ♂ per Meridianum habens Altit.]			
by the steel instrument [per Chalyb.]			53 44
by the revolving instrument [per Volub.]			53 44½
The bright star of Orion's shoulder, east, was then at [Fuit tunc Lucid. Humerus Orion. orient.]			36 3
		19 40	
		19 40⅓	

This evening it was exceptionally clear and moderately calm [Erat hac veſpera apprime ſerenum & mediocriter tranquillum.].

For the place of ♂ on 16 January [Pro ♂ loco die 16 Januarij.]:

H. 6 M. 8 Declination of ♂ [Declin. ♂]	19 40 B.
Distance from the bright star of ♈ [Diſt. a luc. ♈]	19 48¼
Declination of the bright star of ♈ [Declin. lucidæ ♈]	21 31 33
Right ascension of the same [Aſc. recta eiusdem]	26 9
Angle of the ascensional difference [Ang. diff. aſcenſ.]	21 4 47
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	47 13 47
Conversely, from Aldebaran [Viceverſa ab Aldebora]	
6 18 Distance from Aldebaran [Diſt. ab Aldeb.]	15 45
Declination of Aldebaran [Declin. Aldeb.]	15 37 30
Right ascension of the same [Aſc. recta eiusdem]	63 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	15 58 52
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	47 13 8
Right ascension, limited [Aſcenſio recta limitata]	47 13 27
Corresponding longitude [Reſp. Longitudo]	20 13 ♉
Latitude [Latitudo]	1 52 27B.

26 January, in the evening [DIE 26 JANUARIJ, VESPERI.]
♂ was observed near the meridian [Obſeruabatur ♂ iuxta Meridianum.].

H. M.	Diſt. ♂ a Lucida ♈ [distance of ♂ from the bright star of ♈]	Decl. Bor. [northern declination]	Sin. hum. Orionis [Orion's left shoulder]
6 32	23 36⅙		35 23
6 35½	23 36⅙	20 43½	34 32
		20 44	
6 37	23 36		
6 46 Afterwards ♂ crossed the meridian, having an altitude [Tranſijt ♂ poſtea per Meridianum habens Altit.]			
by the steel instrument [per Chalyb.]			54 50 0
by the revolving instrument [per Volub.]			54 50 50
When Orion's left shoulder was [Cum eßet ſiniſter humerus Orion.]			
Declination of ♂ [Declin. ♂]		20 45	east [orient.]
		20 44¾	32 10
Afterwards ♂ conversely from the bright star in the foot of ♊ [Poſtea ♂ viceverſa a luc. pede ♊]			
6 53	39 58⅓		30 14
6 54⅔	39 58½	20 45	29 50
		20 44¾	
6 56⅓	39 58 0		

While these observations were being made it was fairly clear, although the brightness of the ☾ interfered [Erat dum hæc obſeruabantur ſatis ſerenum, obſtante tamen ☾ ſplendore.].

[1] The name of the star is missing. It appears to have been the bright star of Aries [Nomen ſtellæ deeſt. Videtur fuiße Lucida Arietis.].

Determination of the place of ♂ on 26 January [Inquiſitio loci ♂ die 26 Januarij.]:

$5^{H}3^{M}$ Distance of ♂ from the bright star of ♈ [Diſt. ♂ a luc. ♈]	23 36
Declination of ♂ [Declin. ♂]	20 45 B.
Angle of the ascensional difference [Ang. diff. aſc^{um}]	25 18 59
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	51 27 59
Conversely, from the bright star in the foot of ♊ [Viceverſa a luc. pede ♊]	
5 15 30 Distance from the bright star in the foot [Diſt. a luc. pede]	39 58⅓
Declination of the bright star in the foot of ♊ [Declin. luc. pedis ♊]	16 40 31
Right ascension of the same [Aſc. recta eiusdem]	93 33 28
Angle of the ascensional difference [Ang. diff. aſcenſ.]	42 5 50
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	51 27 38
Right ascension, limited [Aſcenſio recta limitata]	51 27 48
Corresponding longitude [Reſp. Longitudo]	24 20 28♉
Latitude [Latitudo]	1 53 26B.

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

H. 6 M. 4⅖ ♂ crossed the meridian, having an altitude [Tranſiuit ♂ per Meridianum habens Altitudinem]		
by the steel instrument [per Chalyb.]		55 9⅙
by the revolving instrument [per Volub.]		55 10
Declination [Declinatio]	21 4	
♂ B. [north]	21 4¾	
The bright shoulder of Orion, east, was then at [Fuit tunc Lucidus humerus Orionis orient.]		30 32 exactly [exacte]

Afterwards ♂ was observed when it had passed the meridian, I [?] from the bright star of ♈ [Poſtea obſeruabatur ♂ cum prætergreßus eßet Merid., I a Lucida ♈.].

H. M.	Diſtantia [distance]	Declin. ♂. [declination of ♂]	Luc. hum. Orion. or. [the bright star of Orion's shoulder, east]
6 11½	24 53	21 3⅔	28 50
Corrected again [Correctum denuo]		21 4⅙	
6 13⅔	24 53		28 5
6 16 0	24 52½	21 4¼	27 31
		21 4	
Conversely, from the lower head of ♊ [Viceverſa ab inferiori Cap. ♊]			
6 19⅚	52 1½		27 6½
6 21⅚	52 2	21 3⅚	26 7
		21 4⅓	

H. M.	Diſtantia [distance]	Declin. ♂. [declination of ♂]	Luc. hum. Orion. or. [the bright star of Orion's shoulder, east]
6 25½	52 1⅔		25 12

To test the quadrants, the meridian altitude of Aldebaran was taken [Pro examine Quadrantum capiebatur Altitudo Merid. Aldeboræ]:

6 47 0	by the steel instrument [per Chalyb.]	49 43⅙
	by the revolving instrument [per Volub.]	49 44
	Declination of Aldebaran [Declinatio Aldeb.]	
	by the great armillae [per Armill. max.]	15 39

Determination of the place of ♂ from the immediately preceding observations [Inquiſitio loci ♂ ex proxime præcedentibus obſeruationibus.]:

$6^{H}11½^{M}$ corr. Distance from the bright star of ♈ [Diſt. a luc. ♈]	24 53
Declination of ♂ [Declin. ♂]	21 4¼ B.
Angle of the ascensional difference [Ang. diff. aſcenſ.]	26 44 50
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	52 53 50
Conversely, ♂ from the lower head of ♊ [Viceverſa ♂ ab infer. capite ♊]	
6 19⅝ Distance [Diſtantia]	57 41 30
Declination of the lower head of ♊ [Declin. infer. cap. ♊]	28 55 7
Right ascension of the same [Aſc. recta eiusdem]	110 8 18
Angle of the ascensional difference [Ang. diff. aſcenſ.]	57 16 50
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	52 51 28
Right ascension, limited [Aſcenſio recta limitata]	52 52 40
Corresponding longitude [Reſp. Longitudo]	25 42 12♉
Latitude [Latitudo]	1 50 35B.

31 January [DIE 31 JANUARIJ.]

H. 6 M. 15⅝ ♂ crossed the meridian, when it had an altitude [Tranſiuit ♂ per Meridianum, cum haberet Altitudinem]		
by the revolving instrument [per Volub.]		55 23
Orion's left shoulder, east, was then at [Fuit tunc ſiniſter Humerus Orion. orient.]	29 33	21 18
— Declination of ♂ [Declin. ♂]		
		21
		17⅓

To test the quadrants, and especially the steel one, whose pinnule was repaired and corrected today, the meridian altitude was taken [Pro examinandis

Quadrantibus & præcipue Chalybeo, cuius pinnacidium hodie reparatum ac correctum eſt, capiebatur Altitudo Meridiana]:

H. 6 57⅓ of Aldebaran [Aldeboræ]		
by the steel instrument [per Chalyb.]		49 43⅙
by the revolving instrument [per Volub.]		49 44
Declination [Declinatio]	15 38	
	15 37¾	

Here the clock was corrected by setting the index back to H. 6 M. 37 [Hic corrigebatur horologium retroponendo indicem in H. 6 M. 37.].

3 February [DIE 3 FEBRUARIJ.]

$5^{H}30\frac{5}{6}^{M}$ ♂ crossed the meridian, having an altitude [Tranſiuit ♂ per Meridianum habens Altitudinem]		
by the steel instrument [per Chalyb.]		55 40¼
by the revolving instrument [per Volub.]		55 40½
Declination of ♂, north [Declinatio ♂ B.]	21 36	
	21 35⅔	
Orion's right shoulder, east, was then at [Fuit tunc dexter humerus Orion. orient.]		28 1

Then ♂ was observed from the bright star of ♈ [Deinde obſeruabatur ♂ a Lucida ♈].

H. M.	Tempus correctum [corrected time]	Diſt. [distance]	Declin. [declination]	Luc. hum. Orion. or. [the bright star of Orion's shoulder, east]
5 36⅓	6 4⅔	27 1½		25 25
5 37⅓	6 6	27 1⅓	21 35⅖	25 8
			21 36	
5 38¾	6 7⅓	27 1⅓		24 46
Conversely, ♂ from the bright star in the foot of ♊ [Viceverſa ♂ a lucido pede ♊]				
5 40¾	6 9⅓	36 29⅙		24 19
5 44	6 12⅓	36 30	21 36⅙	23 33
			21 36	
5 46⅓	6 15	36 29⅔		22 50
5 48 35	6 17	36 29⅔	21 35¾	22 22

H. M.	Tempus correctum [corrected time]	Diſt. [dis-tance]	Declin. [declina-tion]	Luc. hum. Orion. or. [the bright star of Orion's shoulder, east]
			21 36	

5 57 For correcting the quadrants and armillae, the meridian altitude of Aldebaran was observed [Pro Quadrantibus & Armillis corrigendis obſeruabatur Altitudo Meridiana Aldeboræ]

by the steel instrument [per Chalyb.]	49 43
by the revolving instrument [per Volub.]	49 42¾
Here we corrected the clock [Hic correximus Horologium.]	
Declination [Declinatio]	15 37⅔
of Aldebaran [Aldeboræ]	15 38

For the place of ♂ on 3 February [Pro ♂ loco die 3 Februarij.]:

H. 6 M. 4⅔ Distance from the bright star of ♈ [Diſt. a luc. ♈]	27 1⅓
Declination of ♂ [Declin. ♂]	21 36 B.
Angle of the ascensional difference [Ang. diff. aſcenſ.]	29 5 56
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	55 14 56
Conversely, from the bright star in the foot of ♊ [Viceverſa a luc. pede ♊]	
6 15 Distance of ♂ [Diſtantia ♂]	36 29⅔
Declination of the bright star in the foot [Declin. lucidi pedis]	16 40 31
Right ascension of the same [Aſc. recta eiusdem]	93 33 28
Angle of the ascensional difference [Ang. diff. aſcenſ.]	38 22 12
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	55 11 16
Right ascension, limited [Aſcenſio recta limitata]	55 13 5
Corresponding longitude [Reſp. Longitudo]	27 56 40♉
Latitude [Latitudo]	1 53 3B.

24 February, in the evening [DIE 24 FEBRUARIJ, VESPERI.]

H. M.	Diſt. ♂ a Lucida ♈ [distance of ♂ from the bright star of ♈]	Decli-natio [decli-nation]	Can. mai. orient. [the Greater Dog, east]
6 54⅙	37 0½	23 34	7 56
		23 34⅚	
6 56⅓	37 0¼		6 23
6 58⅓	37 0⅙		6 0
Conversely, the distance from the bright star in the foot of ♊ [Viceverſa diſt. a Lucido pede ♊]			
7 4	26 30	23 34	5 50

H. M.	Dift. ♂ a Lucida ♈ [distance of ♂ from the bright star of ♈]	Decli-natio [decli-nation]	Can. mai. orient. [the Greater Dog, east]
		23 34⅚	
7 5	26 30		5 35
Afterwards, for correcting the armillae, the declination of Aldebaran was observed [Poſtea pro corrigendis Armillis obſeruabatur Aldeboræ Declinatio]		15 38¼	
		15 38	

5 March, in the evening [DIE 5 MARTIJ, VESPERI.]
♂ was observed as follows [Obſeruatus eſt ♂ vt ſequitur.].

H. M.	Temp. corr. [corrected time]	Dift. ♂ a Lucida ♈ [distance of ♂ from the bright star of ♈]	Decl. ♂ [declina-tion of ♂]	Can. mai. occ. [the Greater Dog, west]
6 54⅓	7 9½	42 9	24 18½ }	6 24
6 56½	7 12	42 8¾	with one [vno] }	6 57
6 58	7 14⅔	42 8⅚		7 29
7 0½	7 16 0	42 8⅚	24 18¼	8 2
			24 17	
Conversely, from the bright star in the foot of ♊ [Viceverſa a lucido pede ♊]				
7 9½	7 24	21 34	24 17⅙	10 1
			24 17½	
7 14	7 26½	21 34½		10 36
7 20⅔	7 29	21 34½	24 17⅓	11 13
			24 17	
Afterwards ♂ from the eye of ♉ [Poſtea ♂ ab oculo ♉]				
7 28⅔	7 35	11 55⅔		12 42
7 31⅓	7 38	11 55⅚		13 27

From this, a calculation by the usual method of triangles can be set up to determine the latitude of ♂ more precisely, taking its limited distances observed from the bright star in the foot of ♊ and from Aldebaran. Moreover, on this evening, while it was being observed, ♂ was in a straight line with the bright star in the right hand of Erichthonius and the bright star in his foot, as far as the eye could judge [Hinc poteſt pro Latitudine ♂tis præciſius cognoſcenda iuxta vſitatam Triangulorum Methodum calculus inſtitui, aßumptis limitatis diſtantijs eius obſeruatis a Lucido pede ♊ & Aldeboran. Erat autem ♂ hac veſpera, dum obſeruabatur, in recta linea cum Lucida in dextra manu Erichtonij & Lucido pede eiusdem quantum ad viſum.].

For correcting the armillae, the declination of the bright star in the foot of Erichthonius was 28 11½ with both pinnules [Pro Armillis corrigendis fuit Lucidi pedis Erichtonij declinatio 28 11½ vtroque pinnacidio.].

For the place of ♂ from the observations of 5 March [Pro loco ♂ ex obſeruationibus diej 5 Martij.]:

H. 7 M. 14⅔ Distance of ♂ from the bright star of ♈ [Diſt. ♂ a luc. ♈]	42 8⅚
Declination of ♂ [Declin. ♂]	23 17⅓
Angle of the ascensional difference [Ang. diff. aſcenſ.]	45 51½
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	72 0½
Conversely, from the bright star in the foot of ♊ [Viceverſa a luc. pede ♊]	
7 26½ Distance of ♂ [Diſtantia ♂]	21 34½
Angle of the ascensional difference [Ang. diff. aſcenſ.]	21 35⅓
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	71 58⅙
Right ascension, limited [Aſcenſio recta limitata]	71 59½
Corresponding longitude [Reſp. Longitudo]	13 37⅔ ♊
Latitude [Latitudo]	1 47⅙ B.
Afterwards also ♂ from the eye of ♉ [Poſtea etiam ♂ ab oculo ♉]	
7 35 Distance of ♂ [Diſtantia ♂]	11 55¾
Angle of the ascensional difference [Ang. diff. aſcenſ.]	8 44⅙
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	71 56⅓
Corresponding longitude [Reſp. Longitudo]	13 34⅔ ♊
Latitude [Latitudo]	1 47½ B.

9 March [DIE 9 MARTIJ.]

♂ was observed as follows [Obſeruabatur ♂ vt ſequitur.].

H. M.	Diſt. a Cap. Meduſæ [distance from the Head of Medusa]	Declin. ♂ [declination of ♂]	Can. min. occid. [the Lesser Dog, west]
7 44½	32 1⅔		
{ 7 48⅓	32 2⅓		7 27
{ 7 49 corr.			
{ 7 54⅔	32 2¼	24 33	9 7
{ 7 56 corr.		24 32½	

Conversely, from the lower head of ♊ [Viceverſa ab inferiori Cap. ♊]				
7 59⅔		32 6⅔		
{ 8 4		32 6¾	24 32½	11 29
{ 8 6½ corr.			24 33	
{ 8 7½		32 6¾		12 33

{ 8 10 corr.	
For testing the armillae there was taken [Pro examinandis Armillis capiebatur]	
the northern declination [Declinatio borealis]	28 11½
of the horn of ♉ [Cornu ♉]	28 11⅚

The place of ♂ from the observations of 9 March[1] [Locus ♂ ex obſeruationibus diej 9 Martij[1].]:

H. 7 M. 49 Distance of ♂ from the Head of Medusa [Diſt. ♂ a capite Meduſæ]	32 2⅓
Declination of the Head of Medusa [Decl. Med. cap.]	39 20¾
Right ascension of the same [Aſc. Recta eiusdem]	40 33⅚
Angle of the ascensional difference [Ang. diff. aſc.]	33 49⅓
Therefore the right ascension of ♂ [Ergo Aſc. Recta ♂]	74 23⅙
Conversely, from the lower head of ♊ [Viceverſa ab inferiori cap. ♊]	
H. 8 M. 6½ Distance from the lower head of ♊ [Diſt. ab inf. cap. ♊]	32 6¾
Declination of the lower head of ♊ [Decl. inf. cap. ♊]	28 56½
Right ascension of the same [Aſc. Recta eiusdem]	110 8⅓
Angle of the ascensional difference [Ang. diff. aſc.]	35 45⅚
Therefore the right ascension of ♂ [Ergo Aſc. Recta ♂]	74 22½
Right ascension, limited [Aſcenſio recta limitata]	74 22⅚
Declination of ♂ [Declinatio ♂]	24 33 B.
Corresponding longitude [Reſp. Longitudo]	15 49⅙ ♊
Latitude [Latitudo]	1 47⅔ B.

14 March, in the evening [DIE 14 MARTIJ, VESPERI.]

H. M.	Diſt. ab Aldebora [distance from Aldebaran]	Declinatio [declination]	Can. mai.[2] occid. [the Greater Dog, west]
{ 7 30	16 3⅔		23 51
{ 7 46 corr.			
7 32	16 3⅚	24 46⅓	
		24 46¾	
{ 7 35½	16 3⅔	24 46⅚ with one [vno]	25 15
{ 7 52 corr.			
Afterwards, conversely, from the bright star in the foot of ♊ [Poſtea viceverſa a Lucido pede ♊]			
7 46	17 10¼		
7 48	17 10	24 47 with one [vno]	42 3

H. M.	Dist. ab Aldebora [distance from Aldebaran]	Declinatio [declination]	Can. mai.[2] occid. [the Greater Dog, west]
7 49⅔	17 10⅙		42 24
Afterwards, for correcting the armillae, there was taken [Poſtea pro corrigendis Armillis capiebatur]			
the northern declination [Declinatio borealis]		28 11⅚	
of the horn of ♉ [Cornu ♉]		28 12¼	
And for correcting the sextant the distance was taken between Regulus and the lower head of ♊ [Et pro corrigendo Sextante capiebatur diſtantia inter Regulum & inferius Caput ♊]	37 0 0		
	36 59¾		
	36 59¾		

N.B.[3] Last night around midnight ♂ was, to the eye, exactly in a straight line with both horns of ♉, from which it had already moved on quite perceptibly [N.B.[3] Heſterna nocte circa mediam noctem ad viſum fuit ♂ exacte in recta linea cum vtroque Cornu ♉, a qua iam ſatis ſenſibiliter progreßus fuit.].

The place of ♂ from the observations of 14 March [Locus ♂ ex obſeruationibus diej 14 Martij.]:

H. 7 M. 46 Distance of ♂ from Aldebaran [Diſt. ♂ ab Aldeb.]	16 3⅔
Declination of ♂ [Declin. ♂]	24 46½
Declination of Aldebaran [Declin. Aldeb.]	15 37⅓
Right ascension of the same [Aſc. recta eiusdem]	63 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	14 5⅙
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	77 17⅙
Conversely, from the bright star in the foot of ♊ [Viceverſa a luc. pede ♊]	
7 54 Distance of ♂ [Diſtantia ♂]	17 10
Declination of the bright star in the foot [Declin. luc. pedis]	16 40½
Right ascension of the same [Aſc. recta eiusdem]	93 33⅓
Angle of the ascensional difference [Ang. diff. aſcenſ.]	16 12½
Therefore the right ascension of ♂ [Ergo aſc. recta ♂]	77 20 50
Right ascension, limited [Aſcenſio recta limitata]	77 19
Corresponding longitude [Reſp. Longitudo]	18 29⅚ ♊
Latitude [Latitudo]	1 45½ B.

22 March [DIE 22 MARTIJ.]

♂ was observed as follows [Obſeruabatur ♂ vt ſequitur.].

H. M.	Dist. ♂ a Capite Meduſæ[4] [distance of ♂ from the Head of Medusa]	Decl. ♂ [declination of ♂]	Altit. ♂ [altitude of ♂]	Can. min. occ. [the Lesser Dog, west]
8 43½	27 1¼ } doubtful [dubia] }	25 3⅓	37 25[5] Alt. Cap. Med.[4] [altitude of the Head of Medusa]	33 33
		25 4	25 5	
8 47⅔	27 1⅙			34 35
8 50 0	27 1⅙	25 3½		35 16
		25 4		
Conversely, ♂ from the lower head of ♊ [Viceverſa ♂ ab inferiori Capite ♊]				
8 54¼	25 2⅔	25 3½		36 16
		25 4		
8 56⅚	25 2¾			37 0
9 0¼	25 2¾			37 52
For the test of the armillae [Pro examine Armillarum]				28 11¼
northern declination of the horn of ♉ [Declin. borealis Cornu ♉]				28 11½

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

[2] This should be Canis minor [Debet eße Canis minor.].

[3] Added afterwards in another hand [Poſtea alia manu adſcriptum.].

[4] This star was not the Head of Medusa but without doubt "the following star of the left foot" (ζ Persei, 3rd magnitude), whose distance from Mars we found by calculation to be about 27° 3′. The altitude also agrees [Hæc ſtella non erat Caput Meduſæ, ſed ſine dubio »Sequens ſiniſtri pedis« (ζ Perſei, 3 mag.), cujus diſtantiam a Marte per calculum circiter 27° 3′ invenimus. Altitudo etiam conſentit.].

[5] The codex has 57° 25′, which plainly should be 37° [Codex habet 57° 25′, quod manifeſte 37° eße debet.].

25 April, in the evening [DIE 25 APRILIS, VESPERI.]

♂ was observed as follows [Obſeruabatur ♂ vt ſequitur.].

H. M.	Dist. ♂ a Corde ♌ [distance of ♂ from Cor ♌]	Decl. ♂ [declination of ♂]	Altit. ♂ [altitude of ♂]	Spica ♍ occid. [Spica, west]
8 30⅓	41 43½	24 30		11 49
9 25 corr.		24 29½		
8 34	41 43⅓		25 10	10 51
9 29⅓ corr.				
8 36¼	41 43⅔	24 29¾	24 0	10 8

H. M.	Diſt. ♂ a Corde ♌ [distance of ♂ from Cor ♌]	Decl. ♂ [declination of ♂]	Altit. ♂ [altitude of ♂]	Spica ♍ occid. [Spica, west]
9 32 30 corr.		24 30		

For the place of ♂ from the immediately preceding observations of 25 April [Pro loco ♂ ex obſeruationibus proxime præcedentibus diej 25 Aprilis.]:

H. 9 M. 25 Distance of ♂ from Cor ♌ [Diſt. ♂ a Corde ♌]	41 43½
Declination of ♂ [Declin. ♂]	24 30
Declination of Cor ♌ [Declin. Cordis ♌]	13 54 54
Right ascension of the same [Aſc. recta eiusdem]	146 41
Angle of the ascensional difference [Ang. diff. aſcenſ.]	42 56⅓
Therefore the right ascension [Ergo Aſcenſio recta]	103 44⅔
Corresponding longitude [Reſp. Longitudo]	12 34 58♋
Latitude [Latitudo]	1 34⅓ B.

10 May [DIE 10 MAIJ.]

♂ was observed in this way [Obſeruabatur ♂ in hunc modum.].

H. M.	Diſt. ♂ a Corde ♌ [distance of ♂ from Cor ♌]	Decl. ♂ [declination of ♂]	Altit. ♂ [altitude of ♂]	Spica ♍ occid. [Spica, west]
9 24⅔	32 52¾	23 19	24 30	2 35
		23 16		
9 39¼	32 50½	23 17	20 0	5 28
		23 17¾		
9 50⅙	32 51	23 20½	18 40	8 1
		23 21		
…	32 51		18 10	8 56
Conversely, ♂ from the upper head of ♊ [Viceverſa ♂ a ſuperiori Capite ♊]				
10 1¼	10 50	23 20	17 –20	
		23 19		
10 4⅔	10 51		17 0	
10 9⅙	10 50⅚	23 20		12 11
		23 20		

OBSERVATIONS OF VENUS [OBSERUATIONES VENERIS.]

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

♀ began to be visible, and was observed in this way [Conſpici cœpit ♀ ac obſeruata eſt in hunc modum.].

H. M.	Dift. ♀ a ♃ [distance of ♀ from ♃]	Decl. ♀ M. [declination of ♀, M.]	Alt. ♀ [altitude of ♀]	Aldeb. or. [Aldebaran, east]
5 36⅔	31 14	11 44 with one [vno]	1 0	19 4

♀ could not be taken any further straight away, because of small clouds rising and its approach to the horizon [Capi ſtatim ♀ amplius non potuit ob nubeculas exorientes & eius ad Horizontem appropinquationem.].

31 January [DIE 31 JANUARIJ.]

For the second time we observed ♀ as an evening star, moving away from the Sun, as follows [Obſeruabamus ſecundo ♀ veſpertinam a ☉[le] digredientem vt ſequitur.].

H. M.	Diſtantia ♀ a ♃ [distance of ♀ from ♃]	Declin. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]	♃ occid. [♃, west]
5 26		11 1 with one [vno]	4 11	
5 30⅓	29 17	10 58⅙	3 45	
		10 57⅔		
5 33⅙	29 15			39 42
	Dift. a Lucida ♈ [distance from the bright star of ♈]			
5 37	58 0⅔	10 57⅙		40 36
		10 57		
5 39	58 0½		2 45	41 15 Sin. hum. Orion. or. [the left shoulder of Orion, east]
5 43⅔	57 57⅓		2 15	37 2
5 49⅓	57 55	10 53½ with one [vno]	1 33	35 29
5 53⅔	57 51⅓	10 51 with one [vno]	1 6	34 20

3 February [DIE 3 FEBRUARIJ.]

♀ was observed as an evening star in this way [Obſeruabatur ♀ veſpertina in hunc modum.].

H. M.	Dift. ♀ a ♃ [distance of ♀ from ♃]	Declin. [declination]	Altit. [altitude]	Sin. hum. Orion. or. [the left shoulder of Orion, east]
5 53½		9 40 } with both [vtroque] }	5 25	

H. M.	Diſt. ♀ a ♄ [distance of ♀ from ♄]	Declin. [declination]	Altit. [altitude]	Sin. hum. Orion. or. [the left shoulder of Orion, east]
…	26 11⅔		4 52	29 6
5 59⅓	26 10¾	9 38	4 36	28 33
		9 37		
6 1⅚	26 10	9 37¾	4 17	27 55
		9 37		
…		9 37		27 31
		9 36½		
Then ♀ from the bright star of ♈ [Deinde ♀ a Lucida ♈]				
6 5⅔	54 24⅔ doubtful [dubia]			27 3
6 9⅖	54 22⅔	9 34¾	3 22	26 6
		9 34⅚		
6 12	54 22⅓		3 2	25 20
6 14	54 21⅚	9 34	2 50	24 53
		9 33⅚		

For the correction of the armillae in the course of the year 1596, near the western horizon, from the stars of Orion; we afterwards used this correction in the observations of ♀ and ☿ [Pro correctione Armillarum Anno 1596 labente circa occiduum Horizontem ex ſtellis Orionis, qua correctione poſtea in obſeruationibus ♀ & ☿ vſi ſumus.].

In the year 87, completed [Anno 87 completo]:

Meridian altitude, limited, of Orion's shoulder: left [Altitudo Meridiana Limitata Orion. humer. Siniſtri]	40 0
right [Dextri]	41 20⅔
Therefore the declination of Orion's shoulder [Ergo Declin. hum. Orion.]	
left [ſiniſtri]	5 54½
right [dextri]	7 15 35

The altitude of Orion's left shoulder is 8½°; the corresponding refraction 6′ 40″ [Altitudo ſiniſtri humeri Orion. 8½ gr., reſp. Refractio 6′ 40″].

AB	34° 5½′
BC	81 30
CA	84 4 40″
Therefore [Ergo] ABC	91 59 15

Diagram. A circle cut by a horizontal diameter and by an oblique straight line running from the lower left of the circumference to the upper right. Several

lines and arcs run from the upper part of the circumference down towards the horizontal diameter, with a vertical straight line rising from that diameter. Four letters are drawn:

- A (upper left, on the circumference, where several of the curved lines meet): A
- B (top, on the circumference): B
- D (inside the circle, below and right of B, at a crossing of lines): D
- C (inside the circle, left of D, beside the vertical line): C

But the refraction takes 6′ 40″ from side BC, so that it becomes 81 23⅓ [Lateri autem BC Refractio aufert 6′ 40″ ita vt fiat 81 23⅓.].

AB	34 5½
DB	81 23⅓
ABD	91 59¼

Therefore AD, 83 59⅙, is the complement of the refracted declination. The observed and limited declination, however, is 5 59¾ and the computed declination 6° 0′ 50″, a difference of 1′ 5″ — the amount by which the armillae gave the declinations smaller than they should [Ergo AD 83 59⅙ Declinationis refractæ complementum. Declinatio autem obſeruata & limitata 5 59¾, Declinatio ſupputata 6° 0′ 50″, Differentia 1′ 5″, quantum Armillæ minus iuſto dabant Declinationes.].

We attempted the same correction in the same way from the observations of Aldebaran [Eandem correctionem ex obſeruationibus Aldeboræ eodem modo attentauimus.].

The declination of Aldebaran, limited and observed, was 15 44, when it had an altitude of 8° 30′; corresponding refraction 6′ 40″ [Declinatio Aldeboræ 15 44 limitata & obſeruata, cum haberet altitudinem 8° 30′, reſp. Refractio 6′ 40″].

AB	34 5 30
AC	81 30
BC	74 22¼
Therefore [Ergo] BAC	74 27⅓

Diagram. A circle cut by a horizontal diameter and by an oblique straight line running from the lower left of the circumference to the upper right. Straight lines descend from two points on the upper circumference and cross inside the circle above the horizontal diameter; a short vertical line rises from the diameter. Four letters are drawn:

- B (upper left, on the circumference): B
- A (top, on the circumference, right of B): A
- D (inside the circle, right of the crossing lines): D

• C (inside the circle, left of the crossing lines): C

But the refraction takes 6′ 40″ from side AC, so that it becomes 81 23⅓ [Lateri autem AC aufert Refractio 6′ 40″, vt fiat 81 23⅓.].

AB	34 5 30
AC	81 23⅓
BAC	74 27⅓
Therefore [Ergo] BC	74 16⅓

Hence the declination is 15 43⅔ [Hinc Declinatio 15 43⅔.].

The difference between the former correction and this one is therefore 45″. A third of it is 15″, which, added to this latter correction of 20″, makes 35″ — that is, the amount that should be added to the armillae [Differentia igitur ſuperioris correctionis & huius 45″. Huius tertia pars 15″, quæ adiecta huic poſtremæ correctioni 20″ faciunt 35″, quantum ſcilicet Armillis addendum fuerit.].

Place of ♀ for 23 February[1] [Locus ♀ ad diem 23 Februarij[1].]:

Distance of ♀ from ☌ [Diſtantia ♀ a ☌]	5 46½
Altitude of ♀ 9 24, altitude of ☌ 13 50 [Alt. ♀ 9 24, Alt. ☌ 13 50]	
Declination of ♀ [Declinatio ♀]	0 27 35 B.
Declination of ☌ [Declinatio ☌]	2 42 25
Right ascension of ☌ [Aſcenſio recta ☌]	8 47
Angle of the ascensional difference [Ang. diff. aſcenſ.]	5 19⅓
Therefore the right ascension of ♀ [Ergo aſcenſio recta ♀]	3 27⅔
Corresponding longitude [Reſp. Longitudo]	3 23 ♈
Latitude [Latitudo]	0 57⅚ M.

24 February, in the evening [DIE 24 FEBRUARIJ, VESPERI.]

H. M.	Diſt. ♀ a ☌ [distance of ♀ from ☌]	Decl. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]
5 57	4 48⅔	0 57 0 56¾	9 30
6 10	4 47½	0 58½ } with one [vno] }	8 29
		Decl. ☌ [declination of ☌]	Altit. ☌ [altitude of ☌]
6 12½	4 46⅚	2 46 } with one [vno] }	11 32

H. M.	Dist. ♀ a ♃ [distance of ♀ from ♃]	Decl. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]	
	Dist. ♀ a Lucida ♈ [distance of ♀ from the bright star of ♈]	Decl. ♀ [declination of ♀]	Alt. ♀ [altitude of ♀]	Luc. hum. Orion. occ. [the bright star of Orion's shoulder, west]
6 21⅔	29 19⅔		6 41	0 37
6 27½	29 19½	1 0 } with both [vtroque] }	6 5	2 0
6 32⅙	29 18⅙	1 0½ } with both [vtroque] }		2 57

For correcting the declinations in the armillae [Pro corrigendis Declinationibus in Armillis]:

of the left shoulder [ſiniſtri humeri]		6 0
Orion's declination [Orionis Declinatio]		5 59½
Altitude [Altitudo]	8 26	
Of Orion's right shoulder [Dextri humeri Orionis]		7 19½
Declination [Declinatio]		7 19⅚
Altitude [Altitudo]	13 0	

25 February, in the evening [DIE 25 FEBRUARIJ, VESPERI.]
Observation of ♀ and ♃ relative to each other [Obſeruatio ♀ & ♃ inuicem.].

H. M.	Diſtantia [distance]	Declin. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]	Luc. hum. Orion. or. [the bright star of Orion's shoulder, east]
6 13⅓	3 44	1 29 with one [vno]		
6 16⅙	3 44	{ 1 28½ { with the other pinnule [altero pinn.]	8 43	0 54
6 18	3 43⅙		8 25	0 25 occ. [west]
6 22⅓	3 42¾	1 29⅙ with one [vno]	7 55	0 32

[1] Compare above, p. 34, among the observations of Jupiter [Cf. ſupra p. 34 inter obſervationes Jovis.].

	Dist. ♀ ab oculo ☿ [distance of ♀ from the eye of ☿]	Declin. ☌ [declination of ☌]		
6 28	58 18½	2 52 Declin. ♀ [declination of ♀]	7 5	2 4
6 30⅔	58 18⅙	1 30 } with both [vtroque] }	6 45	2 37
6 33⅓	58 17½	1 30½ with one [vno]	6 21	3 30

For testing the armillae at an altitude similar to that of ♀, namely 6⅔, the declination of the middle star of Orion's belt was 1 25 / 1 25¼ [Pro Armillis examinandis in consimili cum ♀ altitudine, 6⅔ videlicet, erat Declin. mediæ balthei Orionis 1 25 / 1 25¼].

26 February, in the evening [DIE 26 FEBRUARIJ, VESPERI.]

♀ was observed [Obseruabatur ♀.].

H. M.	Dist. ♀ ab oculo ☿ [distance of ♀ from the eye of ☿]	Declin. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]	Can. mai. or. [the Greater Dog, east]
6 31	57 4⅚	2 1½	6 36	8 32
		2 2		
6 35	57 4⅓	2 1½		
		2 2		
6 38	57 3⅓	2 3	5 46	
		2 2½		

27 February [DIE 27 FEBRUARIJ.]

At H.5 M.45, ☌ was 1 46 distant from ♀ by the Radius. Declination of ♀ 2 30 B., altitude of ♀ 10 0 [H.5 M.45 distabat ☌ a ♀ per Rad. 1 46 / Declin. ♀ 2 30 B., Altit. ♀ 10 0].

29 February [DIE 29 FEBRUARIJ.]

The distance of ♀ and ☌ was observed with the Radius[1] [Obseruabatur distantia ♀ & ☌ per Radium[1].].

H. M.	Distantia ☌ & ♀ [distance of ☌ and ♀]		Altit. ☌ [altitude of ☌]	
6 35	0 15			
6 37⅓	0 13½		5 47	
6 42	0 14½			
	♀ ab oculo ☿ [♀ from the eye of ☿]	Decl. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]	Can. mai. occ. [the Greater Dog, west]
6 48	53 21 0	3 38⅙		1 4
7 7[2] corr.		3 39		
6 52⅔	53 20 0	3 39⅚		2 14

H. M.	Diſtantia ♃ & ♀ [distance of ♃ and ♀]		Altit. ♃ [altitude of ♃]	
7 11⅝³ corr.		3 40⅙		
			3 13	3 7

For the place of ♀ on 29 February [Pro loco ♀ ad diem 29 Februarij.]:

H.6 M.30 Right ascension of ♀ [Aſcenſio recta ♀]	10 18½
Declination [Declinatio]	3 34
Corresponding longitude [Reſp. Longitudo]	10 51⅚ ♈
Latitude [Latitudo]	0 48⅚ M.

7 7 Distance of ♀ from Aldebaran [Diſt. ♀ ab Aldebora]	53 20½
Declination of ♀ [Declin. ♀]	3 39 B.
Declination of Aldebaran [Declin. Aldeb.]	15 37 30
Right ascension of the same [Aſc. recta eiusdem]	63 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	52 53⅓
Therefore the right ascension [Ergo aſcenſio recta]	10 18⅔
Corresponding longitude [Reſp. Longitudo]	10 54⅙ ♈
Latitude [Latitudo]	0 44⅓ M.

6 March [DIE 6 MARTIJ.]

♀ was observed from Aldebaran as follows [Obſeruabatur ♀ ab Aldeboran vt ſequitur.].

These times are not taken from the clock but computed from the equatorial distances [Hæc tempora non ſunt ex horologio ſed per æquatorias diſtantias ſupputata.].

H. M.	Diſtantia [distance]	Decl. [declination]	Altit. [altitude]	Can. mai. occid. [the Greater Dog, west]
6 55⅙	46 5⅓	6 38	9 10	3 38
		6 38		
6 58⅔	46 6		8 41	4 34
7 0⅔	46 5⅓	6 38⅙		4 52
		6 37		

N.B. This evening was fairly clear, it is true, but a rather strong east wind made the sextant, set up in the open air, shake during the observing, so that these distances need limiting [N. B. Erat hac veſpera ſatis quidem ſerenum, ſed

ventus ſubſolanus validior, qui Sextantem ſub diu expoſitum vacillare fecit inter obſeruandum, adeo vt hæ diſtantiæ limitationem opus habeant.].

Place of ♀ on 6 March [Locus ♀ ad diem 6 Martij.]:

6 55⅙ Distance of ♀ from the eye of ☉ [Diſt. ♀ ab oculo ☉]	46 5⅓
Declination of ♀ [Declin. ♀]	6 38 B.
Angle of the ascensional difference [Ang. diff. aſcenſ.]	46 10 30
Therefore the right ascension [Ergo aſcenſio recta]	17 1½
Corresponding longitude [Reſp. Longitudo]	18 13⅓ ♈
Latitude [Latitudo]	0 36⅓ M.

9 March [DIE 9 MARTIJ.]

H. M.	Diſt. ab Aldeb. [distance from Aldebaran]	Declin. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]	Can. mai. occ. [the Greater Dog, west]
7 9	42 26¼		9 0	9 39
7 8 corr.				
7 12½	42 25½	8 9	8 20	10 32
7 11½ corr.		8 8⅚		
7 19	42 24⅚	8 10	7 30	12 16
7 18½ corr.		8 9½		
7 25½	42 24		7 0	

[1] Other observations of Venus are found above among the observations of Jupiter, p. 35 [Aliæ obſervationes Veneris ſupra inter obſervationes Jovis inveniuntur, p. 35.].

[2] The codex has 17^{m} [Codex habet 17^{m}.].

[3] The codex has 32⅚ [Codex habet 32⅚.].

To test the armillae, the declination and altitude of Orion's left shoulder were observed, since it stood in a position similar to that of ☿ and ♀, so that the refraction of these planets could also be learned. Declination 6 2⅓ with one [vno]. Altitude 6 5. It could not be seen any longer [Pro examine Armillarum obſeruabatur Declinatio & Altitudo ſiniſtri humeri Orionis, cum eßet in conſimili ſitu cum ☿ & ♀ pro refractione etiam horum planetarum cognoſcenda. Declinatio 6 2⅓ vno. Altitudo 6 5. Amplius videri non poterat.].

Place of ♀ on 9 March [Locus ♀ ad diem 9 Martij.]:

H.7 M.11½ Distance of ♀ from Aldebaran [Diſt. ♀ ab Aldeb.]	42 25½
Declination of ♀ [Declin. ♀]	8 9⅙
Angle of the ascensional difference [Ang. diff. aſcenſ.]	42 55 50

Therefore the right ascension of ♀ [Ergo aſcenſio recta ♀]	20 16⅙
Corresponding longitude [Reſp. Longitudo]	21 46⅝ ♈
Latitude [Latitudo]	0 40½ M.

14 March, in the evening [DIE 14 MARTIJ, VESPERI.]

♀ was observed as follows [Obſeruabatur ♀ vt ſequitur.].

H. M.	Diſt. ab Aldebora [distance from Aldebaran]	Declin. [declination]	Altit. [altitude]	Can. maior occid. [the Greater Dog, west]
7 16	36 22⅙	10 37¼	8 20	
		10 36		
7 18½	36 22	10 37⅔		21 0
7 35 corr.		10 36⅓		
7 21	36 21		7 32	
7 24	36 20⅔	10 38½	7 10	22 35
7 41½ corr.		10 37		

It was moderately clear this evening, except around the horizon, but a somewhat stronger wind made the sextant, set up in the open air for observing ☿ and ♀, shake. For the limiting of the distances taken with this same sextant, however, see what follows [Fuit mediocriter ſerenum hac veſpera niſi circa Horizontem, ſed ventus aliquanto validior ſextantem ſub diu ad ☿ & ♀ obſeruandos expoſitum vacillare effecit. Pro limitandis autem diſtantijs per eundem Sextantem acceptis vide ſubſequentia.].

Place of ♀ on 14 March [Locus ♀ die 14 Martij.]:

H.7 M.35 Distance of ♀ from Aldebaran [Diſt. ♀ ab Aldeb.]	36 22
Altitude of ♀ [Altit. ♀]	7 32
Declination of ♀ [Declinatio ♀]	10 37
Angle of the ascensional difference [Ang. diff. aſcenſ.]	37 2 0
Therefore the right ascension of ♀ [Ergo aſc. recta ♀]	26 10 0
Corresponding longitude [Reſp. Longitudo]	28 5⅝ ♈
Latitude [Latitudo]	0 14 0 B.

16 March, in the evening [DIE 16 MARTIJ, VESPERI.]

♀ was observed in declination and altitude as follows [Obſeruabatur ♀ in Declinatione & Altitudine vt ſequitur.].

H. M.	Declin. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]
6 30		15 40

H. M.		Declin. ♀ [declination of ♀]	Altit. ♀ [altitude of ♀]	
6 34		11 29⅚	15 0	
		11 30¼		
6 40⅛		11 31	14 11	
	Diſt. ♀ ab Aldeb. [distance of ♀ from Aldebaran]	11 30		Canis maior occ. [the Greater Dog, west]
6 49½	34 0⅓	11 32½	12 48	15 33
		11 31⅙		
6 52	34 0⅙		12 20	16 22

26 April [DIE 26 APRILIS.]

♀ was observed approaching its greatest elongation from ⊙ [Obſeruabatur ♀ appropinquans digreßioni maximæ a ⊙.].

H. M.	Diſt. ♀ ab inf. cap. ♊ [distance of ♀ from the lower head of ♊]	Declin. ♀ [declination of ♀]	Altit. [altitude]	Spica ♍ orient. [Spica, east]
9 3	27 55½	24 49	15 54	18 43
8 53½ corr.		24 48⅓		
9 9	27 54¾		14 50	
9 14½	27 53⅚	24 49½	14 10	15 34
9 6½ corr.		24 48⅔		

This evening was clear enough, but very windy [Erat hac veſpera ſerenum ſatis ſed flatulentum admodum.].

For the place of ♀ on 26 April, from the immediately preceding observations [Pro loco ♀ ad diem 26 Aprilis ex obſeruationibus proxime præcedentibus.]:

$8^{H}53½^{M}$ Distance of ♀ from the lower head of ♊ [Diſt. ♀ ab inf. cap. ♊]	27 54⅙
Declination of ♀ [Declin. ♀]	24 48¾ B.
Declination of the lower head of ♊ [Declin. inf. cap. ♊]	28 56½ B.
Right ascension of the same [Aſc. recta eiusdem]	110 8 18
Angle of the ascensional difference [Ang. diff. aſcenſ.]	31 1 44
Therefore the right ascension of ♀ [Ergo aſc. recta ♀]	79 6 35
Corresponding longitude [Reſp. Longitudo]	20 7⅓ ♊
Latitude [Latitudo]	1 39¾ B.

10 May [DIE 10 MAIJ.]

♀ was observed in this way [Obſeruabatur ♀ in hunc modum.].

H. M.	Dift. ♀ a Corde ♌ [distance of ♀ from Cor ♌]	Declin. ♀ [declination of ♀]	Altit. [altitude]	Spica ♍ orient. [Spica, east]
…		25 24¼	19 20	
		25 23¼		
8 45½		25 24	18 40	
		25 23⅓		
9 2⅙	47 34	25 23	17 20	1 49
		25 24¼		
9 6	47 34	25 23	16 40	1 10
		25 24		
9 10⅔	47 35		16 20	0 13
				Spica ♍ occid. [Spica, west]
9 13⅙	47 35	25 26	16 0	0 13
		25 25		
9 16¾	47 35	25 26⅓	15 50	0 59½
		25 25½		

Because of the twilight these could not be observed exactly enough [Hæc ob crepuſculum ſatis exacte obſeruari non potuere.].

4 June [DIE 4 JUNIJ.]

♀ was observed in this way [Obſeruabatur ♀ in hunc modum.].

N.B. The centre of the orb of ♀ is approaching the apogee of its eccentric; this observation of ♀ is therefore to be noted, as also in those that follow [N. B. Centrum orbis ♀ appropinquat ad Apogæum ſui Eccentrici, ergo notanda hæc ♀ obſeruatio vti & in ſequentibus.].

H. M.	Dift. ♀ ab Arcturo [distance of ♀ from Arcturus]	Declin. ♀ [declination of ♀]	Altit. [altitude]	Pro temp. Spica ♍ occ. [for the time: Spica ♍, west]
10 40	74 35½	21 5		37 41
10 2 corr.		21 4		
10 43	74 35½		8 0	38 30
10 4 corr.				
10 51	74 35⅔ }	21 5½	7 6	40 38
10 14	twice [bis] }	21 4½		
30 corr.				

Afterwards, from the end of the tail of ♌ [Poſtea ab extrema Caudæ ♌.].

11 6	21 6½	5 30	44 14

10 29 corr.		21 5		
10 40	41 13	21 8 with one pinnule [vno pinn.]	4 20	47 5
10 45	41 13		3 45	48 15
11 26¾	41 12	21 10	3 30	49 37½
10 50 30 corr.		21 10		

N.B. Arcturus has almost the same declination as ♀, and so it serves well for investigating the equatorial distance. As to latitude, ♀ is at its most northern and is beginning to decrease in latitude [N. B. Arcturus habet eandem pene cum ♀ declinationem, ideo recte ſe habet pro diſtantia æquatoria rimanda. Quo ad latitudinem ♀ eſt maxime borea & incipit decreſcere in latitudine.].

While these observations were being made the sky was moderately clear, it is true, but the twilight, which lasted continuously through the whole night, took away to some extent the opportunity of observing the stars [Dum hæc obſeruarentur, mediocriter quidem erat ſerenum, attamen crepuſculum perpetuo per totam noctem durans obſeruandi ſtellas facultatem aliquatenus præripuit.].

For the place of ♀ on 4 June [Pro loco ♀ ad diem 4 Junij.]:

10^{H} 4^{M} Distance of ♀ from Arcturus [Diſtantia ♀ ab Arcturo]	74 35½
Declination of Arcturus [Declin. Arcturi]	21 19⅔
Right ascension of Arcturus [Aſc. recta Arcturi]	209 26⅓
Angle of the ascensional difference [Ang. diff. aſcenſ.]	81 4 24
Therefore the right ascension [Ergo aſc. recta]	128 21¾
10 40 Afterwards from the tail of ☋ [Poſtea a Cauda ☋]	
Distance [Diſtantia]	41 13
Declination of the tail of ☋ [Declin. Caudæ ☋]	16 50 40
Right ascension of the same [Aſc. recta eiusdem]	172 5
Angle of the ascensional difference [Ang. diff. aſcenſ.]	46 20
Therefore the right ascension [Ergo aſcenſio recta]	128 25 0
Right ascension, limited [Aſcenſio recta limitata]	128 23½
Corresponding longitude [Reſp. Longitudo]	5 26 30 ☋
Latitude [Latitudo]	2 10½ B.

11 June, in the evening [DIE 11 JUNIJ, VESPERI.]

♀ was observed as follows [Obſeruabatur ♀ vt ſequitur.].

H. M.	Diſt. ab Arcturo [distance from Arcturus]	Declin. [declination]	Altit. [altitude]	Spica ♍ occid. [Spica ♍, west]
10 47		18 48¼	9 20	
		18 47		
10 57	68 4		7 30	
11 1	68 4½	18 48½	7 0	44 27
		18 48⅙		

H. M.	Dist. ab Arcturo [distance from Arcturus]	Declin. [declination]	Altit. [altitude]	Spica ♍ occid. [Spica ♍, west]
11 7	68 4	18 49¾ 18 48⅝	6 30	45 13
11 15	68 3⅝		5 30	47 1

For the place of ♀ from the observations immediately preceding, on 11 June [Pro loco ♀ ex obſeruationibus proxime præcedentibus diej 11 Junij.]:

Distance of ♀ from Arcturus [Diſt. ♀ ab Arcturo]	68 4 0
Declination of ♀ [Declin. ♀]	18 47½
Declination of Arcturus [Declin. Arcturi]	21 19⅔
Angle of the ascensional difference [Ang. diff. aſcenſ.]	73 5⅔
Right ascension of Arcturus [Aſc. recta Arcturi]	209 26⅓
Therefore the right ascension [Ergo aſcenſio recta]	136 20⅔
Corresponding longitude [Reſp. Longitudo]	13 16 0 ♌
Latitude [Latitudo]	1 59 0 B.
But according to Copernicus's calculation, for the same time, the longitude of ♀ [Iuxta Copernici vero calculum ad idem tempus Long. ♀]	12 45 ♌
According to the Alfonsine, on the other hand [Iuxta Alphonſinum autem]	12 48 ♌

20 June [DIE 20 JUNIJ.]

♀ was observed, nearly at its greatest elongation from the Sun, as follows [Obſeruabatur ♀ ferme iuxta maximam elongationem a Sole vt ſequitur.].

H. M. S.	Dist. a Spica ♍ [distance from Spica ♍]	Declin. ♀ [declination of ♀]	Altit. [altitude]	Dist. æquat. Arcturi occ. [equatorial distance of Arcturus, west]
10 7 20	55 15½	15 26⅔	5 0	40 29
		15 26		
10 12⅓	55 15	15 26⅚	4 30	41 46
	nearly [fere]	15 26⅓		
10 19½	55 15	15 27⅙	3⅔	43 30
		15 28½		
10 23⅓	55 15¼	15 29	3 0	44 36
		15 30		

These times are corrected to the equatorial distances. Around the last observations the altitude of Spica ♍ was 10° [Hæc tempora ſunt correcta ad diſtantias æquatorias. Erat Altitudo Spicæ ♍ circa vltimas obſeruationes 10 grad.].

Place of ♀ from the observations immediately preceding, on 20 June [Locus ♀ ex obſeruationibus proxime præcedentibus diej 20 Junij.]:

Distance of ♀ from Spica ♍ [Diſt. ♀ a Spica ♍]	55 15
Declination of ♀ [Declin. ♀]	15 26⅓
Declination of Spica ♍ [Declin. Spicæ ♍]	8 59 40 M.
Right ascension of Spica [Aſc. recta Spicæ]	196 0⅚
Angle of the ascensional difference [Ang. diff. aſcenſ.]	50 1⅔
Therefore the right ascension of ♀ [Ergo aſc. recta ♀]	145 59⅙ [1]
Corresponding longitude [Reſp. Longitudo]	23 3⅚ ♌
Latitude [Latitudo]	1 39⅙ B.
But the longitude of ♀ for the same time from Copernicus's calculation [Longitudo vero ♀ ad idem tempus ex Copernici calculo]	21 40 ♌
From the Alfonsine Tables, on the other hand [Ex Tabulis autem Alphonſinis]	22 27 ♌

2 July, in the evening [DIE 2 JULIJ, VESPERI.]

♀ was observed from Arcturus as follows. ♀ was near its greatest digression from the ☉ [Obſeruabatur ♀ ab Arcturo vt ſequitur. Erat ♀ iuxta maximam digreßionem a ☉.].

Diſtantia [distance]	Declin. B. [declination, north]	Altit. [altitude]	Tempus Arctur. occ. [time: Arcturus, west]
50 39½	10 15⅙	8 0	42 0
	10 15		
50 36⅓	10 16	5 10	44 15
	10 16⅚		
50 34⅚		4 20	45 40

Afterwards clouds around the horizon obscured ♀, so that it could no longer be seen [Poſtea nubes circa Horizontem ♀ offuſcabant, vt amplius videri deſierit.].

Take, at about the first observation, an altitude of ♀ of 8° and a distance from Arcturus of 50 39; altitude 5⅓, in the second, 50 37; altitude 4¼, in the third, 50 35. Or take, at about altitude 6⅔, distance 50 38 [Pone circa primam obſeruationem Altitud. ♀ 8 partium, diſtantiam ab Arcturo 50 39 / Altitud. 5⅓ in altera 50 37 / Altitud. 4¼ in tertia 50 35 / Vel pone circa Altitud. 6⅔ Diſt. 50 38].

For the time, however, take the distance of Arcturus from the meridian as 43 7, and you will have, as it were, the intermediate of the first two observations, which is

also the most suitable [In tempore vero diſt. Arcturi a Merid. 43 7 & habebis quaſi intermedium duabus primis obſeruationibus, quod etiam potiſsimum conueniens eſt.].

The declination used was 10 15½ north [Declinatio adhibebatur 10 15½ borea.].

For the place of ♀ from the observations immediately preceding, on 2 July [Pro loco ♀ ex obſeruationibus proxime præcedentibus diej 2 Julij.]:

Distance from Arcturus [Diſt. ab Arcturo]	50 39½
Declination of ♀ [Declin. ♀]	10 15 B.
Declination of Arcturus [Declin. Arcturi]	21 19⅔
Right ascension of Arcturus [Aſc. recta Arcturi]	209 20⅔
Angle of the ascensional difference [Ang. diff. aſcenſ.]	51 36 40
Therefore the right ascension of ♀ [Ergo Aſcenſio recta ♀]	157 44 0
Corresponding longitude [Reſp. Longitudo]	5 36⅚ ♍
Latitude [Latitudo]	0 49½ B.

5 July, in the evening [DIE 5 JULIJ, VESPERI.]

♀ was observed while it stood near its greatest digression, I. [?] from Arcturus [Obſeruabatur ♀ iuxta maximam digreßionem exiſtens, I. ab Arcturo.].

On this day ♀ was at its greatest digression from the ☉ [Erat hoc die ♀ in maxima digreßione a ☉.].

H. M.	Diſtantia [distance]	Declin. ♀ [declination of ♀]	Altit. [altitude]	Arcturus occid. [Arcturus, west]
9 4⅙	48 30	8 54½	6 45	
		8 53⅚ doubtful [dubia]		
9 13	48 28	8 55	5 18	ἐν πλάτει [Greek: en platei, "in breadth"]
		8 54¼		among clouds [inter nubes]
9 22⅙	48 28	8 57	4 5	47 22
		8 56		

From the upper of the leading stars in the □ of the Great Bear [A ſuperiore anteriorum in □ vrſæ maioris.]:

9 32	55 1	8 59	2 45	49 36
	good [bona]	9 0		

♀ could not be observed any further because of clouds that came up [Vlterius ♀ ob nubes exorientes obſeruari non potuit.].

Place of ♀ from the observations of 5 July [Locus ♀ ex obſeruationibus diej 5 Julij.]:

Distance from Arcturus [Diſt. ab Arcturo]	48 28
Declination of ♀ [Declin. ♀]	8 54⅓
Declination of Arcturus [Declin. Arcturi]	21 19⅔
Right ascension of the same [Aſc. recta eiusdem]	209 20⅔
Angle of the ascensional difference [Ang. diff. aſcenſ.]	48 45⅙
Therefore the right ascension of ♀ [Ergo aſc. recta ♀]	160 35 30
Corresponding longitude [Reſp. Longitudo]	8 43⅔ ♍
Latitude [Latitudo]	0 37¾ B.[2]

8 July, in the evening [DIE 8 JULIJ, VESPERI.]

We noted these few things on ♀, glimpsed for a moment among the clouds [Hæc pauca in ♀ inter nubes momento conſpecta notauimus.].

Distance from Arcturus at the same time [Diſtantia ſimul ab Arcturo]	46 29
Declination 7 35, with one pinnule [Declin. 7 35 vno pinnacidio]	
Altitude about 3 G. [Altitudo quaſi 3 G.]	
The Vulture was then, east [Erat tunc Vultur orient.]	34 0

[1] The codex has 144° 59⅙′, Long. 22 9⅔, Lat. 1 20⅙ [Codex habet 144° 59⅙′, Long. 22 9⅔, Lat. 1 20⅙.].

[2] The codex has 1° 3⅙′ B., but afterwards there was written beside it "it is less, about 40′" [Codex habet 1° 3⅙′ B., ſed poſtea adſcriptum eſt »eſt minus quaſi 40′«.].

9 July, in the evening [DIE 9 JULIJ, VESPERI.]

♀ was observed in this way, I [?] from Arcturus [Obſeruabatur ♀ in hunc modum, I ab Arcturo.].

H. M.	Diſt. ♀ ab Arcturo [distance of ♀ from Arcturus]	Declin. ♀ [declination of ♀]	Altit. [altitude]	Arcturus occid. [Arcturus, west]
8 10		7 1⅚	6 43	
		7 2¼		
8 22⅚	45 47¾	7 3½	6 30	
		7 3½		
8 28½	{ 45 49⅚	7 4	5 35	44 58
	{ better [melior]	7 3⅔		
8 31⅔	45 50⅙		5 30	45 43
8 35⅓	45 49⅔	7 6½	4 40	46 45
		7 5		
8 39	45 49½		4 25	47 42
8 41½	45 48⅚	7 6	4 10	48 25
		7 6¾		

H. M.	Diſt. ♀ ab Arcturo [distance of ♀ from Arcturus]	Declin. ♀ [declination of ♀]	Altit. [altitude]	Arcturus occid. [Arcturus, west]

No other stars were seen from which ♀ could be taken [Aliæ ſtellæ a quibus caperetur ♀ viſæ non ſunt.].

Place of ♀ on 9 July [Locus ♀ ad diem 9 Julij.]:

Distance of ♀ from Arcturus [Diſt. ♀ ab Arcturo]	45 49⅚
Declination of ♀ [Declin. ♀]	7 3½
Right ascension and declination of Arcturus as before [Aſc. recta & Decl. Arcturi vt ante.]	
Angle of the ascensional difference [Ang. diff. aſcenſ.]	45 8⅓
Therefore the right ascension of ♀ [Ergo Aſc. recta ♀]	164 12⅓
Corresponding longitude [Reſp. Longitudo]	12 44⅓ ♍
Latitude [Latitudo]	0 16⅔

20 November, in the morning [DIE 20 NOUEMBRIS, MANE,]

♀ was observed as follows, nearly at its greatest morning digression from the ☉ [Obſeruabatur ♀ vt ſequitur. Ferme iuxta maximam digreßionem a ☉le matutinam.].

Diſt. inter ♀ & caudam ♌ [1] [distance between ♀ and the tail of ♌]	Declin. ♀ [declination of ♀]	Spica orient. [Spica, east]
31 54		28 56
31 53⅔		28 17
31 54½	6 40	27 50
	6 39½	

Conversely, from Arcturus [Viceverſa ab Arcturo]:

29 2⅔		24 56
29 6 not good [non bona]		24 28
29 3⅔		24 20
29 3½	6 40	23 57
	6 39⅓	

At the last observation ♀ was at an altitude of 24° by the lesser quadrant [per Q. min.]. Not clear enough, and the air turbulent [Cum vltimo obſeruaretur ♀ fuit in Altitudine 24° per Q. min. Non ſatis ſerenum & aër turbulentus.].

Take the distance from the preceding star as 31 54, from the following one as 29 4, and the declination as 6 40 Mer [Pone antecedentem diſt. 31 54 / ſubſequentem 29 4 / Declinationem 6 40 Mer].

N.B. According to the Alfonsine Tables ♀ was then 7 or 8 days before its greatest digression, but according to Copernicus 9 or 10 [N.B. ♀ fuit tunc ante maximam digreßionem iuxta Alphonſinas per 7 vel 8 dies, iuxta Copernicum autem per 9 vel 10.].

1 December [DIE 1 DECEMBRIS.]

♀ was observed in the morning as follows [Obſeruabatur ♀ mane vt ſequitur.].

N.B.[2] According to Maginus [Giovanni Antonio Magini], from the Prutenic calculation, ♀ would have been on the preceding day, the last of November — but according to the Alfonsine, about two or three days earlier — at its very greatest digression from the ☉'s simple …[3] [N. B.[2] ♀ iuxta Maginum ex Prut. Calc. fuißet die antecedente vltimo Nouembris, at iuxta Alphonſ. duobus vel tribus diebus antea ferme in ipſa digreßione maxima a ☉lis ſimplici.].

♀ was not far from its greatest digression from the ☉; it had, that is, passed beyond it *by at least one day or two* [Erat ♀ non longe a digreßione maxima ☉, illa ſcilicet prætergreßa ſaltem vnum vel alterum diem.].

H. M.	Diſt. a bor. lance ♎ [distance from the northern scale-pan of ♎]	Declin. ♀ [declination of ♀]	Spica ♍ orient. [Spica ♍, east]	Alt. ♀ per Vol. [altitude of ♀ by the revolving instrument]
6 29½	12 24 uncertain [incerta]			
6 33⅙	12 20½	Here the altitude of ♀ was about 18 degrees, and that of the scale-pan of Libra 7 0 [Fuit hic Altit. ♀ quaſi 18 grad. & lancis Libræ 7 0]		
6 36⅓	12 20	9 48⅔	14 58	19 33
		9 49½		

Distance of ♀ from Spica ♍ [A Spica ♍ diſt. ♀]:

6 41½	15 17¼		13 35	
6 43⅓	15 17⅙	9 50	13 6	20 40
		9 48¾		
6 51⅚	15 17¼	9 50	10 58	21 5
		9 50¼		

The observations from Spica ♍ are good, and during the observing Spica stood high enough, 24°, and was therefore free of all refraction [A Spica ♍ ſunt bonæ obſeruationes & illa inter obſeruandum ſatis alta fuit 24 gr. ideoque ab omni refractione libera.].

[3]the noun governed by ſimplici is not printed

Take, at about hour 6¾, the distance of ♀ from Spica as 15 17¼, the declination as 9 50 M., and the distance from the northern scale-pan as 12 20. But rather trust the place of ♀ first from Spica ♍[4] [Pone circa horam 6¾ diſt. ♀ / a Spica 15 17¼ / Declinat. 9 50 M. / a boreali lance 12 20 / Sed ſide potius loco ♀ primo a Spica ♍.].

12 December [DIE 12 DECEMBRIS.]

♀ was observed in the morning [Obſeruabatur ♀ Mane.].

H. M.	Diſt. ♀ a ſuperiore ſiniſt. manus Oph. [distance of ♀ from the upper star of the left hand of Ophiuchus]	Decl. ♀ [declination of ♀]	Altit. ♀ per Vol. [altitude of ♀ by the revolving instrument]	Spica ♍ orient. [Spica ♍, east]
6 56	18 43½			
6 59½	18 45	13 14		1 6
		13 16		Spica, west [Spica. occ.]
7 2	18 45		17 45	0 8

[1] Added afterwards: ”It is doubted whether it was ♄” [Adſcriptum eſt poſtea: »Dubitatur an fuerit ♄«.].

[2] Added afterwards by Tycho [A Tychone poſtea adſcriptum.].

Conversely, from Spica ♍ [Viceverſa a Spica ♍]:

7 11½	26 27⅓			3 9
7 16½	26 26			4 34
7 19¼	26 26½		19 25	
7 22⅓		13 14½		5 16
		13 15½		
7 27½	26 27			7 26

At about hour 7⅓, take the distance of ♀ from the highest star in the left hand of Ophiuchus as 18 45, from Spica ♍ as 26 26½, the declination as 17 15, and the altitude as 19 25 [Pone iuxta Horam 7⅓ Diſt. ♀ / a ſuprema in ſiniſtra manu / Ophiuchi 18 45 / a Spica ♍ 26 26½ / Declinationem 17 15 / Altitudinem 19 25].

13 December, in the morning [DIE 13 DECEMBRIS, MANE.]

♀ was observed as follows [Obſeruabatur ♀ vt ſequitur.].

H. M.	Diſt. a cap. Ophiuchi [distance from the head of Ophiuchus]	Decl. ♀ Merid. [declination of ♀, south]	Altit. ♀ [altitude of ♀]	Spica in Æquat. occ. [Spica on the equator, west]
7 20	43 53½		17 45	3 56
7 24¼	43 53⅙	13 31½		

[4] primo may be read with loco, ”the first place”, or as an adverb, ”in the first place”

H. M.	Diſt. a cap. Ophiuchi [distance from the head of Ophiuchus]	Decl. ☿ Merid. [declination of ☿, south]	Altit. ☿ [altitude of ☿]	Spica in Æquat. occ. [Spica on the equator, west]
		13 31		
7 25	43 53½	13 31½		5 5
		13 32⅙		

Conversely, from Spica ♍ [Viceverſa a Spica ♍]:

7 29½	27 30			19 14	6 41
7 31	27 29			19 37	7 6
7 34	27 30¼		13 31⅓	19 40	7 58
			13 31½		
7 36½	27 29⅚			19 40	8 30
8 40	Meridian altitude of ☿ by the revolving instrument [Alt. ☿ Mer. per Vol.]		20 32½		

14 December [DIE 14 DECEMBRIS.]

☿ was observed in the morning as follows, *I [?] from the head of Ophiuchus* [Mane obſeruata eſt ☿ vt ſequitur / I a capite Ophiuchi.].

Diſtantia *a capite Ophiuchi* [distance from the head of Ophiuchus]	Declin. ☿ [declination of ☿]	Altit. ☿ [altitude of ☿]	Diſt. æquat. Spicæ ♍ occ. [equatorial distance of Spica ♍, west]
43 18¼	13 49½	15 40	0 58
	13 50 0		
43 17	13 49	15 55	1 57
	13 49½		
43 27[1]		16 20	2 44

Conversely, from Spica ♍ [Viceverſa a Spica ♍]:

28 32	13 50½	17 0	3 25
	13 50 0		
28 33		17 20	3 59
28 32¼	13 50⅙	17 30	4 39
	13 50⅔		

OBSERVATIONS OF MERCURY [OBSERUATIONES MERCURIJ.]

8 March [DIE 8 MARTIJ.]

In the evening ☿ was observed, seen for the first time [Veſperi obſeruabatur ☿ primum conſpectus.].

H. M.	Declinatio ☿ B. [declination of ☿, north]	Altitudo [altitude]	Canis maior occid. [the Greater Dog, west]
7 48	5 32½ with one [vno]	about 5 [5 quaſi]	5 53

No more could be observed of ☿ this evening, because of thicker vapours condensed into clouds, as it were, near the horizon. But at this time we saw ☿ about two degrees (as far as the eye could judge) to the north of ♃, and, near that edge of the horizon, not higher than ♃ by ⅔ of one degree, as far as we could make out by sight. On this account it is evident that the conjunction of these planets had scarcely yet taken place, which the Prutenic calculation presupposes to have happened the day before [Plura in ☿ hac veſpera obſeruare non licuit ob vapores craßiores in nubes quaſi iuxta Horizontem condenſatos. Vidimus autem ☿ hoc tempore a ♃ quaſi duobus gradibus (quantum ad oculum) ad Septentrionem diſtantem nec circa illum Horizontis limitem altius ♃ ⅔ vnius gradus quantum viſu diſcernere potuimus, vt ob id horum planetarum coniunctionem vix dum celebratam conſtet, quam heſterno die fuiße factum Calculus Prutenicus præſupponit.].

9 March [DIE 9 MARTIJ.]

In the evening ☿ was observed again, as far as the clouds condensed near the horizon allowed [Veſperi obſeruabatur denuo ☿ quantum ob nubes iuxta Horizontem condenſatas fieri licuit.].

H. M.	Diſt. ☿ ab Aldeb. [distance of ☿ from Aldebaran]	Decl. ☿ [declination of ☿]	Alt. ☿ [altitude of ☿]	Diſt. æquat. Can. mai. occ. [equatorial distance of the Greater Dog, west]
{ 6 48		6 21	5⅔	4 29
{ 6 48 corr.		6 20⅚		
{ 6 55⅙	50 28½		4⅓	6 29
{ 6 56 corr.				
{ 6 59	50 27⅙	6 24⅚	3½	7 25
{ 7 0⅓				

☿ would have been clearly enough visible this evening had it not, wrapped in clouds near the horizon, disappeared very quickly. These are nevertheless observations that can safely be trusted [Eßet hac veſpera ſatis conſpicuus ☿ niſi nubibus Horizonti vicinis involutus admodum cito diſparuißet: ſunt tamen obſeruationes, quibus tuto confidere licebit.].

[1] So in the codex [Sic in codice.].

Place of ☿ from the observations of 9 March [Locus ☿ ex obſeruationibus diej 9 Martij.]:

6^{H} 56^{M} Distance of ☿ from Aldebaran [Diſtantia ☿ ab Aldeb.]	50 27⅚
Altitude 5⅔, declination of ☿ [Altit. 5⅔, Declin. ☿]	6 21 B.
Declination of Aldebaran [Declin. Aldeboræ]	15 37 30
Right ascension of the same [Aſc. recta eiusdem]	63 12
Angle of the ascensional difference [Ang. diff. aſcenſ.]	50 49⅚
(I [(Ego)][5]	50 39¾)[1]
Therefore the right ascension [Ergo Aſc. recta]	12 22⅙
Corresponding longitude [Reſp. Longitudo]	13 51 0♈
Latitude [Latitudo]	0 56⅔ B.

(From these data I find 14 0½ ♈, latitude 52 30, and from this the refraction is to be taken away)[1] [(Ego ex his datis invenio 14 0½ ♈, lat. 52 30, & hinc auferenda refractio)[1].].

10 March [DIE 10 MARTIJ.]

☿ was observed as follows [Obſeruabatur ☿ vt ſequitur.].

H. M.	Diſtantia ab Aldeb. [distance from Aldebaran]	Altitudo [altitude]	Canis maior occid. [the Greater Dog, west]
7 12	48 42	5⅔	8 0

But ☿ could not be observed any further because of clouds lying around the horizon [Sed ☿ amplius obſeruari non poterat ob nubes circa Horizontem exiſtentes.].

11 March [DIE 11 MARTIJ.]

In the evening, attending to ☿ in the same way, we observed the following [Veſperi ad ☿ itidem attendentes ſequentia obſeruabamus.].

H. M.	Diſt. ☿ ab Aldeb. [distance of ☿ from Aldebaran]	Decl. ☿ [declination of ☿]	Alt. ☿ per Portatilem [altitude of ☿ by the portable instrument]	Can. mai. orient. [the Greater Dog, east]
{ 6 53⅓	47 5½	8 4⅙	4 25	0 11
{ 7 12 corr.		8 5 good [bona]		occid. [west]
{ 6 57½	47 3½	{ 8 10	3 45	1 0
{ 7 17 corr.		{ doubtful, because ☿ was immersed in vapours [dubia quia ☿ immerſus fuit vaporibus.]		

[5]no verb is printed

No more could be observed of ☿ this evening, both because of clouds risen above it and because of vapours lying near the horizon; as soon as it was immersed in them it disappeared [Nec plura in ☿ hac veſpera obſeruare conceßum eſt, tum ob nubes ſupra illum ſublatas tum vapores vicinos Horizonti exiſtentes, quibus ſimul atque immerſus disparuit.].

The state of the air was pleasant and very calm. The earlier observation, therefore, of both the distance and the declination is most to be trusted, since ☿ was then most conspicuous [Fuit aëris conſtitutio amœna & admodum tranquilla, ergo priori obſeruationi tum diſtantiæ tum declinationis maxime fidendum, quod ☿ tunc maxime conſpicuus fuit.].

From the observations of the immediately preceding day, 11 March [Ex obſeruationibus proxime præcedentis diej 11 Martij.]:

H. 7 M. 12 Distance of ☿ from Aldebaran [Diſt. ☿ ab Aldeb.]	47 5½
Altitude of ☿ by the portable instrument [Altit. ☿ per portatilem]	4 25
Declination, limited [Declin. limitata]	8 4 35 B.
Angle of the ascensional difference [Ang. diff. aſcenſ.]	47 35⅚
Therefore the right ascension of ☿ [Ergo aſc. recta ☿]	15 36⅙
Corresponding longitude [Reſp. Longitudo]	17 27⅚ ♈
Latitude [Latitudo]	1 17⅓ B.

14 March [DIE 14 MARTIJ.]

We observed ☿ near its greatest digression from the ☉ [Obſeruabamus ☿ iuxta maximam digreßionem a ☉le.].

H. M.	Diſt. ☿ ab Aldeb. [distance of ☿ from Aldebaran]	Declin. [declination]	Altit. per Portat. [altitude by the portable instrument]	Can. mai. occid. [the Greater Dog, west]
{ 6 50	42 32⅚	10 22	8 0	13 8
{ 7 3⅔ corr.		10 23		
{ 6 55½	42 32	10 24½	7½	14 40
{ 7 9⅚ corr.		10 23½		
{ 6 59	42 31⅔		6 53	15 39
{ 7 13⅔ corr.				
{ 7 2	42 31½	10 25	6½	16 23
{ 7 16⅔ corr.		10 23½		
{ 7 4½	42 30	10 25	6 3	17 15
{ 7 20 corr.		10 25		

H. M.	Diſt. ☿ ab Aldeb. [distance of ☿ from Aldebaran]	Declin. [declination]	Altit. per Portat. [altitude by the portable instrument]	Can. mai. occid. [the Greater Dog, west]
7 9½	42 28½		5 16	

Afterwards it disappeared among the vapours, which were very much condensed around the horizon [Poſtea disparuit inter vapores circa Horizontem admodum condenſatos.].

Place of ☿ on 14 March. After the correction of the armillae [Locus ☿ die 14 Martij. / Poſt correctionem armillarum.]:

H. 7 M. 9⅝ Distance of ☿ from Aldebaran [Diſt. ☿ ab Aldebora]	42 32
Altitude of ☿ [Altitudo ☿]	6 53
Declination [Declinatio]	10 24 35
Declination of Aldebaran [Declin. Aldeboræ]	15 37¾
Right ascension of the same [Aſc. recta eiusdem]	63 12
Angle of the ascensional difference [Ang. differ. aſcenſ.]	44 16⅓
Therefore the right ascension of ☿ [Ergo aſc. recta ☿]	18 55 40
Corresponding longitude [Reſp. Longitudo]	21 29⅓♈
Latitude [Latitudo]	2 34⅙ B.

15 March [DIE 15 MARTIJ.]

☿ was observed near its greatest digression from the ☉ [Obſeruabatur ☿ iuxta maximam digreßionem a ☉le.].

H. M.	Diſt. ab oculo ♉ [distance from the eye of ♉]	Decl. ☿ [declination of ☿]	Altit. [altitude]	Can. mai. occid. [the Greater Dog, west]
6 55		11 5⅓	10½	11 53
		11 4 0		
{ 6 59½		11 5¼	9 45	12 50
{ 6 58⅝ corr.		11 4		
{ 7 5⅓	41 13		9 10	14 18
{ 7 4½ corr.				

[1] Kepler added this afterwards. Correct [Poſtea adſcripſit Kepler. Recte.].

{ 7 8⅓	41 12⅓	11 5¼	8 40	15 11
{ 7 8 corr.		11 4⅙		
{ 7 12	41 11	11 6⅔	8 10	16 0
{ 7 11 30 corr.		11 6 0		

From the bright star in the breast of Cassiopeia [A lucida in Pectore Caßiopeæ.]:

{ 7 19⅓	45 9¾	11 5½	7 10	17 56
{ 7 19 corr.		11 6⅚		
{ 7 24	45 11⅙	11 8⅓	6 25	19 10
{ 7 24		11 6		
7 27	45 9½		6 0	
{ 7 31	45 9	11 9	5 25	21 0
{ 7 31 30		11 8		

Afterwards from the bright foot of Andromeda [Poſtea a lucido pede Andromedæ.]:

{ 7 36	29 25⅙	11 10	4 44	22 19
{ 7 36⅔		11 9		
7 39⅔	{ 29 25	11 11½	4 22	
	{ better [melior]	11 9⅚		
{ 7 43½	29 22½		3 42	24 10
{ 7 45 30				
7 46⅚	29 20⅙	11 11	3 15	
		11 12		

Afterwards again from Aldebaran [Poſtea iterum ab Aldebora.]:

{ 7 50½	41 4	2 48	26 0
{ 7 51½			
{ 7 54½	41 2⅔	2 13	27 6
{ 7 55 corr.			
{ 7 58½	41 1¼	1 42	28 3
{ 7 59 corr.			
8 5½	40 58	0 55	

This evening it was exceptionally clear and moderately calm. ☿ was conspicuous enough this evening, since its size matched a star between the 1st and the second magnitude, such as Aldebaran, or nearly even Regulus itself; and in its size it perceptibly surpassed the bright star of ♈, even though enclosed in the twilight [Erat hac veſpera apprime ſerenum & mediocriter tranquillum, ☿ hac veſpera ſatis fuit conſpicuus quippe cuius quantitas ſtellam inter 1 & ſecundæ Magnitudinis referebat, vt Aldeboram aut pene etiam ipſum Regulum, ſenſibiliter autem ſua quantitate Lucidam ♈ ſuperabat, etiam crepuſculis incluſus.].

For the refraction of ☿, in both the distance and the declination, the distance of Aldebaran from the bright foot of ♊ was observed first, when Aldebaran was clear of refraction, at an altitude of about 18½ g. [Pro refractione ☿ tum in diſtantia tum Declinatione, obſeruabatur primum diſtantia Aldeboræ a lucido pede ♊, cum Aldeb. eßet extra refractionem in Altitudine 18½ g. quaſi.]:

	29 9½		
	29 9⅓		
Declination of Aldebaran [Declin. Aldeboræ]		15 40	Altitude [Altit.]
		15 40⅓	17 g.

Then, when Aldebaran was at an altitude similar to that of ☿ above, it was observed from the bright foot of ♊ as follows [Deinde cum Aldebora eßet in conſimili altitudine cum ☿ ſuperius obſeruabatur a lucido pede ♊ vt ſequitur.].

H. M.	Diſtantia Aldeb. [distance of Aldebaran]	Declinatio [declination]	Altitudo [altitude]
11 3½	29 8½		10 43
11 8½	29 7		10 0
11 11	29 6½	15 43 0	9 40
		15 43⅓	
11 19		15 44	8 25
		15 43⅓	
11 21	29 6½		8 0
11 25½	29 6 0	15 45⅔	7 25
		15 45½	
11 29	29 5¾	15 45½	7 15
11 51	29 4¼	15 50½	3 40
		15 50⅔	

The arrangement of ☿ and Aldebaran was nearly the same as the present one of Aldebaran and the bright foot of ♊; from this, examine the distances and correct them for refraction [Erat eadem fere diſpoſitio ☿ & Aldeboræ, quæ modo eſt Aldeboræ & lucidi pedis ♊, hinc diſtantias examina & pro refractione emenda.].

Afterwards the declination of the bright star of Orion's shoulder was observed [Poſtea Declinatio Lucidi humeri Orionis obſeruabatur]:

11^{H} 56^{M}	7 20	&	7 22⅚
	7 20½		7 22¼

And the altitude [Et altitudo]	10 3	&	7 0

From this you can limit the declination of ☿, which was removed from the equator midway between Aldebaran and the bright shoulder of Orion [Hinc potes limitare declinationem ☿, qui medio modo fuit remotus ab Æquatore inter Aldeboram & Lucidum humerum Orionis.].

For the place of ☿ on 15 March [Pro loco ☿ die 15 Martij.]:

H. 7 M. 4½ Distance of ☿ from Aldebaran [Dist. ☿ ab Aldeb.]	41 10, Altitude [Alt.] 7¾
from the breast of Cassiopeia [a pectore Caß.]	45 10½
Of the breast of Cassiopeia: longitude [Pectoris Caß. Long.]	2 13½ ♉, Latitude [Lat.] 46 35½ B.
Of Aldebaran [Aldeboræ]	4 8½ ♊, 5 31 M

Diagram. An uncaptioned figure of curved and straight lines set in the right column, to the left of a column of lettered values. Two curved lines run down from A, one to D on the left and one to C at the lower right. A line runs down from A through B to the lower boundary; a curved line joins B to C; a line joins D to B. Two lines run along the foot of the figure from the D side to C.

- A (top): A
- B (interior, left of centre): B
- D (left): D
- C (lower right): C

BC	59 17⅙
BCD	55 30⅔
ACB	25 0 0
ACD	80 30⅔
DA	87 57½
DAC	40 31

Therefore the latitude of ☿ sought [Ergo Latitudo ☿ quæsita]: 2° 2′ 30″ B. Longitude [Longitudo]: 23 37 30 ♈

16 March [DIE 16 MARTIJ.]

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

H. M.	Dist. ab Aldeb. [distance from Aldebaran]	Declin. ☿ [declination of ☿]	Altit. ☿ [altitude of ☿]	Can. mai. occid. [the Greater Dog, west]
6 56	39 54⅓		8 25	17 20

H. M.	Dift. ab Aldeb. [distance from Aldebaran]	Declin. ☿ [declination of ☿]	Altit. ☿ [altitude of ☿]	Can. mai. occid. [the Greater Dog, west]
6 59		11 45	7 38	
		11 46		
7 6	39 52		7 0	20 4

Place of ☿ from the observations of 16 March [Locus ☿ ex obſeruationibus 16 Martij.].

The declination of ☿, limited on account of refraction, since it had an altitude of 7 38, is 11 47¾, whereas the observed declination had been 11 45½ [Declin. ☿ limitata propter refractionem, cum haberet altit. 7 38, 11 47¾, cum decl. obſeruata 11 45½ fuißet.].

Angle of the ascensional difference [Ang. diff. aſcenſ.]	40 56⅓
Right ascension of ☿ [Aſcenſio recta ☿]	22 15⅔
Corresponding longitude [Reſp. Longitudo]	25 8⅓♈
Latitude [Latitudo]	3 9½ B.

N.B.[1] This place of ☿ is not valid, for the armillae were corrected afterwards [N. B.[1] Hic locus ☿ non valet, nam armillæ poſtea ſunt correctæ.].

17 March [DIE 17 MARTIJ.]

☿ was observed among clouds [Obſeruabatur ☿ inter nubes.].

H. M.	Dift. a luc. hum. Or. [distance from the bright star of Orion's shoulder]	Declin. ☿ vno pinn. [declination of ☿, with one pinnule]	Altit. ☿ [altitude of ☿]	Can. mai. occid. [the Greater Dog, west]
7 41	59 9			18 48
	From Aldebaran [Ab Aldeb.]			
7 51½	38 43	12 23	7 15	21 49
7 55⅚	38 42½	12 24¾	6 40	23 6

It was not possible to observe more of ☿ this evening because of clouds [Plura hac veſpera in ☿ obſeruare non licuit propter nubes.].

You will, however, be able to examine its distances from Aldebaran — whether it was 38 43 or 53′ — by means of the distance from the shoulder of Orion, which was moderately good [Poteris autem examinare diſtantias eius ab Aldebora an fuerit 38 43 vel 53′ per illam ab humero Orionis, quæ erat mediocriter bona.].

Note that this evening ☿ had not been far from its greatest digression from the ☉ [N.B. quod ☿ hac veſpera non longe abfuerat a digreßione maxima a ☉le.].

Place of ☿ for 17 March [Locus ☿ ad diem 17 Martij.]:

Distance from Aldebaran [Diſt. ab Aldeb.]	38 42½
Declination of ☿ [Declin. ☿]	12 25⅓
Angle of the ascensional difference [Ang. diff. aſcenſ.]	40 11 0
Right ascension of ☿ [Aſcenſio recta ☿]	23 23
Corresponding longitude [Reſp. Longitudo]	26 12⅓♈
Latitude [Latitudo]	2 26⅓ B.

[1] Added afterwards in another hand [Poſtea alia manu adſcriptum.].

18 March [DIE 18 MARTIJ.]

In the evening ☿ was observed as follows, ☿ being at its greatest digression from the ☉ [Veſperi obſeruabatur ☿ vt ſequitur ☿ in maxima digreßione a ☉le.].

H. M.	Diſt. ab Aldeb. [distance from Aldebaran]	Declin. ☿ [declination of ☿]	Altit. [altitude]	Can. min. occid. [the Lesser Dog, west]
{ 6 40		12 55⅔	11 6	4 20
{ 7 4⅚ corr.		12 54⅚		
{ 6 45	37 40¾		10 5	5 57
{ 7 11 corr.				
{ 6 48	37 40½	12 56	9 40	6 47
{ 7 14½ corr.		12 55		
{ 6 51	37 40⅙	12 55½	9 15	7 35
{ 7 17⅚ corr.		12 54½		
{ 6 54⅔	37 40		8 40	8 22
{ 7 20 30 corr.				

Afterwards, the same evening, ☿ was observed from the bright star in the breast of Cassiopeia [Poſtea eadem Veſpera obſeruabatur ☿ a Lucida in pectore Caßiopeæ.].

{ 7 1½	44 14⅓	12 54⅔	7 35	10 27
{ 7 29 corr.		12 55⅓		
{ 7 5	44 15	12 55	7 15	11 28
{ 7 33 corr.		12 56⅓		
{ 7 8	44 14	12 57	6 40	12 28
{ 7 37 corr.		12 58		

Afterwards again from Aldebaran [Poſtea rurſus ab Aldebora.].

{ 7 12	37 37⅔	12 58⅓	6 5	13 23
{ 7 40½ corr.		12 58½		
{ 7 14½	37 37¼		5 44	14 0
{ 7 43				

Afterwards ☿ from the bright foot of Andromeda [Poſtea ☿ a lucido pede Andromedæ.].

{ 7 19	27 24¾	12 58⅓	5 6	15 13
{ 7 48 corr.		with one [vno]		Cor Hydræ [the heart of Hydra]
7 21	27 23⅔		4 34	east [orient.]
7 24	27 22¼		4 20	10 39

The declination could not be taken any further because of the stone column erected at the small armillae [Declinatio vlterius capi non poterat ob columnam lapideam paruis Armillis erectam.].

Afterwards also from the bright foot of Orion [Poſtea etiam a lucido pede Orionis.].

		Altit. pedis Orionis [altitude of Orion's foot]		
7 28	53 33	12 about [quaſi]	3 50⅚	9 37
7 33½	53 32⅚	11 20	3 4	8 23
7 38	53 32¾	10 34⅚	2 23	7 0

This evening it was very clear and calm, and ☿ (as on the 15th) appeared fairly large, showing a size perceptibly exceeding the magnitude of the bright [Erat admodum ſerenum hac veſpera & tranquillum & ☿ (vti die 15) ſatis magnus apparuit, quantitatem Luci-] star of ♈, although it was wrapped in deeper twilight [dæ ♈ magnitudinem ſuperantem ſenſibiliter referens licet crepuſculis maioribus inuolutus.].

The same evening, to examine the sextant, the distance between Regulus and the lower head of ♊ was taken with the old sextant, with which these distances to ☿ were observed [Eadem Veſpera pro examinando Sextante capiebatur diſtantia inter Regulum & inferius caput ♊ per Sextantem veterem quo hæ in ☿ diſtantiæ ſunt obſeruatæ.].

37 0 5	
36 59¾	otherwise [alias] 36 59½
36 59¾	true distance [vera diſtantia]

Then, when Aldebaran was at an altitude similar to that at which ☿ had been observed earlier, its declination was taken together with the altitude, as

follows [Deinde cum Aldebora eßet in conſimili altitudine qua antea ☿ cum obſeruaretur, capiebatur eius declinatio cum altitudine vt ſequitur.]:

	15 43⅙	Altitude [Alt.] 10 0
	15 42⅔	
	15 43½	9 10
	15 43 0	
True declination [Vera declin.]	15 44¼	8 32
Aldebaran [Aldeb.] 15 37¾	15 43¾	

From this you can correct the declinations of ☿, both for the armillae and for the refraction in ☿ [Hinc potes corrigere declinationes ☿ tum Armillarum tum refractionis in ☿.].

For the place of ☿ on 18 March [Pro loco ☿ die 18 Martij.]:

7^{H} 14½^{M} Distance from Aldebaran [Diſtantia ab Aldeb.]		37 40½
The distance from the bright star of the breast of Cassiopeia, however [Diſt. vero a luc. pectoris Caßiopeæ]		44 14½
Altitude of ☿ [Altitudo ☿] 10 0.	BC	59 17⅙
	BCD	53 33⅓
	ACB	25 0 0
Therefore [Ergo]	ACD	78 33⅓
	DA	87 26 30
Therefore the latitude of ☿ sought [Ergo Latitudo ☿ quæſita]		2 33 30 B.
	DAC	36 50⅔,
therefore the longitude of ☿ [ergo Longitudo ☿]		27 17 50♈

22 March [DIE 22 MARTIJ.]

In the evening ☿ was observed in this way [Veſperi obſeruabatur ☿ in hunc modum.].

H. M.	Diſt. ☿ ab Aldeb. [distance of ☿ from Aldebaran]	Declin. ☿ [declination of ☿]	Altit. ☿ [altitude of ☿]	Can. maior occid. [the Greater Dog, west]
7 22	34 22½ doubtful [dubia]		9 40	25 10
{ 7 24⅙	34 23	14 36	9 15	25 57
{ 7 25⅔ corr.		14 37		
{ 7 28½	34 22⅓	14 38⅔	8 50	27 0
{ 7 30 corr.		14 37½		

H. M.	Dist. ☿ ab Aldeb. [distance of ☿ from Aldebaran]	Declin. ☿ [declination of ☿]	Altit. ☿ [altitude of ☿]	Can. maior occid. [the Greater Dog, west]
{ 7 34⅙	34 22⅙		8 0	28 26
{ 7 35⅔ corr.				
{ 7 37½	34 21⅓	14 38½	7 30	29 4
{ 7 40 corr.		with one pinnule [vno pinn.]		

Then ☿ from Schedar of Cassiopeia [Deinde ☿ a Schedir Caßiopeæ.].

{ 7 41⅔	43 35	14 40	6 55	30 22
{ 7 43½ corr.		14 40⅙		
{ 7 45½	43 34½	14 40½	6 20	31 22
{ 7 47 30 corr.		14 40¼		
{ 7 48⅔	43 34	14 40¼	6 0	32 11
{ 7 50 40 corr.				

Afterwards ☿ again from the eye of ♉ [Postea rursus ☿ ab oculo ♉.].

{ 7 52⅔	34 18½	14 42	5 20	33 12
{ 7 54⅚ corr.		14 41½		Canicula, west [Canicula occid.]
7 55 35	34 18⅓	14 40 } doubtful [dubia] }	5 0	21 18
7 59½	34 18⅓	14 42⅙	4 30	22 22
		14 41¼		

For the place of ☿ on 22 March [Pro loco ☿ die 22 Martij.]:

		7^{H} 22^{M} Distance of ☿ from Aldebaran [Dist. ☿ ab Aldeb.]	34 22½
		from Schedar of Cassiopeia [a Schedir Caß.]	43 35
BCD	51 24⅓	Altitude [Altit.]	9 40
ACD	76 25⅓		
DA	86 59 20	therefore the latitude of ☿ [ergo Latit. ☿]	3 0⅔
DAC	34 23⅙	therefore the longitude of ☿ [ergo Longit. ☿]	29 45⅓♈

OBSERVATIONS OF THE FIXED STARS[1] [OBSERUATIONES STELLARUM FIXARUM[1].]

5 October [DIE 5 OCTOBRIS.]

Distance between the small star adjoining in the thigh of Ursa Major and Capella [Diſtantia inter parvulam contiguam in femore Vrſæ maioris & Capellam]	41 17
	41 17⅔
The same, conversely, from the last of the tail of Ursa Major [Eadem viceverſa a Caudæ vltima Vrſæ maioris]	38 50⅔
	38 51
Its declination [Declinatio eius]	53 52
Between the lowest of the three in the upper wing of Cygnus and Scheat of Pegasus [Inter infimam trium in ſuperiori ala Cygni & Scheat Pegaſi]	44 43¼
	44 43
The same from the bright star of Lyra [Eadem a lucida Lyræ]	15 29
The declination of this one [Declinatio huius]	49 23½
	49 23

[1] All that survive. Cf. below, p. 61, note 2 [Quæ ſuperſunt omnes. Cf. infra p. 61 annot. 2.].

Between Scheat of Pegasus and the 11th in the lower wing of Cygnus [Inter Scheat Pegaſi & 11^{mam} in inferiori ala Cygni]	29 50
	29 50½
The same from the bright star of Lyra [Eadem a lucida Lyræ]	25 46
	25 45½
Its declination [Declinatio eiuſdem]	35 5
	35 6
The upper one in the wing of Cygnus, repeated: distance from the tail of Cygnus [Superior in ala Cygni iterata, Diſtantia a cauda Cygni]	11 55½
	11 55⅔

Meridian altitudes of the pole star and of some other circumpolar stars, for examining our elevation of the pole [Altitudines Meridianæ Stellæ Polaris & aliquot aliarum circumpolarium pro eleuatione poli noſtra examinanda.].

12 December, evening [DIE 12 DECEMBRIS, VESPERI]

Meridian altitude of the pole star [Stellæ polaris Altitudo meridiana]	by the steel instrument [per Chalyb.]	58 46 0	} twice [bis]
	by the revolving instrument [per Volub.]	58 47⅙	

The instruments were checked against the plumb-line and corrected on this very day. Because of this discrepancy the quadrants must be checked again by another method.

13 December, evening [DIE 13 DECEMBRIS, VESPERI.]

Meridian altitude of the pole star [Stellæ polaris altitudo meridiana]	by the steel instrument [per Chalyb.]	58 45¾	twice [bis]
	by the revolving instrument [per Volub.]	58 46⅝	
6ʰ 6ᴹ Aldebaran [Aldebora] 58 0	among rather thin clouds [inter nubes rariuſculas.]		

Appendix to the Observations of the Year 1596[1] [APPENDIX AD OBSERUATIONES ANNI 1596[1].]

Catalogue of fixed stars [CATALOGUS STELLARUM FIXARUM] observed at the end of the year 1595 and the beginning of the following year, '96, to complete the general catalogue of the fixed stars[2] [quæ ſub finem Anni 1595 et initium ſequentis 96 obſeruatæ ſunt pro canone generali fixarum adimplendo[2]].

For the stars whose longitudes were found from declination and right ascension, add 4¼ M. [M. 4¼], so that they are brought to the year 1600; for those found by distances from the globe this is not needed.[3]

Of the 4th magnitude [4ᵗᵃᵉ magnitud.]

The lower of the two unformed stars above Sagitta, which is in a straight line with the middle one of this and the upper one of the same two [Inferior duarum informium ſupra Sagittam, quæ in recta linea cum huius media et ſuperiore earundem.].

Distance from the mouth of Pegasus [Diſtantia ab Ore Pegaſi]	29 52¾
Its declination [Declinatio eiuſdem]	21 38 B.
Right ascension [Aſcenſio Recta]	293 27 35
Longitude [Longitudo]	0 8½ ♒
Latitude [Latitudo]	42 42⅔ B.

Second. Magnitude 4 [Secunda. 4 magnit.]

The upper of the same unformed stars [Superior earundem informium.].

Distance from the mouth of Pegasus [Ab Ore Pegaſi Diſtantia]	29 55⅓
Its declination [Declinatio eiuſdem]	23 7½ B.
Right ascension [Aſcenſio Recta]	294 8½
Longitude [Longitudo]	1 31½ ♒
Latitude [Latitudo]	44 1⅚ B.

Third. Magnitude 4 [Tertia. 4 mag.]

The third, in the acute-angled triangle [Oxigonio] of the same unformed stars [Tertia in Oxigonio earundem informium.].

Distant from the left shoulder of Hercules [Diſtat a ſiniſtro Humero Herculis]	30 13½
from the middle of the lower wing of Cygnus [a media infi. al. Cigni]	19 8
Its declination [Declinatio eiuſdem]	23 58½ B.
Right ascension [Aſcenſio Recta]	…
Longitude [Longitudo]	…
Latitude [Latitudo]	…
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	23 57 ♍
Latitude [Latitudo]	46 3 B.

Of the 4th magnitude [4æ magnit.]

In the tip of the right wing of Cygnus [In extrema dextra ala Cygni.].

Distance from the end of the wing of Pegasus [Diſtantia ab extrema alæ Pegaſi]	36 55½
from the breast of Cygnus [a pectore Cygni]	20 19½
Its declination [Declinatio eiuſdem]	27 0 B.
Right ascension [Aſcenſio Recta]	321 38½
Longitude [Longitudo]	4 28⅔ ♓⁴
Latitude [Latitudo]	38 39 B.

Of the 4th magnitude [4æ mag.]

The lower and preceding one of the two unformed stars between Lyra and the upper wing of Cygnus [Inferior et præcedens duarum informium inter Lyram & ſuperiorem alam Cygni.].

Distance from the breast of Cygnus [Diſtantia a Pectore Cygni]	16 26¾
Its declination [Declinatio eiuſdem]	43 28¾ B.
Right ascension [Aſcenſio Recta]	280 52⅓
Longitude [Longitudo]	19 53 ♍
Latitude [Latitudo]	66 15⅙ B.

Of the 4th magnitude [4æ mag.]

The upper one of the same [Superior earundem.].

Distant from the breast of Cygnus [Diſtat a Pectore Cygni]	15 58¾
Its declination [Declinatio eiuſdem]	46 26 B.
Right ascension [Aſcenſio Recta]	282 39

Longitude [Longitudo]	24 45¼ ♍
Latitude [Latitudo]	68 52⅙ B.

Of the 4th magnitude [4æ mag.]
In the neck of Pegasus [In Collo Pegaſi.].

Distance from the breast of Cygnus [Diſtantia a pectore Cygni]	38 25
from the end of the wing of Pegasus [ab extrema Alæ Pegaſi]	27 19⅙
Its declination [Declinatio eiuſdem]	10 12¼ B.
Right ascension [Aſcenſio Recta]	330 27¼
Longitude [Longitudo]	6 23¾ ♓
Latitude [Latitudo]	20 51¼ B.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	6 26¾ ♓
Latitude [Latitudo]	20 50½ B.

Of the three unformed stars between the mouth of Pegasus and its left foot, whose arrangement is as follows [Trium informium inter Os Pegaſi et pedem eius ſiniſtrum quarum ſitus talis]:

Diagram. A small printed figure of three asterisk star-marks set in the right column, with the words "4æ mag. min." standing to the left of the lower-left mark on the same line.

- Upper right mark: numeral "2" set as a superscript after it.
- Lower left mark: numeral "3" printed above it.
- Lower right mark, level with the lower left one: numeral "1" set as a superscript after it.
- Text beside the lower left mark: "4æ mag. min." — of the 4th magnitude, lesser.

Its distance (it is the one that lies in a straight line from the mouth of Pegasus to the middle of the wing of Cygnus) from the first of the wing of Pegasus: 24 50¾ [Diſtantia eius (quæ eſt in recta linea ad mediam alæ Cygni ab Ore Pegaſi) a prima alæ Pegaſi 24 50¾].

[1] Vienna codex, Latin 10689[34] [Cod. Vindob. lat. 10689[34].].

[2] The observations of the fixed stars made at the beginning of the year 1596 are no longer extant [Obſervationes ſtellarum fixarum ſub initio anni 1596 factæ nunc non extant.].

[3] Added by Tycho in the margin [A Tychone in margine adſcriptum.].

[4] It should be long. 4° 58′ ♓, lat. 39° 35′ B. [Debet eße long. 4° 58′ ♓, lat. 39° 35′ B.]

Its declination [Declinatio eiusdem]	18 9¾ B.
Right ascension [Aſcenſio Recta]	315 53⅔
Longitude [Longitudo]	24 47 ♒
Latitude [Latitudo]	33 21¼ B.

Second. Magnitude 4, lesser [Secunda. 4 mag. minor.]
The other one, which is above this, is distant [Diſtat altera quæ ſupra hanc]:

from the first of the wing of Pegasus [a Prima alæ Pegaſi]	23 44½
Its declination [Declinatio eiusdem]	21 57½
Right ascension [Aſcenſio Recta]	318 2½
Longitude [Longitudo]	28 42⅔ ♒
Latitude [Latitudo]	36 10⅔ B.

Third. [Tertia.]
The one that follows the first [Quæ primam ſequitur].

Distant from Markab of Pegasus [Diſtat a Marcab Pegaſi]	19 20½
Declination [Declinatio]	15 34 B.
Right ascension [Aſcenſio Recta]	337 13⅙[1]
Longitude [Longitudo]	15 11⅙ ♓
Latitude [Latitudo]	23 15⅔ B.

Eridanus [ERIDANUS.]

Magnitude 3, lesser [3 mag. min.]
The first of those adjoining Cetus [Prima Cete contiguarum.].

Its distance from the bright star of Orion's foot [Diſtantia eius a Luc. Pede Orionis]	34 9½
from the end of the wing of Pegasus [ab Extrema alæ Pegaſi]	47 1½
Its declination [Declinatio eiusdem]	10 32½
Right ascension [Aſcenſio Recta]	39 11¾
Longitude [Longitudo]	3 5¾ ♉
Latitude [Latitudo]	24 33¾ A.

Second. Magnitude 4 [Secunda. 4 mag.]
The one between this and the third. Distant [Quæ inter hanc et tertiam. Diſtat]:

from the bright star of Orion's foot [a Lucido Pede Orionis]	32 17½
from the knot of the line of ♓ [a nodo Lini ♓]	18 40⅔
Its declination [Declinatio eiusdem]	9 15 A.
Right ascension [Aſcenſio Recta]	41 7
Longitude [Longitudo]	5 31½ ♉
Latitude [Latitudo]	23 58½ A.

Third. Magnitude 3, lesser [Tertia. 3 mag. min.]
The one that follows this. Distant [Quæ hanc ſequitur. Diſtat]:

from the bright star of Orion's foot [a Lucido Pede Orionis]	29 18½
from the end of the wing of Pegasus [ab Extrema alæ Pegaſi]	51 11⅓
Declination [Declinatio]	10 21½ A.
Right ascension [Aſcenſio Recta]	44 5⅔
Longitude [Longitudo]	8 11½ ♉
Latitude [Latitudo]	25 59 A.

Fourth. Of the 4th magnitude [Quarta. 4æ mag.]
In Tycho's first volume, the eighth in number. Distant [In primo tomo Tychonis octaua numero. Diſtat]:

from the bright star of Orion's foot [a Lucido pede Orionis]	22 2⅔
from the knot of the line of ♓ [a Nodo Lini ♓]	29 47
Its declination [Declinatio eiusdem]	13 23⅔ A.
Right ascension [Aſcenſio Recta]	51 47⅙
Longitude [Longitudo]	15 18⅔ ♉
Latitude [Latitudo]	31 9¼ A.

Fifth. Of the 5th magnitude [Quinta. 5æ mag.]
The preceding and lower of the four after the seventh in the same book. Distant [Præcedens et inferior quatuor poſt ſeptimam in eodem libro. Diſtat]:

from the bright star of Orion's shoulder [a Luc. Humer. Orion.]	30 38
from the bright star of the jaw of Cetus [a Luc. Mandib. Cetæ]	22 57⅓
Southern declination [Declinatio auſt.]	11 16⅙
Right ascension [Aſcenſio Recta]	58 51⅔
Longitude [Longitudo]	23 44⅔ ♉
Latitude [Latitudo]	30 25 A.

Sixth. Of the 4th magnitude [Sexta. 4æ mag.]
The one above this. Distant [Quæ ſupra hanc. Diſtat]:

from the bright star of Orion's foot [a Luc. Pede Orionis]	15 33¾
from the bright star of the jaw of Cetus [a Luc. Mandib. Cete]	20 31⅔
Its declination [Declinatio eiusdem]	7 57 Au.
Right ascension [Aſcenſio Recta]	58 5⅙
Longitude [Longitudo]	23 48½ ♉
Latitude [Latitudo]	27 32 A.

Seventh. Of the 4th magnitude [Septima. 4ᵃᵉ mag.]
The one that follows this. Distant [Quæ hanc ſequitur. Diſtat]:

from the bright star of Orion's foot [a Lucido Pede Orionis]	14 28½
from the bright star of the jaw of Cetus [a Luc. Mandib. Cete]	21 39½
Its declination [Declinatio eiusdem]	8 19½ A.
Right ascension [Aſcenſio Recta]	59 10½
Longitude [Longitudo]	24 53½ ♉
Latitude [Latitudo]	28 9⅓ A.

Eighth. Magnitude 5 [Octaua. 5 magnit.]
The upper and more easterly one. Distant [Superior et Orientalior. Diſtat]:

from the bright star of Orion's shoulder [a Luc. Humero Orionis]	25 20⅔
from the bright star of the jaw of Cetus [a Luc. Mandib. Cete]	21 44⅚
Its declination [Declinatio eiusdem]	4 44⅓ A.
Right ascension [Aſcenſio Recta]	60 56½
Longitude [Longitudo]	27 41⅔ ♉
Latitude [Latitudo]	25 2⅔ A.

[1] The distance and declination give AR 0° 58′.0, and therefore long. 7° 13′, lat. + 13° 52′. But no star visible to the naked eye is found at this place [Diſtantia & declinatio dant AR 0° 58′.0, ergo long. 7° 13′, lat. + 13° 52′. Sed hoc loco nulla ſtella ſolis oculis conſpicua reperitur.].

Of the 4th magnitude [4ᵃᵉ mag.]
The preceding one of the two unformed stars between Eridanus and Taurus. Distant [Præcedens duarum informium inter Eridanum et Taurum. Diſtat]:

from the bright star of Orion's foot [a Lucido Pede Orionis]	25 46⅓
from the bright star of ♈ [a Lucida ♈]	31 41⅕
Declination [Declinatio]	0 54¾ A.
Right ascension [Aſcenſio Recta]	49 5½
Longitude [Longitudo]	16 21⅓ ♉
Latitude [Latitudo]	18 26 A.

From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	16 27¾ ♉
Latitude [Latitudo]	18 26 A.

Magnitude 4 [4 mag.]
The following and southern one. Distant [Sequens et Auſtralis. Diſtat]:

from the bright star of Orion's foot [a Lucido Pede Orion.]	20 37⅚
from the bright star of ♈ [a Lucida ♈]	37 8½
Its declination [Declinatio eiusdem]	4 10½ A.
Right ascension [Aſcenſio Recta]	53 32⅚
Longitude [Longitudo]	20 0½ ♉
Latitude [Latitudo]	22 45⅚ A.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	20 2¾ ♉
Latitude [Latitudo]	22 45 A.

Cepheus [CEPHEUS.]

First. Of the 4th magnitude [Prima. 4ª magnitudo]
The one in the tiara, toward the south. Distant [Quæ in Tiara, ad Auſtrum. Diſtat]:

from the girdle of Cepheus [a Cingulo Cephei]	14 18½
from the flank of Cassiopeia [ab ilia Caßiopeæ]	20 54¼
Longitude [Longitudo]	7 49⅙ ♈
Latitude [Latitudo]	59 59⅙ B.

Second. Of the 4th magnitude [Secunda. 4æ mag.]
In the same, toward the east. Distant [In eadem, ad Ortum. Diſtat]:

from the pole star [a Stella Polari]	31 13⅓
from the bright star in the Chair of Cassiopeia [a Luc. in Cathedra Caßiop.]	11 49
Longitude [Longitudo]	13 35 ♈
Latitude [Latitudo]	58 45¾ B.

Third. Of the 4th magnitude [Tertia. 4æ mag.]
The southern of the two in the bend of the right arm. Distant [Auſtralis duarum in flexura dextri brachij. Diſtat]:

from the flank of Cassiopeia [ab ilia Caßiopeæ]	29 5⅓
from the bright star of the neck of the Lesser Bear [a Luc. Cerui. vrſæ min.]	31 39
Longitude [Longitudo]	29 17 ♓
Latitude [Latitudo]	71 49⅓ B.

Fourth. Of the 4th magnitude [Quarta. 4æ magnitudinis]
The northern one. Distant [Borealis. Diſtat]:

from the bright star of the neck of the Lesser Bear [a Lucida Ceruicis vrſæ minoris]	29 37⅚
from the flank of Cassiopeia [ab ilia Caßiopeæ]	30 8½
Longitude [Longitudo]	29 49¾ ♓
Latitude [Latitudo]	74 0½ B.

Fifth. Magnitude 5 [Quinta. 5 magnit.]
The one in the shoulder-blades. Distant [Quæ in ſcapulis. Diſtat]:

from the flank of Cassiopeia [ab ilia Caßiopeæ]	19 50⅓
from the bright star of the neck of the Lesser Bear [a Luc. Cerui. vrſæ min.]	33 39½
Longitude [Longitudo]	18 42 ♈
Latitude [Latitudo]	65 42⅓ B.

Sixth. Of the 4th magnitude [Sexta. 4æ mag.]
In the right foot. Distant [In dextro pede. Diſtat]:

from the bright star of the Chair of Cassiopeia [a Luc. Cathedræ Caßiop.]	26 39
from the right shoulder of Cepheus [a dextro humero Cephei]	16 4½
Longitude [Longitudo]	27 28¾ ♉
Latitude [Latitudo]	75 27⅓ B.

Seventh. Of the 3rd magnitude, lesser [Septima. 3æ mag. minor.]
In the left foot. Distant [In ſiniſtro pede. Diſtat]:

from the bright star in the Chair of Cassiopeia [a Luc. in Cathedra Caßiop.]	18 25½
from the right shoulder of Cepheus [a dextro humero Cephei]	18 39
from the bright star of the neck of the Lesser Bear [a Luc. Cer. vrſæ minoris]	25 46⅚
Longitude [Longitudo]	24 18⅚ ♉
Latitude [Latitudo]	64 28⅙ B.

Leo [LEO.]

First. Magnitude 6 [Prima. 6 mag.]

The very small one in the head. Distance [Paruula in Capite. Diſtantia]:

from the lower head of ♊ [ab infer. Capite ♊]	28 25
from the tail of Leo [a Cauda Leonis]	29 14⅚
Its declination [Declinatio eiusdem]	26 17½B.
Right ascension [Aſcenſio Recta]	142 11⅔
Longitude [Longitudo]	16 8⅔ ♌
Latitude [Latitudo]	10 46⅓ B.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	16 13 ♌
Latitude [Latitudo]	10 49½ B.

Second. Of the 4th magnitude [Secunda. 4ᵃᵉ mag.]

The preceding one of the two in the hind left foot. Distant [Præcedens duarum in poſteriore ſiniſtro Pede. Diſtat]:

from the third in the left wing of ♍ [a 3ª in ſiniſt. ala ♍]	21 22½
from the Lesser Dog [a Cane minore]	54 51

Its declination [Declinatio eiusdem]	1 27⅔A.
Right ascension [Aſcenſio Recta]	163 59
Longitude [Longitudo]	15 49⅔ ♍
Latitude [Latitudo]	7 40⅙ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	15 53 ♍
Latitude [Latitudo]	7 38 A.

Third. Magnitude 5 [Tertia. 5 mag.]

The following one. Distant [Sequens. Diſtat]:

from the third of the lower wing of Virgo [a 3ª infer. alæ Virginis]	17 54⅓
from the Lesser Dog [a Cane minore]	58 8¼
Its declination [Declinatio ejusdem]	0 46⅓
Right ascension [Aſcenſio Recta]	167 24⅙
Longitude [Longitudo]	18 47¾ ♍
Latitude [Latitudo]	5 42¼ A.

From the great brass globe, for the year 1600 [Ex magno Globo Oricalcico ad Annum 1600]	
Longitude [Longitudo]	18 47 ♍
Latitude [Latitudo]	5 39 A.

Unformed stars around Leo [INFORMES CIRCA LEONEM.]

Magnitude 5 [5 mag.]

Above the back, the preceding one of two [Supra dorſum, duarum præcedens.].

Distant from the lower head of ♌ [Diſtat ab infer. Cap. ♌]	40 11⅔
from Arcturus [ab Arcturo]	49 24⅔
Its declination [Declinatio eiusdem]	25 17¾ B.
Right ascension [Aſcenſio Recta]	155 21½
Longitude [Longitudo]	26 18⅙ ♌[1]
Latitude [Latitudo]	17 40⅓ B.

Second. Of the 5th magnitude [Secunda. 5ᵉ mag.]

The one that follows. Distant [Quæ ſequitur. Diſtat]:

from the lower head of ♌ [ab inferiore Capite ♌]	42 25½
from Arcturus [ab Arcturo]	46 30
Its declination [Declinatio eiusdem]	26 54 B.
Right ascension [Aſcenſio Recta]	158 25⅓
Longitude [Longitudo]	29 52½ ♌
Latitude [Latitudo]	16 30 B.

Third. Of the 5th magnitude [Tertia. 5ᵉ mag.]

The one above the bright star in the back. Distant [Quæ ſupra Lucidam in Dorſo. Diſtat]:

from the lower head of ♌ [ab inf. Capite ♌]	47 8⅔
from Arcturus [ab Arcturo]	42 7⅓
Declination [Declinatio]	25 18 B.
Right ascension [Aſcenſio Recta]	163 25⅙
Longitude [Longitudo]	4 50⅙ ♍
Latitude [Latitudo]	16 47⅓ B.

Fourth. Of the 4th magnitude [Quarta. 4ᵉ mag.]

Above the tail of Leo; it could conveniently be included in the right hand of Virgo. Distant [Supra Caudam Leonis, quæ commode includenda in dextra manu Virginis. Diſtat]:

from Arcturus [ab Arcturo]	34 46½
from the bright star of the neck of Leo [a Lucida ceruicis Leonis]	20 42
Its declination [Declinatio eiusdem]	22 29 B.
Right ascension [Aſcenſio Recta]	171 44⅙
Longitude [Longitudo]	13 17⅔ ♍
Latitude [Latitudo]	17 18⅚ B.

Fifth. Of the 4th magnitude [Quinta. 4ᵃᵉ mag.]

Below the belly, the northern of three. Distant [Sub ventre trium borea. Diſtat]:

from the Lesser Dog [a Cane minore]	51 1
from Vindemiatrix of ♍ [a Vindemiatrice ♍]	29 7½
Declination [Declinatio]	9 30½ B.
Right ascension [Aſcenſio Recta]	161 1⅓
Longitude [Longitudo]	8 53⅔ ♍
Latitude [Latitudo]	1 20½ B.

Sixth. Of the 5th magnitude [Sexta. 5ᵃᵉ mag.]

The middle one. Distant [Media. Diſtat]:

from Vindemiatrix of Virgo [a Vindemiat. Virginis]	30 23½
from the Lesser Dog [a Cane minore]	49 59
Its declination [Declinatio eiusdem]	8 15⅓B.
Right ascension [Aſcenſio Recta]	159 57½
Longitude [Longitudo]	8 23½ ♍
Latitude [Latitudo]	0 12¾ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	8 26 ♍
Latitude [Latitudo]	0 9½ A.

Seventh. Of the 5th magnitude [Septima. 5ᵃᵉ mag.]

The southern of the three. Distant [Auſtralis trium. Diſtat]:

from Vindemiatrix of Virgo [a Vindemiat. Virginis]	31 3½
from the Lesser Dog [a Cane minore]	50 3
Its declination [Declinatio eiusdem]	5 46⅙
Right ascension [Aſcenſio Recta]	159 54⅔
Longitude [Longitudo]	9 16½ ♍
Latitude [Latitudo]	2 32 A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	

Longitude [Longitudo]	9 19½ ♍
Latitude [Latitudo]	2 29 A.

Erichthonius [ERICHTONIUS.]

First. Of the 5th magnitude, greater [Prima. 5æ mag. maior.]

The one above the bright star in the right shoulder. Distance [Quæ ſupra lucidam in dextro humero. Diſtantia]:

from the bright star in the right side of Perseus [a Luc. in dext. lat. Perſei]	26 6¼
from the upper head of ♊ [a ſuper. Capite ♊]	23 0¼

[1] The longitude and latitude are wrong through an error of calculation. They should be 27°52 ♌ + 13° 58′, and the star is 41 Leonis Minoris [Long. et Lat. per errorem calculi falſæ ſunt. Debent eße 27°52 ♌ + 13° 58′, et ſtella eſt 41 Leonis minoris.].

Its declination [Declinatio eiusdem]	45 49⅔ B.
Right ascension [Aſcenſio Recta]	82 29½
Longitude [Longitudo]	24 21⅓ ♊
Latitude [Latitudo]	27 27 B.

Second. Of the 6th magnitude [Secunda. 6æ mag.]

The northern of the two in the loins. Distant [Duarum in lumbis Borea. Diſtat]:

from the bright star of the side of Perseus [a Luc. Lat. Perſei]	21 48
from the upper head of ♊ [a ſuper. Cap. ♊]	28 11½
Its declination [Declinatio eiusdem]	41 20 B.
Right ascension [Aſcenſio Recta]	73 15⅚
Longitude [Longitudo]	16 48⅓ ♊
Latitude [Latitudo]	18 34½ B.

Third. Of the 5th magnitude, lesser [Tertia. 5æ mag. min.]

The southern one. Distant [Auſtralis. Diſtat]:

from the bright star of the side of Perseus [a Lucida Lateris Perſei]	22 13¾
from the upper head of ♊ [a ſuperiore Capite ♊]	28 29⅓
Its declination [Declinatio eiusdem]	39 40⅙

Right ascension [Aſcenſio Recta]	72 38
Longitude [Longitudo]	16 2 ♊
Latitude [Latitudo]	16 58¾ B.

Fourth. Of the 5th magnitude [Quarta. 5æ mag.]
The one below this, toward the west [Quæ infra hanc ad occaſum.].

Distant from the upper head of ♊ [Diſtat. a ſuper. Cap. ♊]	29 23⅚
from the bright star of the side of Perseus [a Luc. Lateris Perſei]	22 28
Declination [Declinatio]	37 54⅔ B.
Right ascension [Aſcenſio Recta]	71 26⅓
Longitude [Longitudo]	14 53⅔ ♊
Latitude [Latitudo]	15 21½ B.

Fifth. Of the 6th magnitude, greater [Quinta. 6æ mag. maior.]
The one that follows this. Distant [Quæ hanc ſequitur. Diſtat]:

from the bright star of the side of Perseus [a Lucida Lateris Perſei]	24 50¼
from the upper head of ♊ [a ſuperiore Capite ♊]	27 6⅓
Its declination [Declinatio eiusdem]	36 53½ B.
Right ascension [Aſcenſio Recta]	74 16½
Longitude [Longitudo]	17 4¾ ♊
Latitude [Latitudo]	14 4¼ B.

Sixth. Of the 5th magnitude [Sexta. 5æ mag.]
The one below the Kids, around the haunches. Distant [Quæ infra Hædos circa clunes. Diſtat]:

from the upper head of ♊ [a ſuper. Cap. ♊]	32 11
from the bright star of the side of Perseus [a Lucida Lateris Perſei]	20 42½
Its declination [Declinatio eiusdem]	37 11½ B.
Right ascension [Aſcenſio Recta]	67 54
Longitude [Longitudo]	11 55⅔ ♊
Latitude [Latitudo]	15 2⅚ B.

Seventh. Of the 5th magnitude [Septima. 5æ magn.]
The preceding one of the two in the right arm. Distant [Duarum in dextro Brachio præcedens. Diſtat]:

from the bright star of the side of Perseus [a Lucida Lateris Perſei]	27 35½
from the upper head of ♊ [a ſuperiore Capite ♊]	22 32
Its declination [Declinatio eiusdem]	38 58 B.
Right ascension [Aſcenſio Recta]	80 16
Longitude [Longitudo]	22 8¼ ♊
Latitude [Latitudo]	15 42½ B.

Eighth. Of the 5th magnitude, greater [Octaua. 5æ mag. maior.]
The following one. Distant [Sequens. Diſtat]:

from the bright star of the side of Perseus [a Lucida Lateris Perſei]	28 1⅔
from the upper head of ♊ [a Superiore Capite ♊]	22 5⅔
Its declination [Declinatio eiusdem]	39 0¼
Right ascension [Aſcenſio Recta]	80 54
Longitude [Longitudo]	22 40 ♊
Latitude [Latitudo]	15 42⅔ B.

Ninth. Of the 6th magnitude, greater [Nona. 6æ mag. maior.]
The one below this, in the right leg [Quæ infra hanc in dextro Crure.].

Distant from the bright star of the right side of Perseus [Diſtat a Luc. dextri Lateris Perſei]	28 59½
from the upper head of ♊ [a ſuperiore Capite ♊]	21 51½
Its declination [Declinatio eiusdem]	37 6⅓ B.
Right ascension [Aſcenſio Recta]	80 51½
Longitude [Longitudo]	22 30⅚ ♊
Latitude [Latitudo]	13 49⅙ B.

Tenth. Of the 5th magnitude [Decima. 5æ mag.]
The one in the left leg. Distant [Quæ in ſiniſtro Crure. Diſtat]:

from the bright star of the side of Perseus [a Lucid. Lat. Perſei]	27 13¾
from the upper head of ♊ [a ſuperiore Capite ♊]	26 36
Its declination [Declinatio eiusdem]	34 2¼ B.
Right ascension [Aſcenſio Recta]	75 9⅓
Longitude [Longitudo]	16 35⅓ ♊
Latitude [Latitudo]	11 15 B.

Eleventh. Of the 5th magnitude [Vndecima. 5æ mag.]

In the right foot. Distant [In dextro Pede. Diſtat]:

from the bright star of the side of Perseus [a Lucida Lat. Perſei]	29 35½
from the upper head of ♊ [a ſuperiore Capite ♊]	25 44½
Its declination [Declinatio eiusdem]	31 50 B.
Right ascension [Aſcenſio Recta]	76 34½
Longitude [Longitudo]	18 29⅔ ♊
Latitude [Latitudo]	8 50⅚ B.

Of the 5th magnitude, greater [5ᵐᵉ mag. maior.]

The preceding one of the two unformed stars around Erichthonius. Below the right foot of Perseus [Præcedens duarum informium circa Ericht. Infra dextrum pedem Perſei.].

Distant from the upper head of ♊ [Diſtat a ſuperiore Capite ♊]	34 2½
from the bright star of the side of Perseus [a Lucida Lateris Perſei]	19 40⅔
Declination [Declinatio]	36 42 B.
Right ascension [Aſcenſio Recta]	65 39
Longitude [Longitudo]	10 0¼ ♊
Latitude [Latitudo]	14 51⅓ B.

Of the 5th magnitude, greater [5ᵐᵉ mag. maior.]

The following and southern one. Distant [Sequens et Auſtralis. Diſtat]:

from the bright star of the side of Perseus [a Lucida Lateris Perſei]	20 36
from the upper head of ♊ [a ſuperiore Capite ♊]	33 34½
Its declination [Declinatio eiusdem]	35 58 B.
Right ascension [Aſcenſio Recta]	66 20⅚
Longitude [Longitudo]	10 26½ ♊
Latitude [Latitudo]	14 2⅓ B.

Unformed stars in the Milky Way between Erichthonius and the feet of ♊, whose arrangement is as follows[1] [Informes in via Lactea inter Erichtonium et Pedes ♊, quarum ſitus talis[1].]:

Diagram. Five small asterisks set in the left column, each with a numeral beside it, showing the relative positions of the five unformed stars. The asterisk marked 1 stands highest and furthest left; 2 stands below and to the right of 1; 4 stands to the right of 2, slightly lower; 3 stands below and to the left of 2; 5 stands below 3 and to its right. No other lines or lettering are drawn.

- 1 (top, left): numeral 1, set above and to the right of its asterisk
- 2 (below and right of 1): numeral 2, set above its asterisk
- 3 (below and left of 2): numeral 3, set to the right of its asterisk

- 4 (right of 2): numeral 4, set to the right of its asterisk
- 5 (lowest): numeral 5, set to the right of its asterisk

First. Of the 4th magnitude [Prima. 4æ mag.]

The northern one toward the east. Distant [Quæ ad ortum Borealis. Diſtat]:

from Aldebaran [ab Aldebaran]	26 12⅚
from the Lesser Dog [a Cane minore]	31 19¼
Declination [Declinatio]	29 34 B.
Right ascension [Aſcenſio Recta]	87 22⅚
Longitude [Longitudo]	27 42¾ ♊
Latitude [Latitudo]	6 3¾ B.

Second. Of the 5th magnitude [Secunda. 5æ mag.]

Distant from Aldebaran [Diſtat ab Aldebaran]	21 2½
from the Lesser Dog [a Cane minore]	33 39½
Its declination [Declinatio eiusdem]	27 27 B.
Right ascension [Aſcenſio Recta]	82 0½
Longitude [Longitudo]	22 53⅔ ♊
Latitude [Latitudo]	4 6⅙ B.

Third. Of the 5th magnitude [Tertia. 5æ mag.]

The one below this, toward the east. Distant [Quæ infra hanc ad ortum. Diſtat]:

from Aldebaran [ab Aldebaran]	21 15½
from the Lesser Dog [a Cane minore]	31 52
Its declination [Declinatio eiusdem]	25 49 B.
Right ascension [Aſcenſio Recta]	83 13
Longitude [Longitudo]	23 53½ ♊
Latitude [Latitudo]	2 26⅙ B.

Fourth. Of the 5th magnitude [Quarta. 5æ mag.]

The one that precedes this; it precedes them all [Quæ hanc præit. Præcedens omnium.].

Distant from the Lesser Dog [Diſtat a Cane minore]	35 14½
from Aldebaran [ab Aldebaran]	17 32⅓
Declination [Declinatio]	25 35½
Right ascension [Aſcenſio Recta]	78 41½
Longitude [Longitudo]	19 48⅓ ♊

Latitude [Latitudo]	2 28⅙ B.

Fifth. Of the 5th magnitude [Quinta. 5æ magnit.]
The one below this, which precedes all of them. Distant [Infra hanc quæ omnes præit. Diſtat]:

from Aldebaran [ab Aldebaran]	18 50
from the Lesser Dog [a Cane minore]	32 46⅔
Its declination [Declinatio eiusdem]	24 22⅓
Right ascension [Aſcenſio Recta]	81 2⅓
Longitude [Longitudo]	21 50½ ♊
Latitude [Latitudo]	1 6 B.

Orion [ORION.]

First. Of the 6th magnitude, lesser [Prima. 6æ mag. minor.]
The following one of the two above the hilt of the sword [Duarum ſupra manubrium enſis ſequens.].

Distant from the Lesser Dog [Diſtat a Cane minore]	34 20
Its declination [Declinatio eiusdem]	1 19¼ A.
Right ascension [Aſcenſio Recta]	76 2⅓
Longitude [Longitudo]	14 40⅔ ♊
Latitude [Latitudo]	24 6¼ Au.

Second. Of the 5th magnitude [Secunda. 5æ mag.]
The one above this that precedes it. Distant [Quæ ſupra hanc præit. Diſtat]:

from Aldebaran [ab Aldebaran]	20 19¼
from the bright star of the jaw of Cetus [a Luc. Mand. Cete]	35 5⅔
from the Lesser Dog [a Cane minore]	34 52⅓
Declination [Declinatio]	0 50⅙
Right ascension [Aſcenſio Recta]	75 17⅙
Longitude [Longitudo]	13 54⅚ ♊
Latitude [Latitudo]	23 32⅓ A.

Third. Of the 5th magnitude [Tertia. 5æ mag.]
The one above this, in the left side [Quæ ſupra hanc in ſiniſtro latere.].

Distant from Aldebaran [Diſtat ab Aldebaran]	18 57¼
from the Lesser Dog [a Cane minore]	33 50¾
Its declination [Declinatio eiusdem]	1 24½ B.
Right ascension [Aſcenſio Recta]	75 56½
Longitude [Longitudo]	14 52⅚ ♊
Latitude [Latitudo]	21 22¾ A.

[1] The first is κ Aurigae, 2 = 136 Tauri, 3 = 139, 4 = 125, 5 = 132 Tauri [Prima eſt κ Aurigæ, 2 = 136 Tauri, 3 = 139, 4 = 125, 5 = 132 Tauri.].

Fourth. Of the 4th magnitude, lesser [Quarta. 4 mag. minor.]

The one that precedes this, below the left arm, in the shield. Distant [Quæ hanc præit infra ſiniſtrum brachium in clipeo. Diſtat]:

from the Lesser Dog [a Cane minore]	36 34
from Aldebaran [ab Aldebaran]	16 25⅙
Its declination [Declinatio eiusdem]	2 19⅓ B.
Right ascension [Aſcenſio Recta]	73 1⅔
Longitude [Longitudo]	11 54 ♊
Latitude [Latitudo]	20 8⅓ A.

Fifth. Of the 5th magnitude [Quinta. 5ᵉ mag.]

The preceding one of the two in the right side [Præcedens duarum in dextro Latere.].

Distant from Aldebaran [Diſtat ab Aldebaran]	22 15
from the Lesser Dog [a Cane minore]	29 25⅔
Its declination [Declinatio eiusdem]	1 13⅙ B.
Right ascension [Aſcenſio Recta]	80 26⅙
Longitude [Longitudo]	19 41 ♊
Latitude [Latitudo]	21 57⅔ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	19 45 ♊
Latitude [Latitudo]	21 58 A.

Sixth. Of magnitude 5 [Sexta. 5 mag.]

The following one [Sequens.].

Distant from Aldebaran [Diſtat ab Aldebaran]	23 53
from the Lesser Dog [a Cane minore]	26 56
Its declination [Declinatio eiusdem]	1 41½ B.
Right ascension [Aſcenſio Recta]	82 55

Longitude [Longitudo]	22 21⅓ ♊
Latitude [Latitudo]	21 37 A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	22 25½ ♊
Latitude [Latitudo]	21 39 A.

Seventh. Of the 5th magnitude [Septima. 5ᵉ mag.]
An unformed star that follows this one [Informis quæ hanc ſequitur.].

Distant from Aldebaran [Diſtat ab Aldebaran]	25 56
from the Lesser Dog [a Cane minore]	25 32¾
Declination [Declinatio]	0 27½B.
Right ascension [Aſcenſio Recta]	84 34⅓
Longitude [Longitudo]	24 6 ♊
Latitude [Latitudo]	22 57¼ A.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	24 10 ♊
Latitude [Latitudo]	22 56 A.

Eighth. Of the 6th magnitude [Octaua. 6ᵉ mag.]
The upper one of the three in the left hand [Superior trium in ſiniſtra manu.].

Distant from the Lesser Dog [Diſtat a Cane minore]	35 56¼
Its declination [Declinatio eiusdem]	10 50 B.
Right ascension [Aſcenſio Recta]	73 35⅓
Longitude [Longitudo]	13 32⅓ ♊
Latitude [Latitudo]	11 45⅓ A.

Ninth. Of magnitude 6 [Nona. 6 mag.]
The middle one. Distant [Media. Diſtat]:

from the Lesser Dog [a Cane minore]	37 29
from Aldebaran [ab Aldebaran]	10 26½
Its declination [Declinatio eiusdem]	9 13½ B.
Right ascension [Aſcenſio Recta]	71 44⅔
Longitude [Longitudo]	11 29⅓ ♊
Latitude [Latitudo]	13 7⅔ A.

Tenth. Of magnitude 6 [Decima. 6 mag.]
The southern one. Distant [Auſtralis. Diſtat]:

from Aldebaran [ab Aldebaran]	11 6
Its declination [Declinatio eiusdem]	7 54 B.
Right ascension [Aſcenſio Recta]	71 21⅔
Longitude [Longitudo]	10 55½ ♊
Latitude [Latitudo]	14 23⅔ A.

Unformed stars that lie between Orion and the Milky Way, above the Greater Dog, whose arrangement is as follows [Informes quæ ſunt inter Orionem & viam Lacteam ſupra Canem maiorem, quarum ſitus talis.]:

Diagram. Ten small asterisks set in the right column, each with a numeral beside it, showing the relative positions of the unformed stars. From top to bottom: 6 stands highest; 8 stands below and to the left of 6; 5 stands below 8 and to the right of it; 7 and 4 stand side by side below 5 (7 to the left, 4 to the right); 10 stands lowest-left of this group, at the left edge of the column, with 9 to its right and slightly higher; 3 stands below 9 and to the right; 2 and 1 stand side by side at the bottom (2 to the left, 1 to the right). No other lines or lettering are drawn.

- 1 (bottom, right): numeral 1, set to the right of its asterisk
- 2 (bottom, left): numeral 2, set to the right of its asterisk
- 3 (above 2): numeral 3, set to the right of its asterisk
- 4 (middle, right): numeral 4, set to the right of its asterisk
- 5 (above 4 and 7): numeral 5, set to the right of its asterisk
- 6 (top): numeral 6, set to the right of its asterisk
- 7 (middle, left of 4): numeral 7, set to the right of its asterisk
- 8 (below and left of 6): numeral 8, set to the right of its asterisk, with a small dot between them
- 9 (left, below 7): numeral 9, set to the right of its asterisk
- 10 (far left): numeral 10, set to the right of its asterisk

First. Of the 4th magnitude [Prima. 4ᵃᵉ mag.]

The preceding one of the three lower ones. Distant [Præcedens trium inferiorum. Diſtat]:

from Aldebaran [ab Aldebaran]	33 26
from the heart of Hydra [a Corde Hydræ]	47 45⅚
Its declination [Declinatio eiusdem]	6 11½A.
Right ascension [Aſcenſio Recta]	88 49⅚
Longitude [Longitudo]	28 39⅚ ♊
Latitude [Latitudo]	29 31⅓ A.

Second¹. Of the 4th magnitude [Secunda¹. 4ᵃᵉ mag.]

The following one. Distant [Sequens. Diſtat]:

from the heart of Hydra [a Corde Hydræ]	44 15¼
from Aldebaran [ab Aldebaran]	36 29¾
Its declination [Declinatio eiusdem]	6 48⅚A.
Right ascension [Aſcenſio Recta]	92 18⅚
Longitude [Longitudo]	2 38⅔ ♋
Latitude [Latitudo]	29 48⅚ A.

Third. Of the 5th magnitude [Tertia. 5ᵉ mag.]
The one above this. Distant [Quæ ſupra hanc. Diſtat]:

from Aldebaran [ab Aldebaran]	34 55⅔
from the heart of Hydra [a Corde Hydræ]	44 43
Southern declination [Declinatio Auſt.]	4 33⅔
Right ascension [Aſcenſio Recta]	92 2⅓
Longitude [Longitudo]	2 17⅔ ♋
Latitude [Latitudo]	28 4⅙ A.

Fourth. Of the 4th magnitude [Quarta. 4ᵉ mag.]
The preceding and more southerly of three in a straight line below the feet of the Twins [Præcedens et auſtralior trium in recta linea infra Pedes Geminorum.].

Difference of right ascensions [Differentia Aſcenſionum Rectarum]	
from the left foot of Orion [a ſiniſtro Pede Orionis]	16 48
from the Lesser Dog [a Cane Minore]	18 53⅓
Right ascension, limited [Aſcenſio Recta limitata]	90 37⅚
Its declination [Declinatio eiusdem]	4 44 B.
Longitude [Longitudo]	1 3¾ ♋
Latitude [Latitudo]	18 47⅓ A.

Fifth. Of the 4th magnitude [Quinta. 4ᵉ mag.]
The middle one. Difference of right ascensions [Media. Differentia Aſcenſionum. Rect.]:

from the Lesser Dog [a Cane minore]	16 45¼
from the left foot of Orion [a ſiniſtro pede Orionis]	18 58
Right ascension, limited [Aſcenſio Recta limitata]	92 46¾
Its declination [Declinatio eiusdem]	7 33⅓ B.
Longitude [Longitudo]	2 54 ♋
Latitude [Latitudo]	15 56½ A.

Sixth. Of the 4th magnitude [Sexta. 4æ mag.]

The northern one. Difference of right ascensions [Borealis. Differentia Aſcenſ. Rect.]:

from the left foot of Orion [a ſiniſtro pede Orionis]	20 53⅓
from the Lesser Dog [a Cane minore]	14 49⅓
Right ascension, limited [Aſcenſio Recta limitata]	94 42⅓
Declination [Declinatio]	10 11½ B.
Longitude [Longitudo]	4 45⅚ ♋
Latitude [Latitudo]	13 15⅓ A.

Seventh. Of the 5th magnitude [Septima. 5æ mag.]

The one below the straight line, toward the south [Quæ infra lineam rect. ad Auſtrum.].

Equatorial distance [Diſtantia æquatoris]	
from the left foot of Orion [a ſiniſtro pede Orionis]	18 54½
from the Lesser Dog [a Cane minore]	16 45⅚
Right ascension, limited [Aſcenſio Recta limitata]	92 44⅔
Its declination [Declinatio eiusdem]	5 5½ B.
Longitude [Longitudo]	2 53¾ ♋
Latitude [Latitudo]	18 24⅓ A.

Eighth. Of the 5th magnitude [Octaua. 5æ mag.]

The one above this, toward the east [Quæ ſupra hanc ad ortum.].

Equatorial distance [Diſtantia Æquatoris]	
from the left foot of Orion [a ſin. pede Orion.]	22 32⅚
from the Lesser Dog [a Cane minore]	13 9⅙
Right ascension, limited [Aſcenſio Recta limitata]	96 22⅕
Northern declination [Declinatio Borea]	8 23½
Longitude [Longitudo]	6 31⅔ ♋
Latitude [Latitudo]	14 59⅓ A.

Ninth. Of the 4th magnitude, lesser [Nona. 4æ mag. minor.]

The preceding one of the two below the Lesser Dog. By equatorial distance [Infra Canem minorem duarum præcedens. Per diſtantiam æquatoris]:

from the Lesser Dog [a Cane minore]	96 44
Right ascension from the southern horn of ♉ [Aſc. Recta ab Auſt. cornu ♉]	96 41
Right ascension, limited [Aſcenſio Recta limitata]	96 42½

Its declination [Declinatio eiusdem]	2 48½ B.
Longitude [Longitudo]	7 10⅓ ♋
Latitude [Latitudo]	20 32⅚ A.

Tenth. Of the 4th magnitude [Decima. 4æ mag.]

The following one of these. Right ascension [Sequens earundem. Aſcenſio Recta]:

from the southern horn of ♉ [ab Auſtr. cornu ♉]	102 49¼
from the Lesser Dog [a Cane minore]	102 50½
Right ascension, limited [Aſcenſio Recta limitata]	102 49⅚
Northern declination [Declinatio Borea]	0 7⅙ B.
Longitude [Longitudo]	13 56 ♋
Latitude [Latitudo]	22 47 A.

Hydra [HYDRA.]

First. Of the 4th magnitude [Prima. 4æ mag.]

The northern one of the two below the base of the Cup. Its distance [Duarum infra baſin Crateris borealis. Diſtantia eiusdem]:

from the heart of Hydra [a Corde Hydræ]	28 38½
from Spica [a Spica Virginis]	33 51
Its declination [Declinatio eiusdem]	20 36 A.
Refraction [Refractio]	4
True declination [Declinatio vera]	20 40
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	23 1½ ♍
Latitude [Latitudo]	25 36 A.

Second. Of the 5th magnitude [Secunda. 5æ mag.]

The southern one. Equatorial distance [Auſtralis. Diſtantia æquatoris]:

from the heart of Hydra [a Corde Hydræ]	24 31
from the third in the left wing of ♍ [a 3ª in ala ſiniſt. ♍]	23 47⅓

[1] ii Monocerotis [ii Monocerotis.].

Right ascension, limited [Aſcenſio Recta lim.]	161 29

Its declination [Declinatio eiusdem]	25 2½A.
Refraction [Refractio]	6
True declination [Declinatio vera]	25 8½
Longitude [Longitudo]	23 44⅔ ♍
Latitude [Latitudo]	30 17⅙ A.

Third. Of magnitude 3, lesser [Tertia. 3 mag. minor.]

The one below the tail of the Crow. Distant [Quæ infra caudam Corui. Diſtat]:

from the heart of Hydra [a Corde Hydræ]	57 0½
from the left knee of Ophiuchus [a ſiniſtro genu Ophiuchi]	48 50
Declination [Declinatio]	20 57½A.
Refraction [Refractio]	4
True declination [Declinatio vera]	21 1½
Right ascension [Aſcenſio Recta]	194 15
Longitude [Longitudo]	21 21⅔ ♎
Latitude [Latitudo]	13 43½ M.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	21 23 ♎
Latitude [Latitudo]	13 42 A.

Fourth. Of magnitude 6 [Quarta. 6 mag.]

A very small one that precedes this. Distant [Paruula quæ hanc præit. Diſtat]:

from the upper one in the left hand of Ophiuchus [a ſup. in ſin. manu Oph.]	48 45½
Its declination [Declinatio eiusdem]	20 59 A.
Refraction [Refractio]	4
True declination [Declinatio vera]	21 3
Right ascension [Aſcenſio Recta]	192 11
Longitude [Longitudo]	19 20 ♎
Latitude [Latitudo]	14 37 A.

Crater [CRATER.]

First. Of the 4th magnitude [Prima. 4^{æ} mag.]

The preceding one of the two upper ones [Præcedens duarum ſuperiorum.].

Distant from the heart of Hydra [Diſtat a Corde Hydræ]	28 49½
from the third in the left wing of ♍ [a 3^{a} in ſiniſt. ala ♍]	21 19
Its declination [Declinatio eiusdem]	8 39½A.
Right ascension [Aſcenſio Recta]	166 2⅓

Longitude [Longitudo]	20 36⅔ ♍
Latitude [Latitudo]	13 29⅚ A.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	20 27 ♍[1]
Latitude [Latitudo]	13 10 Au.

Second. Of magnitude 4 [Secunda. 4 mag.]
The following one of these. Distant [Sequens earundem. Diſtat]:

from the heart of Hydra [a Corde Hydræ]	31 49
from the third in the wing of Virgo [a 3ª in ala Virginis]	18 11¾
Its declination [Declinatio eiusdem]	7 34½A.
Right ascension [Aſcenſio Recta]	169 3½
Longitude [Longitudo]	22 58½ ♍
Latitude [Latitudo]	11 17⅔ A.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	23 1 ♍
Latitude [Latitudo]	11 16 A.

Third. Of the 4th magnitude [Tertia. 4æ mag.]
The preceding one of the two lower ones [Præcedens duarum inferiorum.].

Distant from the heart of Hydra [Diſtat a Corde Hydræ]	34 37
from Spica [a Spica ♍]	25 19
Southern declination [Declinatio Auſtr.]	16 5¾
Refraction [Refractio]	1¼
True declination [Declinatio vera]	16 7
Right ascension [Aſcenſio Recta]	171 5⅓
Longitude [Longitudo]	28 27⅙ ♍
Latitude [Latitudo]	18 18⅓ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	28 29 ♍
Latitude [Latitudo]	18 14 A.

Fourth. Of the 4th magnitude [Quarta. 4æ mag.]
The following one. Distant [Sequens. Diſtat]:

from the heart of Hydra [a Corde Hydræ]	37 4
from Spica [a Spica ♍]	22 23½
Its declination [Declinatio eiusdem]	14 53½A.
Refraction [Refractio]	½

True declination [Declinatio vera]	14 54 A.
Right ascension [Aſcenſio Recta]	173 54⅔
Longitude [Longitudo]	0 30½ ♌
Latitude [Latitudo]	16 3⅔ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	0 31½ ♌
Latitude [Latitudo]	16 0½ A.

Fifth. Of the 5th magnitude [Quinta. 5ᵃᵉ mag.]
In the middle of the Cup. Distant [In medio Crateris. Diſtat]:

from the heart of Hydra [a Corde Hydræ]	32 26½
from Spica [a Spica ♍]	26 2
Its declination [Declinatio eiusdem]	10 57⅔A.
Right ascension [Aſcenſio Recta]	169 36¼
Longitude [Longitudo]	24 52⅚ ♍
Latitude [Latitudo]	14 11 A.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	24 54 ♍
Latitude [Latitudo]	14 7 A.

[1] This position, which Tycho used in the catalogue of a thousand stars, is wrong. The computed position is correct [Hic locus, quo uſus eſt Tycho in catalogo mille ſtellarum, falſus eſt. Locus ſupputatus recte ſe habet.].

Corvus [CORUUS.]

First. Of the 4th magnitude [Prima. 4ᵃᵉ mag.]
The one in the beak. Distant [Quæ in Roſtro. Diſtat]:

from Spica [a Spica Virginis]	22 39
from the heart of the Lion [a Corde Leonis]	46 53⅓
Its declination [Declinatio eiusdem]	22 25
Refraction [Refractio]	4¾
True declination [Declinatio vera]	22 29¾
Right ascension [Aſcenſio Recta]	176 49⅓
Longitude [Longitudo]	6 32 ♌
Latitude [Latitudo]	21 47⅔ A.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	6 43½ ♌
Latitude [Latitudo]	21 44 A.

Second. Of magnitude 5, greater [Secunda. 5 mag. maior.]

In the neck. Distant [In Collo. Diſtat]:

from the heart of Hydra [a Corde Hydræ]	43 36
from the Southern Scale-Pan [ab Auſtr. Lance]	35 58
Declination [Declinatio]	19 53¾A.
Refraction [Refractio]	0 1¼
True declination [Declinatio vera]	19 55 A.
Right ascension [Aſcenſio Recta]	179 55¾
Longitude [Longitudo]	8 10⅙ ♎
Latitude [Latitudo]	18 13⅔ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	8 13 ♎
Latitude [Latitudo]	18 14 A.

Third. Of magnitude 5 [Tertia. 5 mag.]

A very small one above the bright one in the left wing [Paruula ſupra lucidam in ſiniſtra ala.]. Equatorial distance [Diſtantia æquatoris]:

from Spica [a Spica Virginis]	13 7⅙
from the heart of ♌ [a Corde ♌]	36 14½
Its declination [Declinatio eiusdem]	13 55¾A.
Limited ascension [Aſcenſio limitata]	182 54⅓
Longitude [Longitudo]	8 17⅙ ♎
Latitude [Latitudo]	11 27¾ A.

Unformed stars around Virgo [INFORMES CIRCA VIRGINEM.]

First. Of magnitude 5 [Prima. 5 mag.]

The preceding one of three in a straight line below the left arm. Equatorial distance [Sub brachio ſiniſtro in recta linea trium præcedens. Diſt. Æquatoris]:

from the heart of ♌ [a Corde ♌]	37 56⅔
from Spica [a Spica Virginis]	11 19⅓
Southern declination [Declinatio Auſtr.]	5 45½
Right ascension, limited [Aſcenſio Recta limitata]	184 39⅓
Longitude [Longitudo]	6 33¾ ♎
Latitude [Latitudo]	3 25½ Auſt.

Second. Of magnitude 5 [Secunda. 5 mag.]

The middle one. Difference of right ascensions [Media. Differentia Aſcenſ. Rect.]:

from Spica [a Spica Virginis]	7 37⅓
from the heart of ♌ [a Corde ♌]	41 41⅚
Its declination [Declinatio eiusdem]	7 18½A.
Right ascension, limited [Aſcenſio Recta limitata]	188 23
Longitude [Longitudo]	10 34⅚ ♎
Latitude [Latitudo]	3 22⅚ A.

Third. Of magnitude 5 [Tertia. 5 mag.]
The following one. Equatorial distance [Sequens. Diſtantia æquatoris]:

from the Northern Scale-Pan [a Borea Lance]	32 8⅙
from the heart of the Lion [a Corde Leonis]	44 54⅔
Southern declination [Declinatio Auſt.]	8 31⅔
Right ascension, limited [Aſcenſio Recta limitata]	191 39¼
Longitude [Longitudo]	14 4⅙ ♎
Latitude [Latitudo]	3 13½ Auſt.

Fourth. Of magnitude 5 [Quarta. 5 mag.]
Below Spica. The preceding one of three. Distant [Sub Spicam. Trium præcedens. Diſtat]:

from the heart of Hydra [a Corde Hydræ]	55 5½
from the Northern Scale-Pan [a Borea Lance]	31 9
Its declination [Declinatio eiusdem]	14 0¼
Right ascension [Aſcenſio Recta]	192 41
Longitude [Longitudo]	17 8⅔ ♎
Latitude [Latitudo]	7 52¼ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	17 13 ♎
Latitude [Latitudo]	7 50 A.

Fifth. Of magnitude 5 [Quinta. 5 mag.]
The middle one, toward the south. Distant [Media ad auſtrum. Diſtat]:

from the Southern Scale-Pan [ab Auſtrali Lance]	22 3¾
from the heart of Hydra [a Corde Hydræ]	56 48½
Its declination [Declinatio eiusdem]	16 11⅙A.
Refraction [Refractio]	1¼
True declination [Declinatio vera]	16 12½
Right ascension [Aſcenſio Recta]	194 22¼
Longitude [Longitudo]	19 31⅓ ♎

Latitude [Latitudo]	9 15⅔ A.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	19 35 ♎
Latitude [Latitudo]	9 16 A.

Sixth. Of magnitude 5 [Sexta. 5 mag.]

The following and more easterly one. Distant [Sequens et Orientalior. Diſtat]:

from the Northern Scale-Pan [a Borea Lance]	27 29
from the heart of Hydra [a Corde Hydræ]	58 53
Its declination [Declinatio eiusdem]	13 50⅙A.
Right ascension [Aſcenſio Recta]	196 32⅓
Longitude [Longitudo]	20 32½ ♎
Latitude [Latitudo]	6 16½ A.

From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	20 35½ ♎
Latitude [Latitudo]	6 16 A.

Canis Minor [CANIS MINOR]

Of magnitude 6, greater [6 mag. maior.]

A very small one in the neck, above the bright one. Distant [Paruula in collo ſupra Lucidam. Diſtat]:

from the bright star of Orion's shoulder [a Luc. Hum. Orionis]	23 6½
from the heart of the Lion [a Corde Leonis]	39 29½
Its declination [Declinatio eiusdem]	9 42½ B.
Right ascension [Aſcenſio Recta]	106 33½
Longitude [Longitudo]	16 45 ♋
Latitude [Latitudo]	12 51⅓ A.

Of magnitude 6 [6 mag.]

Of the unformed ones, the one above this. Distant [Informium ſupra hanc. Diſtat]:

from the bright star of Orion's shoulder [a Lucido Hum. Orion.]	23 45½

from the heart of the Lion [a Corde Leonis]	38 48⅓
Northern declination [Declinatio Borea]	12 47
Right ascension [Aſcenſio Recta]	106 48¾
Longitude [Longitudo]	16 38⅙ ♋
Latitude [Latitudo]	9 46⅓ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	16 43 ♋
Latitude [Latitudo]	9 46 A.

Of magnitude 5, lesser [5 mag. minor.]

The one that follows this, which may conveniently be included in the tail of the Crab. Distant [Quæ hanc ſequitur quæ commode includen. in Cauda Cancri. Diſt.]:

from the bright star of Orion's shoulder [a Luc. Humero Orion.]	27 35⅓
from the heart of the Lion [a Corde Leonis]	34 52
Its declination [Declinatio eiusdem]	11 41½B.
Right ascension [Aſcenſio Recta]	110 58⅚
Longitude [Longitudo]	20 53¼ ♋
Latitude [Latitudo]	10 19⅙ A.
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	20 57½ ♋
Latitude [Latitudo]	10 19½ A.

Unformed stars below the Twins [INFORMES INFRA GEMINOS.]

Of the 6th magnitude, greater [6ᵉ mag. maior.]

The lower and preceding one of five roughly in a straight line. Distant [Inferior et præcedens quinque quaſi in recta linea. Diſtat]:

from Aldebaran [ab Aldebaran]	42 34¾
from the heart of the Lion [a Corde Leonis]	37 41
Its declination [Declinatio eiusdem]	16 37½B.
Right ascension [Aſcenſio Recta]	107 38⅓
Longitude [Longitudo]	16 58⅙ ♋
Latitude [Latitudo]	5 51⅔ A.

Second. Of the 6th magnitude [Secunda. 6ᵉ mag.]

The following one, above this. Distant [Sequens ſupra hanc. Diſtat]:

from Aldebaran [ab Aldebaran]	43 45⅔

from the heart of the Lion [a Corde Leonis]	36 26
Its declination [Declinatio eiusdem]	18 31½B.
Right ascension [Aſcenſio Recta]	108 59¾
Longitude [Longitudo]	18 1½ ♋
Latitude [Latitudo]	3 48½ A.

Third. Of the 6th magnitude, greater [Tertia. 6æ mag. maior.]

Distant from Aldebaran [Diſtat ab Aldebaran]	45 15¾
from the heart of the Lion [a Corde Leonis]	34 55¾
Northern declination [Declinatio Borea]	19 26⅓
Right ascension [Aſcenſio Recta]	110 38⅙
Longitude [Longitudo]	19 26⅓ ♋
Latitude [Latitudo]	2 41⅔ A.

Fourth. Of the 6th magnitude, greater [Quarta. 6æ mag. maior.]

Distant from the southern horn of ♉ [Diſt. ab Auſtr. Cornu ♉]	32 16
from the heart of the Lion [a Corde Leonis]	32 51⅙
Its declination [Declinatio eiusdem]	20 53⅙B.
Right ascension [Aſcenſio Recta]	112 57⅚
Longitude [Longitudo]	21 24⅚ ♋
Latitude [Latitudo]	0 56⅔ A.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	21 27 ♋
Latitude [Latitudo]	0 55 A.

Fifth. Of the 6th magnitude, greater [Quinta. 6æ mag. maior.]

The last and northern one. Distant [Vltima et Borealis. Diſtat]:

from the southern horn of ♉ [ab Auſtrali Cornu ♉]	34 48
from the heart of the Lion [a Corde Leonis]	30 23½
Northern declination [Declinatio Borea]	22 41½
Right ascension [Aſcenſio Recta]	115 58⅔
Longitude [Longitudo]	23 52 ♋
Latitude [Latitudo]	1 18½ B.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	23 52 ♋
Latitude [Latitudo]	1 18½ B.

Of the 3rd magnitude, lesser [3æ mag. minor]

Below Cancer, the one of the unformed stars that precedes the head of Hydra[1]. Equatorial distance [Sub Cancro Informium antecedens Caput Hydræ[1]. Diſtant. Æquatoris]:

from the heart of Hydra [a Corde Hydræ]	18 17
from the right shoulder of Orion [a dext. Hum. Orionis]	35 17
Its declination [Declinatio eiusdem]	10 23⅓B
Right ascension, limited [Aſcenſio Recta limitata]	118 40⅙
Longitude [Longitudo]	28 40 ♋
Latitude [Latitudo]	10 19 A

[1] In the catalogue of a thousand stars it is the last of the constellation Hydra (β Cancri) [In catalogo mille ſtellarum eſt ultima conſtellationis Hydræ (β Cancri).].

Argo Navis [ARGO NAUIS.]

First. Of the 4th magnitude [Prima. 4æ mag.]

In the sail. Angle of difference of right ascension [In velo. Ang. differ. Aſcenſ. Recta]:

from the heart of Hydra [a Corde Hydræ]	18 48
from the bright star of Orion's shoulder [a Lucida Humer. Orionis]	34 45
Its declination [Declinatio eiusdem]	11 46⅓A.
Right ascension, limited [Aſcenſio Recta limitata]	118 8⅔
Longitude [Longitudo]	4 2⅓ ♌
Latitude [Latitudo]	32 6⅚ A.

Second. Of the 4th magnitude [Secunda. 4æ mag.]

An unformed star to the south, between this one and the uppermost in the stern. Equatorial distance [Informis ad Auſtrum inter hanc et ſupremam in puppi. Diſt. æquatoris]:

from the heart of Hydra [a Corde Hydræ]	19 9⅓
from the bright star of Orion's shoulder [a Lucid. Hum. Orionis]	34 21⅓
Southern declination [Declinatio Auſtr.]	18 5⅙
Refraction [Refractio]	2½
True declination [Declinatio vera]	18 7⅔
Right ascension, limited [Aſcenſio Recta limitata]	117 46
Longitude [Longitudo]	4 23⅙ ♌
Latitude [Latitudo]	38 30⅔ A.

Third. Of the 6th magnitude, greater [Tertia. 6æ mag. maior.]

The lower and more westerly of the three in the mast. Equatorial distance [Inferior et occidentalior trium in malo. Diſtantia Æquatoris]:

from the bright star of Orion's shoulder [a Lucid. Humer. Orionis]	42 24
from the heart of Hydra [a Corde Hydræ]	11 13½
Its declination [Declinatio eiusdem]	14 31¾A.
Right ascension, limited [Aſcenſio Recta limitata]	125 45½
Longitude [Longitudo]	12 22⅓ ♌
Latitude [Latitudo]	32 55¾ A.

Fourth. Of the 4th magnitude [Quarta. 4æ mag.]

The one above this. Difference of right ascension [Quæ ſupra hanc. Differentia Aſc. Rect.]:

from the heart of Hydra [a Corde Hydræ]	10 7⅚
from the bright star of Orion's shoulder [a Luc. Humer. Orionis]	43 29⅓
Its declination [Declinatio eiusdem]	12 6½A.
Right ascension, limited [Aſcenſio Recta limitata]	126 51
Longitude [Longitudo]	12 47⅙ ♌
Latitude [Latitudo]	30 18¼ A.

Fifth. Of the 4th magnitude [Quinta. 4æ mag.]

The upper of the same stars. Difference of right ascensions [Superior earundem. Differentia Aſcenſionum Rectarum]:

from the heart of Hydra [a Corde Hydræ]	11 0⅓
from the right shoulder of Orion [a Dextro Humero Orion.]	42 37⅚
Its declination [Declinatio eiusdem]	5 49½A.
Right ascension, limited [Aſcenſio Recta limitata]	125 58⅚
Longitude [Longitudo]	9 57⅓ ♌
Latitude [Latitudo]	24 28⅔ A.

Sixth. Of the 4th magnitude [Sexta. 4æ mag.]

The preceding one of the two in Cygnus. Equatorial distance [Præcedens duarum in Cygno. Diſtantia Æquatoris]:

from the right shoulder of Orion [a Dextro Humero Or.]	33 44½
from the heart of Hydra [a Corde Hydræ]	19 51
Southern declination [Declinatio Auſtr.]	0 51½
Right ascension, limited [Aſcenſio Recta limit.]	117 6⅚
Longitude [Longitudo]	29 21⅔ ♌

Latitude [Latitudo]	21 39 A.[1]

Seventh. Of the 3rd magnitude, lesser [Septima. 3 mag. minor.]

The following one of the same two. Equatorial distance [Sequens earundem. Diſt. Æquatoris]:

from the heart of Hydra [a Corde Hydræ]	15 36
from the right shoulder of Orion [a Dextro Hum. Orion.]	38 2½
Southern declination [Declinatio Auſtr.]	2 38⅓
Right ascension, limited [Aſcenſio Recta limit.]	121 23⅓
Longitude [Longitudo]	4 16¼ ♌
Latitude [Latitudo]	22 29½ Auſt.[2]

Eighth. Of the 3rd magnitude, lesser [Octaua. 3 mag. minor.]

An unformed star between the sail of the ship and the Milky Way. Difference of right ascensions [Informis inter velum nauis et viam Lacteam. Differentia Aſcenſionum Rectarum]:

from the right shoulder of Orion [a Dextro Hum. Orion.]	27 7⅙
from the heart of Hydra [a Corde Hydræ]	26 29½
Its declination [Declinatio eiusdem]	8 39¼A.
Right ascension, limited [Aſcenſio Recta limitata]	110 29
Longitude [Longitudo]	23 40¼ ♌
Latitude [Latitudo]	30 30¼ Auſt.[3]

Ursa Major [VRSA MAIOR.]

First. Of the 4th magnitude [Prima. 4æ mag.]

The one in the haunch. Distant [Quæ in Clune. Diſtat]:

from the last star in the tail [ab extrema in Cauda]	19 59½
from Dubhe [a Dubbe]	15 13
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	28 10 ♌
Latitude [Latitudo]	41 30 B.

[1] The sign, which is ♌ in the catalogue of a thousand stars too (vol. III, p. 372), should be ♋. The star is 29 Monocerotis, but the declination should be — 1° 51½′. The longitude (for the completed year 1595) is therefore found to be 29° 34.3′ ♋ and the latitude — 22° 38.0′ [Signum, quod etiam in Catalogo mille ſtellarum (T. III p. 372) eſt ♌, debet eße ♋. Stella eſt 29 Monocerotis

ſed Declinatio debet eße — 1° 51½′. Ergo Longitudo (ad a. 1595 completum) invenitur 29° 34.3′ ♋ et Latitudo — 22° 38.0′.].

[2] The sign ♌ is correct; in the catalogue of a thousand stars it is wrong. The star is 30 Monocerotis [Signum ♌ recte ſe habet, in Catalogo mille ſtellarum falſum eſt. Stella eſt 30 Monocerotis.].

[3] The sign is ♋, and the star is 26 Monocerotis [Signum eſt ♋ et ſtella eſt 26 Monocerotis.].

Second. Of the 5th magnitude, greater [Secunda. 5æ mag. maior.]

In the left hind foot. Distant [In poſteriore ſiniſtro Pede. Diſtat]:

from the last star in the tail [ab Extrema in Cauda]	30 13
from Dubhe [a Dubbe]	18 37½
Longitude [Longitudo]	20 57½ ♌
Latitude [Latitudo]	33 1 B.

Unformed stars around Ursa Major [INFORMES CIRCA VRSAM MAIOREM.]

First. Of the 3rd magnitude, lesser [Prima. 3æ mag. minor.]

Between the forefeet of the Bear and the head of the Lion; the southern one of three. Distant [Inter vrſæ pedes priores et Caput Leonis. Trium Auſtralis. Diſtat]:

from Capella [a Capella]	46 54
from the tail of the Lion [a Cauda Leonis]	38 45¼
Its declination [Declinatio eiusdem]	36 3¼B.
Right ascension [Aſcenſio Recta]	134 0¾
Longitude [Longitudo]	6 13 ♌
Latitude [Latitudo]	17 55⅓ Bor.

Second. Of the 4th magnitude [Secunda. 4æ mag.]

The one above this, to the east. Distant [Quæ ſupra hanc ad Ortum. Diſtat]:

from Capella [a Capella]	48 0
from the tail of the Lion [a Cauda Leonis]	37 9⅚
Northern declination [Declinatio Borea]	38 9½
Right ascension [Aſcenſio Recta]	137 14
Longitude [Longitudo]	8 5⅔ ♌
Latitude [Latitudo]	20 41⅔ B.

Third. Of the 4th magnitude, greater [Tertia. 4æ mag. maior.]

The one that precedes this. Distant [Quæ hanc præit. Diſtat]:

from the tail of the Lion [a Cauda Leonis]	40 6½
from Capella [a Capella]	45 11¾
Its declination [Declinatio eiusdem]	38 28¼ B.
Right ascension [Aſcenſio Recta]	133 20½
Longitude [Longitudo]	4 56 ♌
Latitude [Latitudo]	20 4⅔ B.

Fourth. Of the 4th magnitude, lesser [Quarta. 4æ mag. minor.]

In front of this one, the following one of two. Distant [Ante hanc duarum ſequens. Diſtat]:

from Capella [a Capella]	42 15¾
from the tail of the Lion [a Cauda Leonis]	42 58½
Its declination [Declinatio eiusdem]	40 1⅓ B.
Right ascension [Aſcenſio Recta]	130 8
Longitude [Longitudo]	1 53 ♌
Latitude [Latitudo]	20 51 B.

Fifth. Of the 4th magnitude [Quinta. 4æ mag.]

The preceding one of the same two. Distant [Præcedens earundem. Diſtat]:

from Capella [a Capella]	39 43⅔
from the tail of the Lion [a Cauda Leonis]	45 19
Northern declination [Declinatio Borea]	43 19¼
Right ascension [Aſcenſio Recta]	128 28½
Longitude [Longitudo]	29 38 ♋
Latitude [Latitudo]	23 41⅓ B.

Sixth. Of the 4th magnitude [Sexta. 4 mag.]

Between the hind feet and the Lion, the preceding one. Distant [Inter poſteriores Pedes et Leonem Præcedens. Diſtat]:

from the last star in the tail [ab Extrema in Cauda]	42 49½
from Dubhe [a Dubbe]	27 57½
For the year 1600, from the great globe [Ad Annum 1600 ex magno Globo]	
Longitude [Longitudo]	14 12 ♌
Latitude [Latitudo]	21 53 B.

Seventh. Of the 4th magnitude [Septima. 4æ mag.]

The following one, to the north. Distant [Sequens ad Boream. Diſtat]:

from the last star in the tail [ab Extrema in Cauda]	37 49¼
from Dubhe [a Dubbe]	25 38
Longitude [Longitudo]	18 51 ♌
Latitude [Latitudo]	25 4⅕ B.

Eighth. Of the 5th magnitude, greater [Octaua. 5æ mag. mai.]

The one that follows this to the south [Quæ hanc ad Auſtrum ſequitur.]. Distant [Diſtat]:

from Dubhe [a Dubbe]	28 34⅔
from the last star in the tail [ab Extrema in Cauda]	39 51⅚
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	19 57 ♌
Latitude [Latitudo]	24 59 B.

Ninth. Of the 5th magnitude [Nona. 5æ mag.]

The preceding one of the two in the base of the Oxygonium (the acute-angled triangle) [Præcedens duarum in Baſi Oxygonij.]. Distant [Diſtat]:

from Dubhe [a Dubbe]	30 2
from the last star in the tail [ab Extrema in Cauda]	38 56⅔
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	23 22½ ♌
Latitude [Latitudo]	21 38 B.

Tenth. Of the 5th magnitude, greater [Decima. 5æ mag. maior.]

The following one. Distant [Sequens. Diſtat]:

from the last star in the tail of Ursa Major [ab Extrema in Cauda Vrſæ maioris]	38 40
from Dubhe [a Dubbe]	31 13
For the year 1600, from the great globe [Ad Annum 1600 ex Globo magno]	
Longitude [Longitudo]	26 9 ♌
Latitude [Latitudo]	20 44 B.

Eleventh. Of the 4th magnitude [Vndecima. 4æ mag.]

The third and northern one in the Oxygonium. Distant [Tertia et Borealis in Oxygonio. Diſtat]:

from Dubhe [a Dubbe]	27 32½
from the last star in the tail [ab Extrema in Cauda]	35 11
Longitude [Longitudo]	25 14¾ ♌
Latitude [Latitudo]	24 58⅙ B.

Twelfth. Of the 5th magnitude, greater [Duodecima. 5æ magn. maior.]

The one between the haunches of the Bear and the bright unformed star, above Coma Berenices [Quæ inter Vrſæ Clunes et Lucidam Inform., ſupra Comam Berenices.]. Distant [Diſtat]:

from Arcturus [ab Arcturo]	30 47¾
from the bright star in the back of ♌ [a Lucida in Dorſo ♌]	26 48½
From the great globe, for the year 1600 [Ex Globo magno ad Annum 1600]	
Longitude [Longitudo]	12 16 ♍
Latitude [Latitudo]	40 30 B.

Boötes [BOOTES.]

First. Of the 5th magnitude [Prima. 5æ mag.]

The preceding one of the four in the right hand. Distant [Præcedens quatuor in dextra manu. Diſtat]:

from the tail of ♌ [a Cauda ♌]	46 17½
from the bright star of Lyra [a Lucida Lyræ]	46 52½
Its declination [Declinatio eiusdem]	26 39¾B.
Right ascension [Aſcenſio Recta]	221 7
Longitude [Longitudo]	28 7 ♎
Latitude [Latitudo]	40 14½ B.

Second. Of the 5th magnitude [Secunda. 5æ mag.]

The following one, to the south. Distant [Sequens ad Auſtrum. Diſtat]:

from the tail of ♌ [a Cauda ♌]	47 26½
from the bright star of Lyra [a Lucida Lyræ]	45 58½
Northern declination [Declinatio Borea]	26 29
Right ascension [Aſcenſio Recta]	222 24
Longitude [Longitudo]	29 35⅔ ♎
Latitude [Latitudo]	40 31½ B.

Third. Of the 5th magnitude, greater [Tertia. 5æ mag. maior.]

The northern one. Distant [Borealis. Diſtat]:

from the bright star of Lyra [a Lucida Lyræ]	45 28½
from the tail of ♌ [a Cauda ♌]	46 58
Declination [Declinatio]	28 34½B.
Right ascension [Aſcenſio Recta]	221 46
Longitude [Longitudo]	27 48⅔ ♎
Latitude [Latitudo]	42 16⅓ B.

Fourth. Of the 6th magnitude [Quarta. 6 mag.]
The one that follows this. Distant [Quæ hanc ſequitur. Diſtat]:

from the left shoulder of Hercules [a ſiniſtro hum. Herculis]	28 33
from the tail of ♌ [a Cauda ♌]	47 45
Its declination [Declinatio eiusdem]	27 53 B.
Right ascension [Aſcenſio Recta]	222 42¼
Longitude [Longitudo]	29 12 ♎
Latitude [Latitudo]	41 55 B.

Fifth. Of the 5th magnitude [Quinta. 5æ mag.]
The preceding and more southerly of the two above the hand on the crook. Distant [Præcedens et Auſtralior duarum ſupra manum in Coloboro. Diſtat]:

from the left shoulder of Hercules [a ſiniſtro humero Herc.]	27 5½
from the tail of the Lion [a Cauda Leonis]	49 20
Its declination [Declinatio eiusdem]	30 42 B.
Right ascension [Aſcenſio Recta]	224 23⅓
Longitude [Longitudo]	29 30⅓ ♎
Latitude [Latitudo]	45 6 B.

Sixth. Of the 5th magnitude, greater [Sexta. 5æ mag. maior.]
The following one. Distant [Sequens. Diſtat]:

from the left shoulder of Hercules [a ſiniſtro humero Hercul.]	25 17
from the tail of the Lion [a Cauda Leonis]	51 17¾
Its declination [Declinatio eiusdem]	31 49½
Right ascension [Aſcenſio Recta]	226 37⅔
Longitude [Longitudo]	1 22¼ ♏[1]
Latitude [Latitudo]	46 52¼ B.

Seventh. Of the 4th magnitude [Septima. 4æ mag.]

The upper one on the crook. Distant [Superior in Coloboro. Diſtat]:

from the bright star of Lyra [a Lucida Lyræ]	37 24
from the tail of the Lion [a Cauda Leonis]	52 34¾
Northern declination [Declinatio Borea]	38 50
Right ascension [Aſcenſio Recta]	227 17¾
Longitude [Longitudo]	27 27⅔ ♎
Latitude [Latitudo]	53 27½ B.

Eighth. Of the 4th magnitude [Octaua. 4 mag.]

An unformed star that follows this one. Distant [Informis quæ hanc ſequitur. Diſtat]:

from the bright star of Lyra [a Lucida Lyræ]	34 46½
from the tail of ♌ [a Cauda ♌]	55 21
Its declination [Declinatio eiusdem]	38 0 B.
Right ascension [Aſcenſio Recta]	231 1¼
Longitude [Longitudo]	2 31 ♏
Latitude [Latitudo]	54 0 B.

Unformed stars around ♎, above ♏ [INFORMES CIRCA ♎ SUPRA ♏.]

Of the 4th magnitude [4æ mag.]

The upper of the two below the southern scale-pan. Equatorial distance [Superior duarum infra Auſt. Lancem. Diſtantia Æquatoris]:

from Spica [a Spica Virginis]	33 41⅙
from the left knee of Ophiuchus [a ſiniſtro Genu Ophiu.]	14 2
Southern declination [Declinatio Auſtrina]	18 16½
Refraction [Refractio]	2½
True declination [Declinatio vera]	18 19
Right ascension, limited [Aſcenſio Recta limit.]	229 42
Longitude [Longitudo]	22 6⅙ ♏
Latitude [Latitudo]	0 2½ B.

Of the 4th magnitude [4æ mag.]

The lower of the same stars. Equatorial distance [Inferior earundem. Diſtantia Æquatoris]:

from the third star in the left wing of ♍ [a tertia in ſin. ala ♍]	47 12
from the left knee of Ophiuchus [a ſin. Genu Ophiuchi]	11 15

[1] The codex has II [Codex habet II.].

Southern declination [Declinatio Auſtrina]	18 52
Refraction [Refractio]	3
True declination [Declinatio vera]	18 55
Right ascension [Aſcenſio Recta]	232 29
Longitude [Longitudo]	24 59⅙ ♏
Latitude [Latitudo]	0 7⅙ B.

Of the 4th magnitude [4æ mag.]

After this one, the preceding one of three in a straight line. Equatorial distance [Poſt hanc, in recta linea trium præcedens. Diſtantia æquatoris]:

from the left knee of Ophiuchus [a ſiniſtr. Genu Ophiuchi]	10 59¾
from the 3rd star in the wing of ♍ [a 3ª in ala ♍]	47 24
Declination [Declinatio]	15 26¼
Refraction [Refractio]	¾
True declination [Declinatio vera]	15 27
Right ascension [Aſcenſio Recta]	232 42½
Longitude [Longitudo]	24 11½ ♏
Latitude [Latitudo]	3 32⅔ B.

Of the 4th magnitude [4æ mag.]

The middle one. Equatorial distance [Media. Diſtantia Æquatoris]:

from the left knee of Ophiuchus [a ſiniſt. genu Ophiuchi]	9 50
from the 3rd star in the wing of ♍ [a 3ª in ala ♍]	48 36
Its declination [Declinatio eiusdem]	13 2 A.
Right ascension [Aſcenſio Recta]	233 53½
Longitude [Longitudo]	24 43½ ♏
Latitude [Latitudo]	6 9⅚ B.

Of the 4th magnitude [4æ mag.]

The upper and more easterly one. Difference of right ascension [Superior et orientalior. Differentia Aſc. Rect.]:

from the third star in the left wing of ♍ [a tertia in ſiniſtra ala ♍]	50 14½
from the left knee of Ophiuchus [a ſiniſtro Genu Ophiu.]	8 12
Southern declination [Declinatio Auſtrina]	10 10⅓
Right ascension [Aſcenſio Recta]	235 31⅔
Longitude [Longitudo]	25 37⅓ ♏

Latitude [Latitudo]	9 18⅔ B.

Of the 5th magnitude, greater [5ᵉ mag. maior.]

The one that follows this. Equatorial distance [Quæ hanc ſequitur. Diſtantia Æquatoris]:

from the tail of ♌ [a Cauda ♌]	65 24½
from the bright star of Ophiuchus's right shoulder [a Luc. dext. hum. Ophi.]	23 25
Its declination [Declinatio eiusdem]	8 56⅓A.
Right ascension, limited [Aſcenſio Recta limit.]	237 28½
Longitude [Longitudo]	27 15 ♏
Latitude [Latitudo]	10 57 B.

Of the 3rd magnitude [3ᵉ mag.]

Below the northern scale-pan; it could conveniently be included in the left arm of Scorpius. Equatorial distance [Infra Boream Lancem quæ commode includenda in ſiniſtro Brachio Scorpij. Diſtantia Æquatoris]:

from the left knee of Ophiuchus [a ſiniſtro Genu Ophiuchi]	23 36⅙
from Spica ♍ [a Spica ♍]	24 8⅔
Southern declination [Declinatio Auſtrina]	23 34¼
Refraction [Refractio]	5¾
True declination [Declinatio vera]	23 40 A.
Right ascension [Aſcenſio Recta]	220 8⅔
Longitude [Longitudo]	15 3½ ♏
Latitude [Latitudo]	7 36¾ A.

Of the 3rd magnitude, lesser [3ᵉ mag. minor.]

The one that follows this. Equatorial distance [Quæ hanc ſequitur. Diſtantia Æquatoris]:

from Spica ♍ [a Spica ♍]	26 19¼
from the left knee of Ophiuchus [a ſiniſt. Genu Ophiuchi]	21 23
Its declination [Declinatio eiusdem]	18 10⅓A.
Refraction [Refractio]	2½
True declination [Declinatio vera]	18 12⅚A.
Right ascension [Aſcenſio Recta]	222 20½
Longitude [Longitudo]	15 22½ ♏
Latitude [Latitudo]	1 47¾ A.

The Serpent of Ophiuchus [OPHIUCHI SERPENS.]

Of the 4th magnitude [4æ mag.]

The one above the bright star in the neck of the Serpent. Distant [Quæ ſupra Lucidam in collo Serpentis. Diſtat]:

from Vindemiatrix [a Vindem. Virginis]	40 36¾
from the head of Ophiuchus [a Capite Ophiuchi]	27 8½
Its declination [Declinatio eiusdem]	8 40½ B.
Right ascension [Aſcenſio Recta]	231 42⅝
Longitude [Longitudo]	16 45¼ ♏
Latitude [Latitudo]	26 36½ B.
From the great globe, for the year 1600 [Ex magno Globo ad Annum 1600]	
Longitude [Longitudo]	16 46 ♏
Latitude [Latitudo]	…

Of the 4th magnitude [4æ mag.]

The one behind the right thigh of Ophiuchus, at his back. Equatorial distance [Quæ poſt dextrum femur Ophiuchi a tergo. Diſtantia Æquatoris]:

from the northern scale-pan [a Boreali Lance]	30 45⅓
from the bright star of the Vulture [a Vulturis Lucida]	38 5
Southern declination [Declinatio Auſtrina]	12 21
Right ascension [Aſcenſio Recta]	254 38⅓
Longitude [Longitudo]	14 44¾ ♐
Latitude [Latitudo]	10 21¼ B.

Of the 3rd magnitude, lesser [3æ mag. minor.]

The southern one of the two following. Equatorial distance [Sequentium duarum Auſtrina. Diſtantia Æquatoris]:

from the bright star of the Vulture [a Lucida Vulturis]	34 11¼
from the northern scale-pan [a Borea Lance]	34 46

Southern declination [Declinatio Auſtrina]	15 1
Right ascension [Aſcenſio Recta]	258 35½
Longitude [Longitudo]	18 52⅔ ♐
Latitude [Latitudo]	8 4 B.

Of the 4th magnitude [4æ mag.]

The northern one. Equatorial distance [Quæ Borea. Diſtantia Æquatoris]:

from the left knee of Ophiuchus [a ſiniſtro Genu Ophiuchi]	15 57
from the bright star of the Vulture [a Lucida Vulturis]	33 8½
Its declination [Declinatio eiusdem]	12 34¼A.
Right ascension [Aſcenſio Recta]	259 39½
Longitude [Longitudo]	19 44⅙ ♐
Latitude [Latitudo]	10 34⅔ B.

Of the 4th magnitude [4æ mag.]

The one above this. Equatorial distance [Quæ ſupra hanc. Diſt. Æquatoris]:

from the left knee of Ophiuchus [a ſiniſtro Genu Ophiuchi]	15 16½
from the bright star of the Vulture [a Lucida Vulturis]	33 46
Its declination [Declinatio eiusdem]	7 47 A.
Right ascension [Aſcenſio Recta]	259 0½
Longitude [Longitudo]	18 41 ♐
Latitude [Latitudo]	15 18 B.

Of the 5th magnitude [5æ mag.]

The one between the left hand and the knee of Ophiuchus. Equatorial distance [Quæ inter ſiniſtram manum et Genu Ophiuchi. Diſtantia Æquatoris]:

from the tail of ♑ [a Cauda ♑]	69 24⅓
from the bright star in the right shoulder of Ophiuchus [a Luc. in dext. hum. Oph.]	19 24
Southern declination [Declinatio auſtrina]	7 22
Right ascension [Aſcenſio Recta]	241 28⅝
Longitude [Longitudo]	0 53 ♐
Latitude [Latitudo]	13 18⅔ B.

Of the 5th magnitude [5æ mag.]

Of the unformed stars by the right arm of Hercules, the more southerly. Distant [Informium a dextro brachio Herculis Auſtralior. Diſtat]:

from the head of Hercules [a Capite Herculis]	11 54
from Arcturus [ab Arcturo]	31 19½
Its declination [Declinatio eiusdem]	15 1½ B.
Right ascension [Aſcenſio Recta]	241 42⅙
Longitude [Longitudo]	25 54¼ ♏
Latitude [Latitudo]	35 14⅝ B.[1]

Antinous [ANTINOUS.]

Of the 3rd magnitude [3æ mag.]

In the right arm. Equatorial distance [In dextro Brachio. Diſtantia Æquatoris]:

from the head of Ophiuchus [a Capite Ophiuchi]	27 13⅓
from the mouth of Pegasus [ab Ore Pegaſi]	34 52⅔
Distant from the tail of the Dolphin [Diſtat a Cauda Delphini]	18 38¾
Right ascension [Aſcenſio Recta]	286 14⅓
Its declination [Declinatio eiusdem]	2 25 B.
Longitude [Longitudo]	17 56⅔ ♑
Latitude [Latitudo]	24 55⅚ B.

Of the 3rd magnitude [3æ mag.]

The one in the breast. Equatorial distance [Quæ in Pectore. Diſtantia Æquatoris]:

from the head of Ophiuchus [a Capite Ophiuchi]	33 53⅚
from the mouth of Pegasus [ab Ore Pegaſi]	28 12½
Its declination [Declinatio eiusdem]	0 3½ B.
Right ascension [Aſcenſio Recta]	292 54⅔
Longitude [Longitudo]	24 45¾ ♑
Latitude [Latitudo]	21 37⅔ B.

Of the 3rd magnitude [3æ mag.]

In the right foot. Equatorial distance [In dextro Pede. Diſtantia Æquatoris]:

from the head of Ophiuchus [a Capite Ophiuchi]	22 7⅔
from the bright star of the Vulture [a Vulturis Lucida]	11 34½
Southern declination [Declinatio Auſtrina]	5 23
Right ascension [Aſcenſio Recta]	281 10½
Longitude [Longitudo]	11 41½ ♑
Latitude [Latitudo]	17 41⅙ B.

Of the 4th magnitude [4æ mag.]

The unformed star that precedes this one. Equatorial distance [Informis quæ hanc præit. Diſtantia æquatoris]:

from the left knee of Ophiuchus [a ſin. Genu Ophiu.]	36 17½
from the bright star of the Vulture [a Lucida Vulturis]	12 46½

Its declination [Declinatio eiusdem]	6 12⅔A.
Right ascension [Aſcenſio Recta]	280 0⅚
Longitude [Longitudo]	10 25 ♑
Latitude [Latitudo]	16 57⅙ B.

Unformed stars around Ursa Minor [INFORMES CIRCA VRSAM MINOREM.]

The more southerly of the two above the bright star of the neck of the same. Distant [Auſtralior duarum ſupra Lucidam Ceruicis eiusdem. Diſtat]:

from the pole star [a ſtella Polari]	15 4⅔
from Dubhe [a Dubbe]	21 56⅙
Longitude [Longitudo]	2 50⅙ ♌
Latitude [Latitudo]	71 23 B.

The one above this. Distant [Quæ ſupra hanc. Diſtat]:

from the pole star [a ſtella Polari]	13 13¼
from Dubhe [a Dubbe]	21 26¼
Longitude [Longitudo]	27 16¼ ♋
Latitude [Latitudo]	70 18⅓ B.

[1] The star is ω Herculis; it is not found in the catalogue of a thousand stars [Stella eſt ω Herculis, in catalogo mille ſtellarum non invenitur.].

Unformed stars around Ophiuchus, in the Milky Way [INFORMES CIRCA OPHIUCHUM in Via Lactea.]

Of the 4th magnitude [4æ mag.]

To the east, in the right shoulder; the most northerly of three. Distant [Ab Ortu in dextro humero, maxime Borea trium. Diſtat]:

from the uppermost star in the left hand of Ophiuchus [a ſuprema in ſin. manu Ophiuchi]	27 36⅓
from the tail of the Vulture [a Cauda Vulturis]	18 38½
Its declination [Declinatio eiusdem]	4 29½ B.
Right ascension [Aſcenſio Recta]	265 3¾
Longitude [Longitudo]	24 25⅔ ♐
Latitude [Latitudo]	27 55⅙ B.

Of the 4th [4æ.]

The middle one of them. Distant [Media earum. Diſtat]:

from the left hand of Ophiuchus [a ſiniſt. manu Ophiuchi]	27 19
from the tail of the Vulture [a Cauda Vulturis]	19 19⅓
Northern declination [Declinatio Borea]	3 2½
Right ascension [Aſcenſio Recta]	265 7½
Longitude [Longitudo]	24 33⅔ ♐
Latitude [Latitudo]	26 23⅓ B.

Of the 4th magnitude [4ᵃᵉ mag.]
The southern one of the three. Distant [Auſtralis trium. Diſtat]:

from the left hand of Ophiuchus [a ſiniſtra manu Ophiuchi]	27 14½
from the tail of the Vulture [a Cauda Vulturis]	20 6⅚
Northern declination [Declinatio Borea]	1 24½
Right ascension [Aſcenſio Recta]	265 18¼
Longitude [Longitudo]	24 49⅙ ♐
Latitude [Latitudo]	24 50⅓ B.

Of the 4th magnitude [4ᵃᵉ mag.]
Further on, following the three. Distant [Adhuc ſequens tres. Diſtat]:

from the uppermost star in the left hand of Ophiuchus [a ſuprema in ſiniſtra manu Ophiuchi]	28 24
from the tail of the Vulture [a Cauda Vulturis]	18 37½
Northern declination [Declinatio Borea]	2 40⅔
Right ascension [Aſcenſio Recta]	266 16
Longitude [Longitudo]	25 53½ ♐
Latitude [Latitudo]	26 10 B.

Observations of the Year 1597 [OBSERUATIONES ANNI 1597.]

Observations of the Sun [OBSERUATIONES SOLIS.]

21 January [DIE 21 JANUARIJ.]

Meridian altitude of the ⊙ [Altitudo ⊙ merid.]	
by the steel instrument [per Chalyb.]	16 49
by the revolving instrument [per Volub.]	16 48½
Declination by [Declinatio per]	17 16½
the greatest armillae [Armillas maximas]	17 17

It was moderately clear.

8 February [DIE 8 FEBRUARIJ.]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	
by the steel instrument	22 35⅓
by the revolving instrument	22 35
Declination of the ⊙ [Declin. ⊙]	11 30
by the greatest armillae [per Arm. max.]	11 30½

It was exceptionally clear.

10 February [DIE 10 FEBRUARIJ.]

Meridian altitude of the ⊙	
by the steel instrument	23 17⅓
by the revolving instrument	23 17⅓
Declination [Declin.]	10 49
	10 48½

15 February [DIE 15 FEBRUARIJ.]

The ⊙ was observed as follows.

Declination of the ⊙ by [Declin. ⊙ per]	8 58½

the larger armillae [Armillas maiores]	8 58
Meridian altitude of the ⊙ [Altitudo ⊙ merid.]	
by the steel instrument	25 7⅚
by the revolving instrument	25 7½

It was quite clear.

21 February [DIE 21 FEBRUARIJ.]

The meridian altitude of the ⊙ was taken

by the steel instrument	27 22⅚
by the revolving instrument	27 22⅓
Declination [Declin.]	6 41
by the greatest armillae [per Armillas max.]	6 41

26 February [DIE 26 FEBRUARIJ.]

Meridian altitude of the ⊙	
by the steel instrument	29 19⅔
by the revolving instrument	29 19⅚
Declination of the ⊙	4 45
by the greatest armillae [per armill. max.]	4 45⅔

It was quite clear.

28 February [DIE 28 FEBRUARIJ.]

Meridian altitude of the ⊙	
by the steel instrument	30 6⅙
by the revolving instrument	30 5⅙
Declination of the ⊙ by the armillae [Declin. ⊙ per Armillas]	4 0
	4 0½

2 March [DIE 2 MARTIJ.]

The meridian altitude of the ⊙ was observed

by the steel instrument	30 52⅔
by the revolving instrument	30 53½
Declination [Declinatio]	3 11½
	3 11

4 March [DIE 4 MARTIJ.]

The meridian altitude of the ☉ was taken

by the steel instrument	31 41⅙
by the revolving instrument	31 41½
Declination of the ☉	2 24½
by the greatest armillae	2 24

5 March [DIE 5 MARTIJ.]
The ☉ was observed as follows.

Meridian altitude on the steel instrument [Altit. merid. in Chalyb.]	32 4½
the revolving instrument [Volub.]	32 3½
Declination on the armillae [Declin. in armillis]	2 2
the greatest [maximis]	2 1½

7 March [DIE 7 MARTIJ.]
The meridian altitude of the ☉ was observed

by the steel instrument	32 52
by the revolving instrument	32 51¾
Declination	1 15 0
	1 15½

It was moderately clear.
10 March [DIE 10 MARTIJ.]

Meridian altitude of the ☉	
by the steel instrument	34 2⅓
by the revolving instrument	34 2⅓
Declination by the armillae	0 3⅓
	0 3¾

Near the vernal equinox. It was fairly clear.
14 March [DIE 14 MARTIJ.]

The meridian altitude of the ☉ was [Fuit Altit. ☉ merid.]	
by the steel instrument	35 37⅙
by the revolving instrument	35 37 0
Declination by the greatest armillae [Declin. per armillas max.]	1 31½

	1 31⅔

15 March [DIE 15 MARTIJ.]

Meridian altitude of the ☉	
by the steel instrument	36 0 0
by the revolving instrument	36 0 40
Declination	1 54½
	1 55

Observations of the Moon [OBSERUATIONES LUNÆ.]

17 January [DIE 17 JANUARIJ.]

The ☾ was observed around the 90th degree and the meridian [Obſeruabatur ☾ circa 90 gr. & merid.].

H. M.	Distance of the western limb of the ☾ from the lower head of ♊ [Diſt. occ. limbi ☾ ab inf. Cap. ♊]	Declination [Declin.]	Bright star of Orion's foot, east [Luc. pes Orionis orient.]
5 26½	43 1	25 5	
		25 35	
5 28½	42 57½	25 34⅚	30 44
		25 6	
5 34 0	42 56½	25 6	
	doubtful [dubia]	25 35	
5 40⅚	42 55½	25 6½	
		25 35⅓	
5 43⅓	42 51½		
	Conversely, from the bright star of the Girdle of Andromeda [Viceverſa a lucido Cingulo Andromedæ.]		
5 50⅙	43 52	25 7½	
		25 37	
5 52 0	43 49½		
5 54	43 48		
5 58	To correct the clock, Orion's right shoulder, east, was observed [Pro corrigendo horologio obſeruabatur dexter humerus Orionis orientalis]		23 30
6 25⅓	The bright star of Orion's foot, east [Lucidus pes Orion. orient.]		13 40

The western limb of the ☾ crossed the meridian, with an altitude [Tranſijt occident. limb. ☾ per Meridianum habens Altitud.]

by the steel instrument	59 47	doubtful [dubia]
	59 32	moderate, by the shadow [mediocr. per vmbram]
by the revolving instrument [Volub.]	59	
	49½	
	59 18	

6 33½	Declination	25 13		
		25 40	Bright star of Orion's foot, east [Luc. pes Orionis orient.]	11 49

All these observations of the ☾ were made among dense clouds, with stars shining through them now and then.

18 January [DIE 18 JANUARIJ.]

The ☾ was observed past the 90th degree, because before then it was not clear. It was in the 90th degree at exactly 8 h [Fuit in 90 g. H. 8 exacte.]. When the bright star of Orion's foot stood at 4 49½, the azimuth of the western limb of the ☾ was 5 14, from the meridian towards the west [Cum Orionis Lucidus pes eßet 4 49½ erat Azimuth occid. limbi ☾ 5 14 a meridie ad occaſum.].

H. M.	Distance from the lower head of ♊ [Diſt. ab inf. cap. ♊]	Declination [Declin.]	Altitude, upper [Altit. ſup.]	Bright star of Orion's foot, west [Luc. pes Orion. occ.]
9 0		27 19	61 49	
		27 50		
9 5⅓	30 6			11 30
9 6½	30 5 nearly [fere]			12 0
				Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
9 7½	30 4⅙			2 36
	Conversely, from the bright star of ♈ [Viceverſa a Lucida ♈.]			the Greater Dog, east [Can. mai. or.]
9 13½	45 28½	27 20		10 42
		27 50		

More could not be had because of the clouds.

20 January [DIE 20 JANUARIJ.]

In the evening the ☾ was observed near the meridian and the 90th degree of the ecliptic (in which it stood at H. 10 M. 23), both because of its greatest latitude and because of the parallax. For it was not far from the summer tropic and the greatest northern latitude, and moreover it was approaching opposition to the ☉ [applicans in oppoſitum ☉lis].

At 10^{H} $1⅓^{M}$ the western limb of the ☾ crossed the meridian, and had an altitude

by the steel instrument, upper [per Chalyb. ſup.]	61 39½	
lower [inf.]	61 5	
by the revolving instrument, upper [Volub. ſup.]	61 40	good [bona]
lower [inf.]	61 4⅙ [1]	

N.B. Clouds came up a little before the ☾ reached the meridian, so that it could hardly be observed on the meridian itself, especially as regards the lower limb; for as to the upper,

[1] The codex has 14⅙ [Codex habet 14⅙.].

it was moderately clear when it was taken [fuit mediocriter ſerenum cum is caperetur.].

To correct the clock, Sirius, or the Greater Dog [Sirius ſeu Canis Maior], was taken among clouds before the transit of the ☾ across the meridian, as follows.

9 55½	the Greater Dog, west [Canis maior occidentalis]	5 53
9 59½		6 54

10 February [DIE 10 FEBRUARIJ.]

In the evening the ☾ was observed past the 90th degree, as follows.

H. M.	Distance of the ☾ from ♃ [Diſt. ☾ a ♃]	Declination of the ☾ [Declin. ☾]	Bright star of Orion's foot, east [Lucidus pes Orionis orient.]	
6 18⅔	12 26	11 27½	2 54	
		11 2½		
6 20⅙	12 24		2 24	
6 22 0	12 23½	11 3	1 58	
		11 30		
	Conversely, from the Head of Andromeda [Viceverſa a Capite Andromedæ]			
6 24⅔	27 33		1 5	Altitude of the lower [Alt. inf.]
6 25½	27 34¼		0 54	limb of the ☾ [limb. ☾]
6 26⅔	27 35	11 24	0 29	30⅔
		11 2½		

To correct the armillae, the following was observed:

Declination [Declinatio]	21 33
of the bright star of ♈ [Lucidæ ♈]	21 32

N.B. It was exceptionally clear, so we observed the ☾ roughly midway between ♂ and □, and applying to ♃. It was past the 90th degree, and roughly halfway between the meridian and the setting point. From this both the longitude and the latitude of the ☾, and its parallaxes along with them, can be examined.

15 February [DIE 15 FEBRUARIJ.]

In the evening we observed the ☾ near the summer tropic, at precisely its greatest northern latitude [in maxima exquisite Latitudine Borea]. It was near the 90th degree of the ecliptic at H. 6 M. 57.

H. M.	Distance of the western limb of the ☾ from Aldebaran [Dist. occ. limbi ☾ ab Aldebora]	Declination of the ☾ [Declin. ☾]	Bright star of Orion's foot, west [Luc pes Orion. occ.]
6 55⅛	22 37	28 33	2 52
		28 1½	
6 58	22 38		3 28
6 59⅙	22 39½	28 31	3 43
		28 0	
	Conversely, from the lower head of ♊ [Viceversa ab inferiore capite ♊.]		
7 5½	23 6½	28 33	5 25
		28 0½	
7 7⅙	23 4⅚	28 30	6 0
		28 2½	
7 8⅓	23 4 0		6 17

At 7 23⅓ the western limb of the ☾ crossed the meridian, having

by the steel instrument [Chalyb.]	62 34½	28 29½	
	62 1 0	28 1⅙	
by the revolving instrument [Volub.]	62 34	At that time the bright star of Orion's foot, west, was [Tunc fuit luc. pes Orionis occid.]	
	62 3⅚		10 18

N.B. This evening a halo [Halo] appeared around the ☾, whose inner circumference was bounded on either side by Aldebaran [Aldebora] and Pollux. It is worth noting, or rather wondering at, that this winter (in earlier times

we did not notice it so) such a halo surrounded the ☾ at night in each of its revolutions in this quarter of the sky [in hac quarta cœli], but most of all, and above all, near the vernal equinox. This in passing.

22 February, morning [DIE 22 FEBRUARIJ, MANE.]

The full ☾ was observed near, roughly, the contact of the first epicycle [iuxta contactum fere Epicycli primi], as follows. It was in the nonagesimal degree at H. 2⅓ after midnight [P.M.N.].

H. M.	Distance of the eastern limb of the ☾ from the heart of ♌ [Diſt. or. limbi ☾ a Corde ♌]	Declination [Declin.]	Spica ♍, east [Spica ♍ orient.]
2 4⅔	20 18	6 45	1 4
		6 14½	
2 8½	20 20 } uncertain [incertæ]	6 42	0 9
		6 13	west [occid.]
2 11⅓	20 21 }		0 34
	from the bright star in the neck of ♌ [a lucida Ceruice ♌]		
2 16	22 19		1 37
	eastern limb from the heart of ♌ [or. limb. a Corde ♌]		
2 19	20 24⅚	6 42	2 16
	good [bona]	6 10	
{ 2 22⅓ / 2 17 corr.	20 25		3 1
	Conversely, from Spica ♍, western limb of the ☾ [Viceverſa a Spica ♍ occid. limb. ☾.]		
{ 2 25 / 2 18 corr.	34 14½		3 45
2 26	34 13		4 10
2 29	34 12½	6 41	4 43
		6 5	

2 30½	34 11		5 9
2 32½		6 40	5 34
		6 5	

To correct the declination, ♄ was observed [Pro Declinatione corrigenda obſeruabatur ♄]:

2 40⅔	6 54	7⅔
	6 53½	

Upper altitude [Altitudo ſuper.] 32 21

N.B. These observations are very good for examining the prosthaphaereses [Proſthaphæreſεων] of the ☾ near the contact of the first, or greatest, epicycle, since at this time the ☾ was almost exactly in opposition to the Sun [in Solis ☍]. We therefore observed it by both limbs, the eastern as well as the western, so that the middle would be known without error. The outermost edges of the limbs were observed with great precision — so much so that if you presuppose in the calculation the distances as taken, and then put half the difference that emerges in right ascension for the semidiameter, you can hardly go appreciably wrong.

Hour 2⅓ [Hora 2⅓]	Distance of the eastern limb from Regulus [Diſtantia orient. limbi a Regulo]	20 26⅔
	of the western limb from Spica ♍ [occid. limbi a Spica ♍]	34 13
	Corrected declination of the centre [Declinatio correcta centri]	6 23

14 March [DIE 14 MARTIJ.]

In the evening the ☾ was observed approaching the summer tropic and its greatest northern latitude.

Declination of the foot of Erichthonius [Declin. pedis Erichtonij]	28 12½
	28 12

Correct the declination of the ☾ in what follows from this [Hinc corrige Declinationem ☾ in ſequentibus.].

H. M.	Declination, upper/lower [Declin. ſup./inf.]	Altitude, upper/lower [Altit. ſup./inf.]	Azimuth [Azim.]	Greater Dog, west [Canis mai. occid.]
7 30	28 18	…	60 0	20 28
	27 42½	50 52	doubtful because of the beam [dubia propter trabem]	
7 34	28 15	51 3¼	61 0	21 22
	27 43	50 28		
7 37	28 15	50 39	62 0	22 11
	27 41	50 4		

Afterwards the distance of the ☾ from the left foot of Erichthonius was taken at the western limb.

H. M.	Distance of the ☾ from the left foot of Erichthonius [Diſt. ☾ a ſiniſt. pede Erichtonij]	Declination, upper/lower [Decl. ſup./inf.]	Greater Dog, west [Can. maior occid.]
7 44½	10 51½		23 46
7 47	10 54	28 16⅓	24 16
		27 42½	
	Conversely, the western limb of the ☾ was taken from the lower head of ♊ [Viceverſa ab infer. Capite ♊ capiebatur occidentalis limbus ☾.]		
7 50⅚	27 0½		25 0
7 55⅙	27 0	28 16	25 50
		27 43	

You may use these observations of the ☾ to examine its greatest latitude near quadrature with the ☉ [iuxta □ram a ☉le], provided you have first taken account of the parallax of longitude, since the ☾ had passed the nonagesimal degree of the ecliptic by a long interval. It was exceptionally clear and calm.

15 March, afternoon [DIE 15 MARTIJ, P. M.]

The ☾ was observed near the meridian and the nonagesimal degree of the ecliptic, since it was moving about the summer tropic, where its northern latitude is nearly greatest; it was also near □ ☉ and the apogee of the first epicycle [Apogæum Epicycli primi].

H. M.	Distance of the western limb of the ☾ from the ☉ [Diſt. occ. limbi ☾ a ☉]	Declination of the ☾, upper/lower [Decl. ☾ ſup./inf.]	Altitude of the ☉ [Altit. ☉]	☉ in the equator [☉ in æquatore]
5 7½	86 32	28 33		
		28 4½		
5 10½	86 31½			
5 13⅙	86 32		9 47	76 1
5 17⅓	86 30½	28 34	9 10	76 54
5 26⅔		28 32	8 3	78 37
		28 7		
5 54			5 30	83 52
6 3			4 40	85 21
6 14	The western limb of the ☾ crossed the meridian [Tranſijt occid. limbus ☾ per Meridianum]		3¼	87 31

and had altitude [habuitque Altit.]

by the steel instrument [per Chalyb.]	62 36¾	upper [ſuper.]
	62 8 0	lower [infer.]
by the revolving instrument [per Volub.]	62 37⅔	upper [ſuper.]
	62 9½	lower [infer.]
Declination of the ☾ [Decl. ☾]	28 33	
	28 5	

6 42½	Altitude by the revolving instrument [Altit. per Volub.]	62 24⅙ } 61 55 }	Azimuth 10° on the revolving instrument [Azimuth 10° in Vol.]
		28 32	
		28 9½	

Afterwards the ☾ was observed from Jupiter [Poſtea obſeruabatur ☾ a Ioue].

H. M.	Dist. of the western limb of the ☾ from ♃ [Diſt. occid. limbi ☾ a ♃]	De-clin.	Altit. ♃	Can. mai. occid.
7 26	50 18⅙		25 40	8 48
6 43 corr.				
7 30	50 21		25 0	9 36
6 46 corr.				
				Can. min. or.
7 34⅙	50 21⅔	28 4½	24 35	2 24
		28 33½		
Conversely, from the lower head of ♊ [Viceverſa ab inf. Cap. ♊]				
7 37⅙	15 31½			1 28
7 40⅚	15 29⅓	28 5		0 40
		28 33½		
7 43½	15 29			0 8

For the place of the ☾ on the 15th of March [Pro loco ☾ die 15to Martij].

Declination of the centre of the ☾ [Declinatio centri ☾]	28 18 0
Dist. of the western limb from ♃ [Diſt. occid. limbi a ♃]	50 21
Decl. and right ascension of ♃ as given below [Decl. & aſc. recta ♃ vt ſequitur inferius]	

Angle of the ascensional difference [Ang. diff. aſcenſ.]	52 35⅙
Therefore right ascension of the western limb of the ☾ [Ergo aſc. recta occid. limbi ☾]	92 32⅚

Conversely, from the lower head of ♊ [Viceverſa ab infer. capite ♊]

Dist. of the western limb of the ☾ [Diſt. occid. limbi ☾]	15 29
Declin. of the lower head of ♊ [Declin. infer. cap. ♊]	28 55½
Right ascension of the same [Aſc. recta eiusdem]	110 9⅓
Angle of the ascensional difference [Ang. diff. aſcenſ.]	17 38⅓
Therefore right ascension of the western limb of the ☾ [Ergo aſc. recta occid. limbi ☾]	92 31 0
Right ascension, limited [Aſcenſio recta limitata]	92 31 50
Corresponding longitude [Reſp. Longitudo]	2 14⅙ ♋
Latitude [Latitudo]	4 47⅔ B.

Repetition of the calculation from the observation of the ☾ for 15 March[1] [Reiteratio calculi ex obſeruatione ☾ ad diem 15 Martij[1]].

H. 6 M. 46: right ascension of the ☾ from ♃ [Aſc. R. ☾ a ♃] 92 49.

16′ added for the semidiameter [addit. 16′ pro ſemid.] (for I knew that while observing I had always observed the semidiameter of the ☾ larger than it truly is, since I had caught only the rays of the ☾ through the pinnules, and not any particle of its limb).

Corresponding longitude [Reſp. Longitudo]	2 29½ ♋
Parallax [Parall.]	3½ added [add.]
and of the latitude, arc subt. [et latit. arcus ſubt.]	52″

You may, however, retain the true place of the ☾ at this time as 2° 33′ ♋ without error [Poteris autem abſque errore retinere verum locum ☾ ad hoc tempus 2° 33′ ♋].

OBSERVATIONS OF SATURN [OBSERUATIONES SATURNI.]

DIE 4 JANUARIJ, MANE. [4 January, morning]

♄ was observed in △ ☉ [Obſeruabatur ♄ in △ ☉].

2^{H} 4^{M} meridian altitude of ♄ [Altitudo ♄ meridiana]

by the steel instrument [per Chalyb.]	39 41⅓	The steel instrument here corrected [Correctus hic Chalybeus]
by the revolving instrument [per Volub.]	39 41½	
Declin.	5 36½	

Spica was in the equator, east [Erat Spica in Æquatore orient.] 24 45.

Afterwards ♄ was observed from the heart of ♌ [Poſtea obſeruabatur ♄ a Corde ♌].

H. M.	Distance [Diſtantia]		Spica east [Spica orient.]
2 13	26 49⅔ moderate, between clouds [mediocris inter nebulas]		22 59
2 27	26 49½	5 36⅙	
		5 37	

No more could be observed because of the dense clouds that rose [Plura non licuit obſeruare propter denſas exortas nebulas].

DIE 7 JANUARIJ, MANE. [7 January, morning]

♄ was observed again after it had crossed the meridian, as follows [Obſeruabatur rurſus ♄ tranſuectus Meridianum vt ſequitur].

H. M.	Dist. from Spica ♍ [Diſt. a Spica ♍]	Declin.	In the equator, Spica west [In æquat. Spica occ.]
5 30½	27 36⅓	5 35	7 36
		5 34¾	
5 34 0	27 38 twice [bis]		8 33
5 49⅔	27 37		12 59
5 57 0	27 37⅔	5 35	
		5 35½	
5 59 0 To examine the declination, the first [star] of the southern wing of ♍, standing about 1½ degrees below ♄, was observed by the armillae [Pro Declinatione examinanda per Armillas obſeruabatur prima alæ ♍ auſtralis ad 1½ quaſi gradum infra ♄ poſita]		4 3	
		4 3½	

N.B. ♄ had almost the same right ascension as the first [star] of the wing of ♍, yet a little greater — scarcely by the size of its own diameter [N.B. Habuit ♄ eandem fere aſcenſionem rectam cum prima alæ ♍, tamen paulo maiorem vix ad magnitudinem ſui diametri].

Conversely, from the heart of ♌ [Viceverſa a Corde ♌]

			Cor ♌ west [Cor ♌ occid.]
…	26 43⅓		
6 19⅔	26 44		70 15
6 25⅓	26 44	5 35½	71 53
		5 35½	
6 29 0	26 44		72 50

This morning was moderately clear and fairly calm [Erat hoc mane mediocriter ſerenum & ſatis tranquillum].

[1] From codex V. Compare *Progymn.* p. 123 (vol. II p. 135) [E codice V. Cfr. Progymn. p. 123 (T. II p. 135)].

DIE 19 JANUARIJ, MANE. [19 January, morning]

♄ was observed near the meridian [Obſeruabatur ♄ iuxta meridianum].

2^{H} 0^{M} altitude of ♄ [Altitudo ♄]

by the steel instrument [per Chalyb.]	39 55
by the revolving instrument [per Volub.]	39 55⅙

♄ had then passed the meridian line by 3 g. in azimuth [Erat ♄ tunc prætergreßus lineam merid. in Azimuth 3 g.].

H. M.	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Declin.	Spica ♍ east [Spica ♍ orient.]
2 13	26 16		
2 24	26 15⅙	5 54½	15 46
		5 54	
2 26	26 15		15 12
Conversely, from Spica ♍ [Viceverſa a Spica ♍]			
2 37	28 6⅓		12 25
2 39	28 6½	5 53¾	11 53
		5 54	
2 41	28 6		

It was moderately clear, except that the brightness of the ☾ somewhat dimmed the stars, so much so that the first [star] of the wing of ♍, which lies below ♄, could not be taken for correcting the armillae. To emend the declination, therefore, you may use here as well the declination of this star taken on 7 January, together with the altitude about the meridian [Erat mediocriter ſerenum, niſi quod ſplendor ☾ ſtellas nonnihil obfuſcabat, adeo vt pro Armillis corrigendis prima alæ ♍ infra ♄ poſita capi non poßet, quare pro declinatione

emendanda vti poteris etiam hoc loco declinatione huius ſtellæ ſumpta die 7 Januarij vna cum altitudine circa meridiem].

DIE 22 JANUARIJ, MANE. [22 January, morning]

♄ was observed tending towards opposition with the ☉ [Obſeruabatur ♄ tendens ad oppoſitionem ☉$^{l_{i^{S}}}$].

2^{H} 6^{M} meridian altitude of ♄ [Altitudo ♄ merid.]

by the steel instrument [per Chalyb.]	40 2⅚	
by the revolving instrument [per Volub.]	40 2½	
Declin. ♄	6 0½	Spica ♍ east [Spica ♍ orient.]
	6 0	23 43

H. M.	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Declin. ♄	Cor ♌ west [Cor ♌ occid.]
2 22⅓	26 6½		30 11
2 31⅓	26 7⅚		32 31
2 33⅔	26 7	6 0	33 13
		6 0	
2 36½	26 6⅓		34 0
Conversely, from Spica ♍ [Viceverſa a Spica ♍]			Spica east [Spica or.]
2 40	48 16½		14 26
2 44⅔	48 15½	6 0	13 22
		6 0	
2 52⅔	48 15 between clouds [inter nubes]		11 0
2 59	48 15		9 25

These were observed between thinner clouds [Hæc inter nubes rariores ſunt obſeruata].

DIE 7 FEBRUARIJ. [7 February]

In the evening ♄ was observed approaching ☍ ☉, as follows [Veſperi obſeruabatur ♄ vergens in ☍ ☉ vt ſequitur].

H. M.	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Declin. ♄	Altit. ♄ by the revolving instrument [Altit. ♄ per Vol.]	Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
9 2	25 0⅔		20 0½	24 43
9 4½	25 1			25 42
9 6⅔	25 1	6 27½	21 15	26 32
		6 28		
Conversely, from the Vindemiator of ♍ [Viceverſa a vindemiatore ♍]			Alt. of the Vindemiator [Alt. Vindemiat.]	
9 13⅓	20 21¾		18 15	30 9

H. M.	Dist. of ♄ from the heart of ♌ [Dist. ♄ a Corde ♌]	Declin. ♄	Altit. ♄ by the revolving instrument [Altit. ♄ per Vol.]	Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
9 17⅔	20 21⅔		18 25	31 33
9 20¼	20 21½		19 20	32 22
9 22⅙	20 21⅔	6 27½		32 59
		6 26¾ good [bona]		

For correcting the armillae there was observed [Pro corrigendis Armillis obſeruabatur]

Declination of the first [star] of the wing of ♍ [Declinatio primæ alæ ♍]	4 4⅙	Its altitude was then [Tunc fuit eius altitudo]	23 0
	4 4½		

It was fairly clear [Erat ſatis ſerenum].

DIE 8 FEBRUARIJ, MANE. [8 February, morning]

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

Meridian altitude of ♄ [Altitudo ♄ meridiana]

H. M.		
	by the steel instrument [per Chalyb.]	40 33⅓
	by the revolving instrument [per Volub.]	40 32⅔
1 9½	Cor ♌ west [Cor ♌ occid.]	26 21

H. M.	Dist. from the heart of ♌ [Dist. a Corde ♌]	Declin. ♄	Cor ♌ west [Cor ♌ occ.]
1 22⅔	25 1	6 28½	30 25
		6 27⅔	
1 29	25 0		32 39
1 32⅙	25 1⅙	6 28½	
		6 27⅔	
Conversely, from Spica ♍ [Viceverſa a Spica ♍]			Spica ♍ east [Spica ♍ orient.]
1 46	29 32⅙		13 0
1 59	29 32⅓	6 28 0	9 9
		6 27⅔	
2 3½	29 32½		8 0

It was fairly clear [Fuit ſatis ſerenum].

DIE 10 FEBRUARIJ. [10 February]

In the evening ♄ was observed approaching ☌ ☉, as follows [Veſperi obſeruabatur ♄ appropinquans ☌ ☉$^{\text{lis}}$ vt ſequitur].

H. M.	Dist. from the heart of ☋ [Diſt. a Corde ☋]	Declin. ♄	Cor ☋ west [Cor ☋ occ.]
11 44	24 48¾		14 5
11 46	24 49		14 32
11 49	24 49¼	6 32	15 29
		6 31	
…	24 49⅙		

H. M.			
Conversely, from Spica ♍ [Viceverſa a Spica ♍]			
11 53	29 30		16 37
11 57⅓	29 30⅙	6 32½	17 39
		6 32	
11 59	29 30		18 7
12 22½		6 32	24 33
		6 32⅔	

♄ crossed the meridian with altitude [Tranſijt ♄ per Meridianum habens Alt.]:

by the steel instrument [per Chalyb.]	40 36
by the revolving instrument [per Volub.]	40 35⅓

For the correction of the armillae, the declination of the first star of the wing of ♍ was taken [Pro Armillarum correctione capiebatur declinatio primæ alæ ♍]:

declination [declinatio]	4 1⅔
of the first star of the wing of ♍ [primæ alæ ♍]	4 2

It was exceptionally clear [Erat apprime ſerenum].

DIE 18 (antecedente)[1] FEBRUARIJ, VESPERI. [18 February (the preceding day), evening]

At 12ʰ 36ᵐ ♄ was observed, having meridian altitude [Obſeruabatur ♄ habens Altitud. merid.]:

by the steel instrument [per Chalyb.]	40 52⅔
by the revolving instrument [per Volub.]	40 51⅚
Heart of ☋ west [Cor ☋ occid.]	23 40

H. M.	Dist. of ♄ from the heart of ☌ [Diſt. ♄ a Corde ☌]	De-clin.	Heart of ☌ west [Cor ☌ occ.]
12 57	24 13½		30 0
1 0	24 12	6 46⅔	30 58
		6 47⅓	
1 4	24 11⅔		32 5
Conversely, from Spica ♍ [Viceverſa a Spica ♍]			Spica ♍ east [Spica ♍ or.]
1 32	30 8 0	6 47	10 44
		6 47⅔	
1 36	30 8 0		9 35
1 40	30 8⅙	6 47⅔	7 0
		6 47⅙	

It was quite clear this night [Erat hac nocte bene ſerenum].

DIE 22 FEBRUARIJ[2]. [22 February]

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

At 12[H] 23⅔[M], meridian altitude [Altitudo merid.]:

		Heart of ☌ west [Cor ☌ occ.]
by the steel instrument [per Chalyb.]	40 58	
by the revolving instrument [per Volub.]	40 57½	23 27

H. M.	Dist. from the heart of ☌ [Diſt. a Corde ☌]	Declin.	
12 32⅙	23 57⅙		25 56
12 35⅓	23 57½	6 52½	26 44
		6 52½	
12 37½	23 57⅚		27 21
12 40⅙	23 57⅓		28 13

Conversely, from Spica ♍ [Viceverſa a Spica ♍]			
12 48½	30 20½	6 52½	31 0
		6 53	
12 50⅔	30 21		31 36
12 54⅙	30 20½		32 35

It was fairly clear, except that the Moon, standing close to ♄, interfered somewhat with the observations by her rays [Erat ſatis bene ſerenum, niſi quod ☾ ♄ propinqua ſuis radijs aliquid obſeruationibus officeret].

On the same day, 22 February,[3] around midnight, ♄ was observed again, not far from opposition to the Sun, as follows [Eodem die 22 Februarij[3] circiter mediam noctem obſeruabatur denuo ♄ non longe a ☉[l.ſ] oppoſito vt ſequitur].

H. M.	Dist. from the heart of ♌ [Diſt. a Corde ♌]	De-clin.	Heart of ♌ west [Cor ♌ occ.]
11 47	23 55		16 18
11 49	23 54⅙	6 55	16 57
		6 54½	
11 50½	23 53⅚		17 41
11 54	23 53¼	6 55	
		6 54½	
Conversely, from Spica ♍ [Viceverſa a Spica ♍]			
11 57	30 29		
11 59	30 28¼	6 55	20 49
		6 55	
12 15	30 28⅚ among clouds [inter nubes]		28 36
12 17	30 28 0 good [bona]		29 17
12 5½ ♄ crossed [Tranſijt ♄]			23 20

the meridian, having altitude [per Meridianum habens Altitud.]:

by the steel instrument [in Chalyb.]	40 59 45
by the revolving instrument [in Volub.]	41 0 0

It was moderately clear, and the observations were taken carefully enough that they can be relied on, except that the brightness of the Moon interfered somewhat [Erat mediocriter ſerenum & obſeruationes diligenter ſatis acceptæ, vt his confidere liceat, niſi quod ſplendor ☾ aliquid officeret].

DIE 23 FEBRUARIJ [23 February]

Around the following midnight ♄ was observed as well as could be managed among the clouds [circa mediam noctem ſequentem obſeruabatur ♄ prout inter nubes haberi poterat].

H. M.	Dist. from the heart of ♌ [Diſt. a Corde ♌]
11 59⅔	23 50⅔ good [bona]
12 2⅓	23 50 moderate, but among clouds [mediocris ſed inter nubes]
12 6½	…
12 11⅔ ♄ crossed [Tranſijt ♄]	

the meridian, having altitude [per Meridianum habens Altitud.]:

by the steel instrument [per Chalyb.]	41 2 0
by the revolving instrument [per Volub.]	41 1⅚

[1] Added later in another hand [Poſtea alia manu adſcriptum]. [2] It should be the morning of the 22nd [Debet eſſe mane diei 22]. [3] That is, in the night that preceded the 23rd [Id eſt, nocte quæ præcedebat diem 23].

No more could be observed this evening, because the sky was covered over with very dark clouds; so compare these with the preceding [Plura hac veſpera obſeruare non licuit, quod cœlum obſcuris admodum nubibus ſubducebatur: confer itaque hæc cum antecedentibus].

DIE 28 FEBRUARIJ. [28 February]

♄ was observed near opposition to the simple ☉, in this way [*Obſeruabatur ♄ iuxta ☍ ſimplicis ☉ in hunc modum.*]

Time, H. M. [Tempus H. M.]	Dist. from the heart of ☋ [Diſt. a Corde ☋]	Declin. ♄	Altit. ♄	Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
7 38½	23 25½	7 8	21 6	23 28
7 43	23 27	7 8½	21 55	24 54
		7 8		
7 46	23 26⅙	7 8	22 17	25 43
		7 7⅔		
7 50	23 26	7 7⅚	22 30	26 34

Afterwards, to test the instruments, the declination of the tail of ☋ was taken — 16 52⅔ and 16 52⅓ — at its altitude of 29 58, and this to test the declination [*Poſtea pro examinandis inſtrumentis capiebatur Declinatio Caudæ ☋ 16 52⅔ in altitudine 16 52⅓ ipſius 29 58 idque pro examinanda Declinatione.*]

For the distance between Aldebaran and 1 ♈ [*Pro diſtantia inter Aldeb. & 1 ♈*]	*35 32*
The shoulder of Orion, west, was then [*Fuit tunc Hum. Orion. occ.*]	*27 50*

Afterwards the distance was taken [*Poſtea accipiebatur diſt. inter*]:

between Aldebaran and the lower head of ♊ [*Aldeb. & infer. Cap.* ♊]	*45 5*
Altitude of the tail of ☋ [*Altitudo Caudæ* ☋]	*30*
	31½
Declin. of the tail of ☋ [*Declin. Caudæ* ☋]	*16 53*
	16
	52⅓
The bright star of Orion's shoulder, west, was then [*Fuit tunc lucida Humeri Orion. occ.*]	*29¾*
In the later one the altitude of the tail of ☋ *was* [*In poſteriori fuit altitudo Caudæ* ☋]	*31 28*

Afterwards ♄ was observed again in this way [*Poſtea denuo obſeruabatur ♄ hoc modo.*]

Time [Tempus]	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Declin. ♄	Altit. ♄	Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
8 4	23 25⅙	7 7⅔	24 46	31 1
8 9	23 26	7 7½	25 26	32 12
8 17	23 25½	7 8	26 25	33 20
8 25	23 25	7 8 7 7⅔	27 5	35 17
8 28	23 25⅓		27 30	36 4

Again, to test the sextant [Rurſus pro examinando Sextante]:

between the lower head of ♊ and the bright star of the neck of ♌, exactly, twice [Inter infer. caput ♊ & Lucidam colli ♌, exacte bis]	36 0
	36 0

♄ was further observed from Arcturus [Vlterius obſeruabatur ♄ ab Arcturo].

Time [Tempus]	Dist. of ♄ from Arcturus [Diſt. ♄ ab Arcturo]	Declin. ♄	Altit. ♄	Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
8 41	40 54⅓	7 7⅚ 7 8	29 7	39 17
8 45	40 53⅚		29 12	40 25
8 49	40 54	7 8	Alt. of Arcturus [Alt. Arcturi]	
	Dist. of ♄ from [Diſt. ♄ a]	7 7⅔	20 52	41 19
8 58	the tail of ♌ [Cauda ♌]	7 8⅙ 7 7⅔	21 25	43 31 Heart of ♌ east [Cor ♌ or.]
9 5	9 59⅙			19 3
9 9⅔	9 58⅚	7 8⅙ 7 7⅔	22 40 Altit. ♄	17 55
9 15	9 59¼		32 35½	16 36
	Dist. of ♄ from the bright star of the wing of ♍ [Diſt. ♄ a Luc. alæ ♍]		Altit. of the bright star of the wing [Altit. luc. alæ]	Canis Minor, west [Canis min. occ.]
	16 54	7 8½ 7 8	20 26 Altit. ♄	22 18
	16 54⅙		33 0	23 26
	16 54½	7 8½ 7 8	33 47	24 16

Time [Tempus]	Dist. of ♄ from Arcturus [Diſt. ♄ ab Arcturo]	Declin. ♄	Altit. ♄	Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
	16 54⅔		33 56	24 48

To test the quadrants, the meridian altitude of the heart of ♌ [Pro Quadrantibus examinandis Altitudo merid. Cordis ♌]:

by the steel instrument [per Chalyb.]		48 0 0
by the revolving instrument [per Volub.]		48 0⅙
its declination [Declin. eius]	13 55½	
	13 55½	

The declination should have been 13 54¾, which agrees better with the observed altitude [*Debuit eſſe Declinatio 13 54¾, quod rectius cum Altitudine obſeruata congruit.*]

After supper ♄ was further observed near the meridian, as follows [Poſt cœnam vlterius obſeruabatur ♄ prope Meridianum vt ſequitur].

Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]		Canicula west [Canicula occid.]
23 25	among clouds [inter nebulas]	47 13
23 24¾		47 43

Then the altitude of the same was taken [Deinde capiebatur Altitudo eiuſdem]:

by the steel instrument [per Chalyb.]	41 11½	41 11 30
revolving instrument [Volub.]	41 11⅓	34 5 30
		7 6 0

On the equator was taken [In Æquatore ſumebatur]:

Heart of ♌ west [Cor ♌ occid.]	22 55

Declin. by the greater armillae [Declin. per maiores Armillas]	7 7½
	7 7⅙

The meridian altitude of the tail of ☋ was given by [Altit. merid. Caudæ ☋ dabatur per]:

Chal.	50 54¾	Decl. 16 50
Vol.	50 54¾	16 51

N.B. On almost this very day ♄ was in opposition to the simple Sun, so this is a good observation for regulating its eccentric, especially as regards the eccentricity. Ver- [*N.B. Hoc ipſo quaſi die fuit ♄ in ☍ ſimplicis Solis, vnde bona obſeruatio pro Eccentrico eius regulando, præſertim quo ad eccentricitatem. Ver-*]

sabatur[6]*. For it was situated near the greatest prosthaphaeresis of the eccentric, and these are quite good observations on which you may safely build: for it was thoroughly clear from the time it was first observed at altitude 21 up to altitude 34, and it was not then subject to any perceptible refraction.* [*ſabatur enim iuxta maximam proſthaphæreſin Eccentrici, ſuntque ſatis bonæ obſeruationes, quibus tuto te fundare poßis: erat enim bene ſerenum a tempore quo primum obſeruabatur in altitudine 21 vſque in altitudinem 34, neque tunc ſenſibili refractioni fuit obnoxius.*]

You may, however, set its distance at about its altitude of 32 [*Potes vero circa altit. eius 32 quaſi ponere eius diſtantiam*]:

1. from Arcturus [*1. ab Arcturo*]	*40 54*
2. from the tail of ☋ [*2. a Cauda* ☋]	*9 59*
3. from the bright star of the wing of ♍ [*3. a Lucida ala* ♍]	*16 54⅓*
4. from the heart of ☋ [*4. a Corde* ☋]	*23 25*

and set its declination at exactly 7 6, as the meridian altitude gave it [*et pone Declinationem ipſius 7 6 exacte, prout dedit altit. meridiana.*]

And from these four stars you will search out quite exactly both its longitude and its latitude, and afterwards you will easily derive its place at the ☍ of the simple Sun, taking 5′ for the diurnal motion; and at the same time you will find the time when it occurs. [*Atque ex his quatuor ſtellis ſatis exacte ipſius tam longitudinem quam latitudinem rimabere & poſtea eius locum ad ☍ ſimplicis Solis facile deduces aßumendo pro motu diurno 5′ & tempus vna inuenies quando id contingit.*]

For the place of ♄ on 28 February [Pro loco ♄ ad diem 28 Februarij.]

Declination of ♄ [Declinatio ♄]	7 6 B.
Distance from the heart of ☋ [Diſt. a Corde ☋]	23 25

[6]the end of the word *Ver-* at the foot of the preceding page, completing *Verſabatur*, "it was situated"

Declination of the heart of ☋ [Declin. Cordis ☋]	13 55 0 B.
Its right ascension [Aſc. recta eiuſdem]	146 41 50
Angle of the ascensional difference [Ang. diff. aſcenſ.]	22 48 17
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	169 30 10
Conversely, from the bright star of the wing of ♍ [Viceverſa a Luc. alæ ♍]	
Distance [Diſtantia]	16 54⅓
Declination of the bright star of the wing [Declin. luc. alæ]	0 47 30
Its right ascension [Aſc. recta eiuſdem]	185 17 20
Angle of the ascensional difference [Ang. diff. aſcenſ.]	15 43 50
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	169 33½
The right ascension, limited — which, however, comes closer to that from the heart of ☋, because of the refraction that was present in the other [Aſcenſio recta limitata, quæ tamen propius ad Cor ☋ propter refractionem, quæ in altera fuit, accedit]	169 31⅙
Corresponding longitude [Reſp. Longitudo]	17 35⅙ ♍
Latitude [Latitudo]	2 22 B.
And from Arcturus [Et ab Arcturo]	
Distance of ♄ from Arcturus [Diſt. ♄ ab Arcturo]	40 54
Declination of Arcturus [Declin. Arcturi]	21 19 40B.
Its right ascension [Aſc. recta eiuſdem]	209 20 40
Angle of the ascensional difference [Ang. diff. aſcenſ.]	39 43 50
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	169 36 50

For the same place of ♄, otherwise, by the usual method in triangles [Pro eodem loco ♄ aliter conſueto modo in triangulis.]

Distance from the heart of ☋ [Diſt. a Corde ☋]	23 25
from the tail of ☋ [a Cauda ☋]	9 59⅓
Heart of ☋, longitude [Cordis ☋ longit.]	24 13 45 ☋
latitude [latit.]	0 26 30 B.
Tail of ☋, longitude [Caudæ ☋ longit.]	15 59 45 ♍
latitude [latit.]	12 28 B.
Declination of ♄ [Declinatio ♄]	7 6 B.

Diagram. A small figure of curved lines, set at the left of the right column. Two arcs descend from A at the top, one to B at the lower left and one to D at the lower right; a third arc runs down from A between them, on the right side of the figure. An arc runs from B across to the right-hand part of the figure; a short vertical line stands below the label C; two curved lines run along the base between B and D.

- A (top apex): A
- B (lower left): B
- C (inside the figure, right of centre): C
- D (lower right): D

In triangle BAC are given [In triangulo BAC dantur]:

BA	89 33 30
CA	77 42
BAC	21 46 0
Therefore [Ergo] BC	24 38 0

II. In triangle CBD are given [II. In triangulo CBD dantur]:

BC	24 38 0
BD	23 25
DC	9 59
Therefore [Ergo] CBD	24 30 5

III. In triangle ABC are given [III. In triangulo ABC dantur]:

BA	89 33 30
BC	24 38 0
CA	77 42
Therefore [Ergo] ABC	60 22 35

From the angles ABC and CBD the angle ABD is compounded [Ex angulo ABC & CBD conflatur angulus ABD]: 84 52 40.

Finally, in triangle ABD are given [Poſtremo in triangulo ABD dantur]:

BA	89 33 30
BD	23 25
ABD	84 52 40
Therefore [Ergo] DA	87 33 40

Therefore the latitude of ♄ [Ergo Latitudo ♄]	2 26 20 B.
Longitude of ♄ [Longitudo ♄]	17 34 10 ♍

This latitude of ♄ is doubtful; the following observations should also be consulted, for the distance from the tail of ☋ was taken with difficulty, because it was above ♄. [*Hæc Latitudo ♄ eſt dubia, conſulendæ etiam ſequentes obſeruationes, nam diſtantia a Cauda ☋ difficulter capiebatur quod eßet ſupra ♄.*]

Reduction of ♄ to the opposite of the ☉, from the observations of 28 February [Reductio ♄ ad oppoſitum ☉ ex obſeruationibus diej 28 Feb.]

Simple motion of the ☉ on the 28th at 9^{H} 15^{M} [Motus ☉ ſimplex diej 28 $9^{H}15^{M}$]	18 26 12 ♓
Place of ♄ at the same time [Locus ♄ ad idem tempus]	17 35 10 ♍
Diurnal motion of the ☉ [Motus diurnus ☉]	59′ 8″
of ♄ [♄]	0 5 0
Diurnal motions of ☉ & ♄ combined [Motus diurni ☉&♄ coniuncti]	1 4 8

Difference between the simple motion and the place of ♄ [Differentia motus ſimplicis & loci ♄]	51 0
Time corresponding to the difference [Tempus reſpondens differentiæ]	19^{H} 8^{M}

The opposition of the ☉ and ♄ was therefore [Fuit igitur oppoſitio ☉ & ♄]:

27^{d} Feb. H. 14⅙	Longitude of ♄ [♄ Longitudo]	17 39⅙ ♍
	Latitude [Latitudo]	2 22 B.

From the observations made on 2 March around midnight there was found [Ex obſeruationibus die 2 Martij factis circa mediam noctem inuenta eſt]:

Long.	17 25 20 ♍
Latit.	2 21 36 B.

From this, by the diurnal motion, it is quite clear that the acronychal position computed above is quite correct [vnde per motum diurnum ſatis conſtat ſitum acronychum ſuperius ſupputatum ſe ſatis recte habere.]

Arc of inclination 1° 54′, to be added [Arcus inclinat. 1° 54′ add.]

From the Prutenic Tables, for the time of the ☍ [Ex tabulis Prutenicis ad tempus ☍]:

Simple longitude of ♄ [Simplex longit. ♄]	2ſex.	13°36′51″
Apogee of ♄ [Apogæum ♄]	4	1 16 30
Our precession of the equinoxes [Noſtra præceß. æqu.]		28 12 33

DIE 2 MARTIJ, VESPERI. [2 March, evening]
♄ was observed in this way [Obſeruabatur ♄ in in hunc modum.][7]

H. M.	Dist. of ♄ from the heart of ☋* [Diſt. ♄ a Corde ☋*]	Decl. ♄	Altit. ♄	Heart of ☋ east [Cor ☋ orient.]
7 52⅔	24 40⅙		25 52	30 18
7 55⅓	24 40	7 10½		29 51
		7 10⅔		
7 57	24 39⅚		26 15	29 34

* It is the distance between the Heart and the tail of ☋[1] [Eſt diſtantia inter Cor & Caudam ☋[1].]
Conversely, from the tail of ☋ [Viceverſa a Cauda ☋]
(Here observing ♄ by its distance from the tail of ☋ was begun for the first time)[1] [(Hic primum inceptum eſt obſeruare ♄ in diſtantia a Cauda ☋)[1].]

8 6	9 58¾	7 10 7 9⅚	27 33
8 6⅔	9 58⅓		27 6
8 8	9 58½		26 30

After supper we observed ♄ as follows, with both sextants. By the old sextant, with which the distances of that star were taken two days before, at the ☍ of the ☉ [Poſt cœnam obſeruabamus ♄ vt ſequitur vtroque ſextante. Per veterem ſextantem, quo in ☍ ☉ ante biduum illius diſtantiæ acceptæ ſunt.]:

H. M.	Dist. of ♄ from the heart of ☋ [Diſt. ♄ a Corde ☋]	De-clin.	Altit. ♄	Canis Minor, west [Can. min. occid.]
9 10⅔	23 16½		33 11½	23 3
9 13½	23 17	7 10 7 10½	33 32	23 34
9 15⅚	23 17	7 10 7 10⅓	33 39	24 27

[7]"in in" so printed.

Conversely, from the bright star of the wing of ♍, with one sextant [Viceverſa a lucida alæ ♍ per vnum ſextantem]:

			Altit. of the bright star of the wing of ♍ [Altit. luc. alæ ♍]	
9 20	17 5¾		21 16	25 13
9 23⅚	17 5¾	7 10⅙	21 50	25 57
		7 9⅚		
9 27⅓	17 5⅚	7 10	22 8	26 33
		7 10⅓		
9 32⅓	17 5½		22 50	27 31

Then ♄ was observed with the other, new sextant, as the following entries show [Deinde obſeruabatur ♄ per alterum nouum ſextantem prout ſeqq. habent]:

H. M.	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Decl. ♄	Alt. ♄	Heart of ♌ east [Cor ♌ orient.]
10 7⅔	23 17½	7 10		2 41
		7 10½		
10 10⅙	23 17¾			2 2
10 15	23 18	7 9⅚	37 39	1 10
		7 10⅙		

10 21½: Regulus crossed the meridian, having altitude [10 21½ Tranſiuit Regulus Meridianum habens Altitudinem]:

by the steel instrument [per Chalyb.]	47 59⅚
by the revolving instrument [per Volub.]	47 59½

Declination by the greater armillae [Declinatio per Armillas maiores]:

with one [vno]	13 55
with the other [altero]	13 55½

Afterwards, to test the armillae, the following observations were taken [Poſtea pro examinandis armillis accipiebantur ſequentes obſeruationes.]:

			Heart of ♌ west [Cor ♌ occ.]
Declination of the tail of ♌ [Decl. Caudæ ♌]	16 50⅙	with one [vno]	
	16 50½	with the other [alt.]	2 18

10 40: declination of the first star of the wing of ♍, which stood just below ♄ [10 40 Declin. primæ alæ ♍ proxime infra ♄ exiſtentis]:

	Time: Heart of ♌ west [Tempus: Cor ♌ occ.]
4 3	
4 2⅔	3 40

From this the declinations of the armillae can be verified, especially those that follow in the same position [Hinc poßunt verificari Declinationes armillarum, præſertim ſubſequentes in eodem ſitu.]

Afterwards ♄ was observed again, having now risen higher and drawing ever nearer to the meridian, in the following way [Poſtea rurſus obſeruabatur ♄ iam altior factus magis magiſque meridiano appropinquans in hunc qui ſequitur modum.]

Distance by the new and corrected sextant. [*Diſtantia per nouum & correctum Sextantem.*]

Time [*Tempus*]	*Dist. from the heart of* ♌ [*Diſt. a Corde* ♌]	*Declin.*	*Altit.*	*Lower head of* ♊, *west* [*Inf. Cap.* ♊ *cccid.*]
10 48½	23 18	7 10 *with one pinnule* [*vno pinn.*]		42 56
				Tail of ♌, *east* [*Cauda* ♌ *or.*]
10 53	23 18	7 10	39 35	18 35
10 57	23 17⅚		39 39	17 40

[1] Added later [Poſtea adſcriptum.]

Afterwards, again, from the bright star of the wing of ♍ [Poſtea rurſum a Lucida ala ♍]

		Declination of the bright star of the wing of ♍ [Declin. luc. alæ ♍]		Heart of ♌, west [Cor ♌ occ.]
11 3½	17 7¾	0 47½		
		0 48		
		Declination of ♄ [Declin. ♄]		
11 12⅔	17 8½	7 9⅔	with the other [altero]	10 50

11 16	17 8	7 10⅙	Altitude of ♄ [Alt. ♄]	11 42	
		7 10	40 10		
11 20	17 8⅔			12 18	
11 21⅚	17 8¼			12 32	

Afterwards ♄ was again taken from Arcturus [Poſtea rurſus capiebatur ♄ ab Arcturo]

11 36⅔	41 5¼			41 0	15 55
11 39⅙	41 4½		7 10⅙	41 2	16 25
			7 10		
11 40½	41 5			41 6	16 41
11 42⅓	41 4¾		7 10	41 8	17 3
	Distance of ♄ *from the tail of* ☋ [*Diſt.* ♄ *a Cauda* ☋]		7 10⅙		
11 50⅙	9 59½		7 9⅚	41 11	19 11
			7 10		
11 52	10 0		0 good [0 bona]	41 13	19 32
11 54⅚	Here we could not take it, because of the obliquity [Hic non potuimus habere propter obliquitatem.]				20 16
12 2	Finally the meridian altitude of ♄ was taken [Tandem ſumebatur altit. ♄ merid.]				22 47
	on the steel instrument [in Chalyb.]			41 15⅙	
	revolving instrument [Volub.]			41 14⅔	
	Declination on the largest armillae [Declin. in max. armill.]		7 10⅙		
			7 10		
12 14⅔	The tail of ☋ crossed the meridian, having altitude [Cauda ☋ tranſiuit per Merid. habens Altitud.]				25 35
	on the steel quadrant [in Quad. Chalyb.]			50 54¾	
	revolving instrument [Volub.]			50 54⅔	
	Declination of the tail of ☋ [Declin. Caudæ ☋]		16 50		
			16 50½		

Further, when ♄ had already passed the meridian, it was observed in the following way [Vlterius ♄ cum iam transuectus erat Meridianum obſeruabatur ſequenti modo.]:

H. M.	Distance from the heart of ☋ [Diſt. a Corde ☋]	Declination of ♄ [Declin. ♄]	Altitude of ♄ [Altit. ♄]	Heart of ☋, west [Cor ☋ occid.]
12 51	23 17	7 10⅙	40 35	33 9
		7 10		
12 56	23 16¾			33 50
				Spica ♍, east [Spica ♍ or.]
12 58⅔	23 16⅚		40 16	14 47
1 1	23 17	7 10⅔		
		7 10	40 10	14 4
1 4⅔	23 17			13 30

Conversely, the distance of ♄ from Spica was taken [Viceverſa ſumebatur diſt. ♄ a Spica]

			Altitude of Spica [Alt. Spicæ]	
1 14⅙	31 7		24 18	12 14
1 17⅚	31 6½		Altitude of ♄ [Alt. ♄]	11 44
1 20¾	31 6	7 10¾	39 45	11 13
		7 10		
1 24⅓	31 5⅔			10 34
1 27	31 6⅙		39 20	10 4
1 29⅙	31 6⅙	7 10	39 18	9 38
		7 10⅙		
1 31	31 6			9 19

It was quite clear and moderately calm [Fuit bene ſerenum ac mediocriter tranquillum.]

The place of ♄ from the observations of 2 March [Locus ♄ ex obſeruationibus diej 2 Martij.]

Declination of ♄ [Declinatio ♄]	7 9½
Distance from the heart of ☋ [Diſt. a Corde ☋]	23 18
Declination of the heart of ☋ [Declin. Cordis ☋]	13 54 45
Its right ascension [Aſc. recta eiuſdem]	146 41 55
Angle of the ascensional difference [Ang. diff. aſcenſ.]	22 41 0
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	169 23
Conversely, from the third of the wing of ♍ [Viceverſa a 3ª alæ ♍]	
Distance [Diſtantia]	17 8½
Declination of the third of the wing of ♍ [Declin. 3æ alæ ♍]	0 47 30
Its right ascension [Aſc. recta eiuſdem]	185 17 10
Angle [Angulus]	15 57 13
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	169 20 0
Afterwards from Spica ♍ [Poſtea a Spica ♍]	

Distance [Diſtantia]	31 7 0
Declination of Spica [Declin. Spicæ]	9 0 0
Its right ascension [Aſc. recta eiuſdem]	196 0 55
Angle of the ascensional difference [Ang. diff. aſcenſ.]	26 39 56
Therefore the right ascension of ♄ [Ergo aſc. recta ♄]	169 21 0
The right ascension of ♄, limited [Aſcenſio recta ♄ limitata]	169 22 0[1]
Corresponding longitude [Reſp. Longitudo]	17 25 25 ♍
Latitude [Latitudo]	2 21 36 B.

3 MARCH [DIE 3 MARTIJ.]

♄ was observed in this way [Obſeruabatur ♄ in hunc modum.]:

H. M.	Distance of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Declination of ♄ [Declin. ♄]	Altitude of ♄ [Altit. ♄]	Heart of ♌, west [Cor ♌ occid.]
11 35	23 12¾		40 57	16 11
11 39	23 11⅔	7 11		17 29
		7 11½		
11 42	23 11⅙			18 9
11 44	23 11¼	7 11¾		18 34
		7 11½		

[1] Afterwards corrected to 169 20½. This ascension gives Long. 17° 24′, Lat. + 2° 21′. [Poſtea in 169 20½ correcta. Hæc aſcenſio facit Long. 17° 24′, Lat. + 2° 21′.]

Conversely, from Spica ♍ [Viceverſa a Spica ♍]

11 49	31 9⅓		19 21
11 52¾	31 9⅚	7 11⅙	20 10
		7 11½	
11 56	31 10		21 3

To correct the armillae, the declination of the first of the wing of ♍ was observed: 4 2⅙ with one; with the other I could not take it because of the roof [Pro corrigendis armillis obſeruabatur Declinatio primæ alæ ♍ 4 2⅙ vno; altero non poteram capere ob tectum.]

12 2	♄ crossed the meridian, having altitude [Tranſijt ♄ per Meridianum habens Altitudinem]	
	by the steel instrument [per Chalyb.]	41 17½
	by the revolving instrument [per Volub.]	41 17⅙
	Spica ♍ was then east [Fuit tunc Spica ♍ orient.]	26 41
	Declination on the larger armillae [Declin. in Armillis maioribus]	7 11⅚

		7 11⅔
12 13	The tail of ☋ crossed the meridian, having altitude [Tranſijt Cauda ☋ per Meridianum habens Altitud.]	
	by the steel instrument [per Chalyb.]	50 55⅓ *better* [*melior*]
	revolving instrument [Volub.]	50 54½
	Spica ♍ was then [Fuit tunc Spica ♍]	23 56
	Declination of the tail of ☋ on the larger armillae [Declin. Caudæ ☋ in Armill. maioribus]	16 49⅚
		16 49½

41 17 30
34 5 30
7 12 0

It was quite clear and calm. [*Fuit bene ſerenum & tranquillum.*]
Set the distance of ♄ *at about midnight* [*Pone circa mediam noctem diſtantiam* ♄]:

from the heart of ☋ [*a Corde* ☋]	*23 12*
from Spica ♍ [*a Spica* ♍]	*31 10*
Declination [*Declinatio*]	*7 12 Bor.*

Here the declination agrees, roughly, with the observed altitude. [*Conſentit hic Declinatio cum obſeruata altitudine fere*]

DIE 4 MARTIJ. [4 March]

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

H. M.	Distance of ♄ from the heart of ☋ [Diſt. ♄ a Corde ☋]	Declination of ♄ [Declin. ♄]	Heart of ☋, west [Cor ☋ occid.]
12 22	23 8¼		30 12
12 24	23 7⅚	7 13⅓	30 42
		7 12⅔	
12 27	23 7¾		31 18
	Conversely, from Spica ♍ [Viceverſa a Spica ♍]		
12 30	31 10⅔		32 5
12 32	31 10½	7 12½	32 53
		7 13	
12 34	31 10⅚		33 29

DIE 5 MARTIJ. [5 March]

After dinner ♄ was observed, standing on the meridian, as follows [Poſt cœnam obſeruabatur ♄ exiſtens meridianus vt ſequitur.]:

$12^{H}\ 4^{M}$	♄ crossed the meridian, having altitude [Tranſijt ♄ per Meridianum habens Altitud.]	
	by the steel instrument [per Chalyb.]	41 21
	by the revolving instrument [per Volub.]	41 20⅚
	Declination [Declinatio]	7 15½ 7 16
	Spica ♍ was then east [Erat tunc Spica ♍ orient.]	26 56

H. M.	Distance from the heart of ♌ [Diſt. a Corde ♌]	Declination [Declin.]	Altitude [Altit.]	Spica ♍, east [Spica ♍ orient.]
12 14½	23 3¾		41 17	25 0
12 17	23 3⅔	7 15⅚ 7 15		24 24
12 18	23 4 Conversely, from Spica ♍ [Viceverſa a Spica ♍]			24 9
12 21½	31 21½			23 39
12 24	31 21½	7 15¾ 7 16½		23 4
12 27	31 21½		41 15	22 34

DIE 6 MARTIJ. [6 March]

♄ was observed near noon as follows [Obſeruabatur ♄ iuxta meridiem vt ſequitur.]:

H. M.	Distance from the heart of ♌ [Diſt. a Corde ♌]	Declination [Declinatio]	Equatorial distance, Spica ♍ east [Æquat. diſt. Spica ♍ orient.]
11 20	23 0		34 57
11 23	23 0	7 16½ 7 17	34 23
11 24	23 0⅙ Conversely, from Spica ♍ [Viceverſa a Spica ♍]		34 5
11 32	31 21⅔		32 38
11 35	31 22½	7 17 7 17⅔	32 15
11 40	31 22		31 5

♄ crossed the meridian, having altitude [Tranſijt ♄ per Meridianum habens Altitud.]		
by the steel instrument [per Chalyb.]		41 22⅔
by the revolving instrument [per Volub.]		41 22
Declination of ♄ [Declin. ♄]		7 17 7 17½
Spica ♍, east [Spica ♍ orient.]		26 49

DIE 7 MARTIJ, VESPERI. [7 March, evening]

♄ was observed around the meridian, after the ♂ with the ☉ [Circa Meridianum obſeruabatur ♄ poſt ♂ cum ☉^{le}.]:

H. M.	Distance of ♄ from the heart of ☋ [Diſt. ♄ a Corde ☋]	Declination [Declinatio]	On the equator, Spica ♍ east [In æquatore Spica ♍ orient.]
11 54	22 55		30 9
11 57	22 54½	7 19½ 7 20	29 34
11 59	22 54½		29 2

12 9	♄ crossed the meridian, having [Tranſijt ♄ per Meridianum habens]	
	by the steel instrument [per Chalyb.]	41 24⅔
	by the revolving instrument [per Volub.]	41 25 0
	Declination [Declinatio]	7 19⅓ 7 20
	Spica ♍, east [Spica ♍ orient.]	27 5

12 24	The tail of ☋ crossed the meridian, having altitude [Tranſijt Cauda ☋ per Meridianum habens Altitud.]	
	by the steel instrument [per Chalyb.]	50 55 0
	by the revolving instrument [per Volub.]	50 55 0
	Declination of the tail of ☋ [Declin. Caudæ ☋]	16 49½ 16 50
	Spica ♍, east [Spica ♍ or.]	23 53

Afterwards ♄ was observed conversely from Spica ♍ [Poſtea obſeruabatur ♄ viceverſa a Spica ♍.]:

12 28	31 27½		22 54
12 31	31 27⅓	7 19½	22 2
		7 20	
12 33	31 28		21 38

DIE 9 MARTIJ. [9 March]
In the evening ♄ was observed [Veſperi obſeruabatur ♄.]:

H. M.	Distance of ♄ from the heart of ☋ [Diſt. ♄ a Corde ☋]	Declination [Declinatio]	Spica ♍, east [Spica ♍ orient.]
11 19	22 44	7 24	31 25
		7 24⅔	
11 23	22 44		30 38
11 25	22 44⅔	7 24⅙	30 9
		7 25	

11 39	♄ crossed the meridian, having altitude [Tranſijt ♄ per Meridianum habens Altitud.]	
	by the steel instrument [per Chalyb.]	41 28½
	by the revolving instrument [per Volub.]	41 28
	Declination of ♄ [Declin. ♄]	7 23⅚
		7 24½
	Spica ♍, east [Spica ♍ or.]	27 22
11 56	The tail of ☋ crossed the meridian, having altitude [Tranſijt Cauda ☋ per Merid. habens Altitudinem]	
	by the steel instrument [per Chalyb.]	50 55⅙
	by the revolving instrument [per Volub.]	50 54⅚
	Declination of the tail of ☋ [Declin. Caudæ ☋]	16 50
		16 50½
	Spica ♍, east [Spica ♍ or.]	23 57

Conversely, from Spica ♍ [Viceverſa a Spica ♍.]

12 3	31 38 0		22 18
12 6	31 38½		21 38
12 10	31 38 0	7 23⅚	20 57
		7 24 12	
12 16	31 38⅔		19 35

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

♄ was observed near the meridian as follows [Obſeruabatur ♄ iuxta Meridianum vt ſequitur.]:

11ᴴ 16ᴹ	♄ crossed the meridian, having altitude [Tranſijt ♄ per Meridianum habens Altitud.]	
	by the steel instrument [per Chalyb.]	41 29⅚
	by the revolving instrument [per Volub.]	41 29⅔
	Northern declination [Declinatio Borea]	7 26½ 7 27
	Spica ♍, east [Spica ♍ or.]	27 16
11 32	The tail of ♌ crossed the meridian, having altitude [Tranſijt Cauda ♌ per Meridianum habens Altitud.]	
	by the steel instrument [per Chalyb.]	50 54¾
	by the revolving instrument [per Volub.]	50 54⅚
	Declination [Declinatio]	16 50⅔ 16 51
	Spica ♍, east [Spica ♍ or.]	24 3

H. M.	Distance of ♄ from Regulus [Diſt. ♄ a Regulo]	Declination [Declinatio]	Arista, east [Ariſta orient.]
11 24	22 40½		25 38
11 25	22 41	7 26½ 7 27	25 24
	Conversely, from Spica ♍ [Viceverſa a Spica ♍.]		
11 38	31 42½		22 30
11 42	31 42⅓		22 3

OBSERVATIONS OF JUPITER [OBSERUATIONES IOUIS.]

DIE 3 JANUARIJ, VESPERI. [3 January, evening]

♃ was observed near the meridian, at almost its greatest digression of the annual orb, with the ☉ standing not far from its perigee [Obſeruabatur ♃ iuxta meridianum circa maximam fere digreßionem orbis annui, ☉ˡᵉ non longe a Perigæo ſuo exiſtente.]:

H. M.	Distance of ♃ from the first of the wing of Pegasus [Dist. ♃ a prima alæ Pegasi]	Declination [Declin.]	Bright star of Orion's shoulder, east [Humer. luc. Orionis orient.]
5 53	47 22¼		61½
5 58⅙	47 20½		59 43
6 0⅔	47 21	II 0 0	59 30
		II 1 0	
6 2½	47 22 twice [bis]		58 37
6 6⅙	47 22		57 36
	Conversely, from Aldebaran [Vice versa ab Aldebora.]		
6 8½	33 0		57 0
6 10⅓	32 59½		56 28
6 12⅓	33 1	II 1½	55 54
		II 1⅓	
6 14 0	33 0½		55 29
6 26 0	33 1½		52 11

The same evening ♃ was observed, having meridian altitude [Eadem vesperа obseruabatur ♃ habens Altitud. merid.]:

	by the steel instrument [per Chalyb.]	45 2¾
	by the revolving instrument [per Volub.]	45 1¾
6 20⅓	Aldebaran, east [Aldeb. orient.]	33 39

N.B. An error in the steel instrument was found afterwards [N.B. Error in Chal. inuentus est postea.].

To test the old sextant, with which these distances and those of the previous year were for the most part observed, the interval between the bright star of ♈ and Aldebaran was taken: I 35 33, II 35 33 [Pro examinando veteri sextante quo hæ & superioris anni distantiæ vt plurimum sunt obseruatæ, capiebatur interuallum inter Lucidam ♈ & Aldebor. I 35 33 II 35 33].

It is therefore clear[1] that this sextant is in only moderate order: the true distance would be 35 32½, so it is in excess by about ½ of one minute [Patet[1] itaque quod sextans hic mediocriter se habeat, nam vera distantia esset 35 32½, abundat itaque circiter ½ vnius minuti.].

DIE 8 JANUARIJ. [8 January]

In the evening ♃ was observed near the meridian [Vesperi ♃ obseruabatur iuxta merid.]:

H. M.	Distance from the first of the wing of Pegasus [Diſt. a 1 alæ Pegaſi]	Declination [Declin.]	Right shoulder of Orion [Dexter humerus Orionis]
5 51½	47 39½ doubtful [dubia]		58 0
5 53⅙	47 41		57 41
5 54⅔	47 40⅚	11 5 through clouds [per nubes]	
		11 5½	57 15
	Conversely, from Aldebaran [Vice verſa ab Aldebora.]		
5 57⅔	32 39½		Aldebaran, east [Aldeb. orient.]
5 59½	32 40		35 44
6 1⅓	32 40½ doubtful [dubia]		35 15
6 2⅔	32 40	11 5½	34 58
		11 5½	

	Meridian altitude of ♃ [Altitudo ♃ meridiana]	
	by the steel instrument [per Chalyb.]	45 10⅙
	by the revolving instrument [per Volub.]	45 10⅙
6 8⅔	Aldebaran, east [Aldeb. orient.]	33 15

It was not clear enough, though moderately so [Non erat ſatis ſerenum, ſed mediocriter tamen.].

Place of ♃ from the observations of 8 January [Locus ♃ ex obſeruationibus diei 8 Jan.]:

Distance of ♃ from the first of the wing of Pegasus [Diſt. ♃ a prima alæ Peg.]	47 40⅚
Declination of ♃ [♃ Declin.]	11 4⅔
Declination of Markab [Declin. Marchab]	13 3 30
Right ascension of Markab [Aſc. recta Marchab]	341 10 40
Angle of the ascensional difference [Ang. differ. aſcenſ.]	48 47 20
Therefore the right ascension of ♃ [Ergo Aſc. recta ♃]	29 58
Conversely, from Aldebaran [Vice verſa ab Aldebora.]	
Distance [Diſtantia]	32 40
Declination of Aldebaran [Declin. Aldeboræ]	15 38 0
Right ascension of Aldebaran [Aſcenſio Recta Aldeboræ]	63 13
Angle of the ascensional difference [Ang. differ. aſcenſ.]	33 17
Therefore the right ascension of ♃ [Ergo Aſc. recta ♃]	29 56
Right ascension, limited [Aſcenſio recta limitata]	29 57
Corresponding longitude [Reſp. Longitudo]	1 44⅔ ♉
Latitude [Latitudo]	1 6⅔ M.

DIE 17 JANUARIJ. [17 January]

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

H. 5 M. 3	Meridian altitude [Altitudo meridiana]	
	by the steel instrument [per Chalyb.]	45 29⅓ among clouds [inter nubes]
	by the revolving instrument [per Volub.]	45 30½
	Declination [Declinatio]	11 25
		11 24⅚

DIE 21 JANUARIJ. [21 January]

In the evening ♃ was observed near the meridian [Veſperi obſeruabatur ♃ iuxta Meridianum.]:

5^{H} $14⅓^{M}$	Meridian altitude of ♃ [Altitudo ♃ meridiana]	
	by the steel instrument [per Chalyb.]	45 40
	by the revolving instrument [per Volub.]	45 40½
	Declination of ♃ [Declin. ♃]	11 35⅓
		11 36
	Bright star of Orion's foot, east [Luc. pes Orion. or.]	42 45

	Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	Declination [Declin.]	
5 21	31 24	11 35	41 5
		11 36	
5 22⅚	31 24	11 35	40 40
		11 36	
5 25⅙	31 24⅙	11 35	39 58
		11 36	
	Conversely, from the end of the wing of Pegasus [Vice verſa ab extrema alæ Pegaſi.]		
5 30½	32 15	11 35½	38 32
		11 36	
5 33	32 16⅔		37 53
5 35⅓	32 16½		37 20
5 38½	32 16⅚	11 35½	36 24
		11 36	
5 39⅔	32 17		36 5

It was quite clear and calm, but the brightness of the ☾ was something of a hindrance, especially to the distances of ♃ from the end of the wing of Pegasus [Erat bene ſerenum & tranquillum, ſed ☾ ſplendor nonnihil impediebat, præcipue diſtantias ♃ ab extrema alæ Pegaſi.].

DIE 4 FEBRUARIJ. [4 February]

In the evening ♃ was observed approaching the ☉ [Veſperi obſeruabatur ♃ ☉[li] appropinquans.]:

H. M.	Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	Declination [Declin.]	Bright star of Orion's shoulder, east [Luc. humerus Orion. orient.]
5 33	29 32½		30 18
5 40⅓	29 31¼	12 16½	28 35
		12 17	

[1] Added later in another hand [Poſtea alia manu adſcriptum.]

5 45½	29 31¼		27 19
5 56⅓	29 30⅔ twice [bis]	12 16⅓	24 35
		12 17	

Conversely, from the first of the wing of Pegasus [Vice verſa a prima alæ Pegaſi.]

6 5½	36 45	12 16⅓	22 18
		12 17	
6 7½	36 45⅓		21 11
6 9⅔	36 45½		19 59
6 13	36 45½		18 17

It was quite clear [Erat bene ſerenum.].

DIE 8 FEBRUARIJ. [8 February]

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

H. M.	Distance of ♃ from the bright star of ♈ [Diſt. ♃ a lucida ♈]	Declination of ♃ [Declinatio ♃]	Bright star of Orion's foot, east [Luc. pes Orion. or.]
6 28⅔	11 22½	12 25	3 49
		12 26	
6 33⅙	11 23⅓		2 36
6 36½	11 25	12 25½	1 38
		12 26	
6 38⅓	11 25		

Conversely, from Aldebaran [Vice verſa ab Aldebora.]

6 41⅔	28 56½	12 26	0 18
		12 25½	Orion's foot, west [Pes Or. occ.]
6 44 0	28 56½		0 25
6 48 0	28 55⅓		

To correct the armillae, there was observed [Pro corrigendis Armillis obſeruabatur]:

bright star of the jaw of Cetus [lucida mandibulæ Ceti]	2 28½
	2 29

6 54	Bright foot of Orion, west [Lucidus pes Orionis occ.]	3 28

It was fairly clear [Erat ſatis ſerenum.].

DIE 10 FEBRUARIJ. [10 February]

♃ was observed in the evening, approximately in sextile with ☉$^{l_i{}^s}$ [Obſeruabatur ♃ Veſperi quaſi in Sextili ☉$^{l_i{}^s}$.]:

H. M.	Distance from Aldebaran [Diſt. ab Aldebora]	Declination of ♃ [Declin. ♃]	Bright star of Orion's shoulder, east [Luc. humer. Orion. or.]
5 46 0	28 36⅓	12 38½	22 15
		12 37½	
5 48½	28 36⅚	12 37⅙	21 27
		12 38⅓	
5 50	28 36¼		21 0
5 51⅔	28 36¼	12 38½	20 21
		12 37⅔	
5 56⅔	28 36 0		18 59

Conversely, from the bright star of ♈ [Vice verſa a Lucida ♈.]:

				Bright star of Orion's foot, east [Luc. pes Orion. or.]
6 2 0				7 47
6 4⅓	11 32½	12 38½		7 9
		12 37⅔	somewhat doubtful because of the brightness of the ☾ [aliquanto dubiæ propter ſplendorem ☾]	

			Bright star of Orion's foot, east [Luc. pes Orion. or.]
6 8⅝	11 32		6 49
6 12⅔	11 32		4 39
6 14	11		4 16
0	31½		

To correct the armillae, the following were taken [Pro corrigendis armillis capiebatur]:

Declination of the bright star [Declinatio Lucidæ]	2 30
of the jaw of Cetus [Mandibulæ Ceti]	2 29⅓

DIE 18 FEBRUARIJ. [18 February]
In the evening ♃ was observed [Veſperi obſeruabatur ♃.]:

H. M.	Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	Declination [Declin.]	Bright star of Orion's shoulder, east [Luc. humer. Orion. or.]
6 5½	27 15		5 41
6 7⅚	27 15	13 5⅔	4 58
		13 6⅓	
6 9½	27 14⅓		4 29

Conversely, from the bright star of ♈ [Vice verſa a lucida ♈.]

6 18⅔	12 3½	13 5½	1 54
		13 6	
6 20½	12 2⅔	13 5⅚	1 15
		13 6⅔	
6 22⅙	12 3		0 52

DIE 20 FEBRUARIJ. [20 February]
♃ was observed in ✶ ☉ as follows [Obſeruabatur in ✶☉ ♃ vt ſequitur.]:

Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	Declination [Declin.]	Bright foot of Orion, west [Lucidus pes Orionis occ.]
26 59		10 0
26 58	13 15	10 12
	13 13½	
26 58		10 53

Conversely, from the bright star of ♈ [Vice verſa a lucida ♈.]:

		Bright shoulder of Orion, west [Lucidus humerus Or. occ.]
12 9½	13 15 with one [vno]	2 14
12 10	13 15	2 42
	13 13½	

It was not clear enough this evening; instead the sky was spread underneath with a sprinkling of scattered clouds [Non fuit ſatis ſerenum hac veſpera, ſed cœlum aſpergine nubium rariorum ſubſternebatur.].

DIE 21 FEBRUARIJ. [21 February]

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

Distance from Aldebaran [Diſt. ab Aldeb.]	Declination [Declin.]	Bright star of Orion's shoulder, east [Luc. humer. Orion. or.]
26 43		4 23
26 43		3 37
26 44		2 5

Conversely, from the bright star of ♈ [Vice verſa a Lucida ♈.]

12 14⅓	13 16	1 37
	13 18	
12 15		
12 15	13 16	0 22
	13 17	

To correct the armillae, the declination of the bright star of the jaw of Cetus [Pro corrigendis Armillis lucidæ Mandibulæ Cete declin.]:

2 30	
2 29⅙	

For the sextant: the distance between the bright star of ♈ and Aldebaran, 35 32½, not certain enough because of the Moon's rays [Pro Sextante Diſtantia inter Lucidam ♈ & Aldeboram 35 32½ non ſatis certa propter radios lunares.].

DIE 22 FEBRUARIJ. [22 February]

In the evening ♃ was observed in the usual way, as follows [Veſperi obſeruabatur ♃ conſueto more vt ſequitur.]:

H. M.	Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	Declination of ♃ [Declin. ♃]	Bright shoulder of Orion, east [Humer. Orion. lucid. orient.]
6 18½	26 35	13 20	3 23

H. M.	Distance of ♃ from Aldebaran [Dist. ♃ ab Aldeb.]	Declination of ♃ [Declin. ♃]	Bright shoulder of Orion, east [Humer. Orion. lucid. orient.]
		13 21	
6 22⅔	26 35⅓		2 40
6 26⅙	26 35	13 20⅓	2 4
		13 21	

Conversely, from the bright star of ♈ [Vice versa a Lucida ♈.]

6 28⅔	12 20		0 51
6 31⅔	12 19⅚		0 17
6 33⅚	12 19⅚	13 21	west [occid.]
		13 21	0 13

It was quite clear [Erat bene serenum.].

DIE 28 FEBRUARIJ. [28 February]

♃ was observed in sextile with ☉, as follows [Obseruabatur ♃ in Sextili ☉ vt sequitur.]:

Distance of ♃ from Aldebaran [Dist. ♃ ab Aldeb.]	Declination of ♃ [Declin. ♃]	Altitude of ♃ [Altit. ♃]	Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
25 28½	13 45½		6 32
	13 46		
25 28⅓	13 45		7 2
	13 46		
25 27⅚		31 28	7 28

Conversely, from the bright star of ♈ [Vice versa a Lucida ♈.]

12 52⅔		31 0	8 22
12 53	13 45½		8 48
	13 46		
12 53⅙	13 45	30 17	9 15
	13 46		

It was exceptionally clear [Erat apprime serenum.].

DIE 2 MARTIJ. [2 March]

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

H. M.	Distance of ♃ from the bright star of ♈ [Diſt. ♃ a luc. ♈]	Declination of ♃ with one pinnule [Decl. ♃ vno pinn.]	Altitude of ♃ [Alt. ♃]	Bright star of Orion's foot, west [Luc. pes Orion. occ.]
6 45	13 10	13 53½	26 55	25 10
6 47⅔	13 9⅔	13 53½		26 23
6 53	13 10⅙ Conversely, from Aldebaran [Vice verſa ab Aldeb.]	13 53⅔ with the other pinnule [alt. pinn.]	26 0	27 30 Bright star of Orion's shoulder, west [Luc. hum. Orion. occ.]
6 57½	25 5¼	13 54	25 28	19 4
7 1	25 5¼	13 53⅚	25 3	19 47
7 4	25 5⅙		24 53	20 22

To test the new sextant, with which the above observations of ♃ were taken, outside [Pro examinatione novi Sextantis per quem ſuperiores obſeruationes ♃ ſunt acceptæ exterius.]:

Distance between the bright star of ♈ [Diſt. inter Lucidam ♈]	35 32
and Aldebaran [& Aldeboram]	35 32⅙

It was very clear and calm [Erat admodum bene ſerenum ac tranquillum.].

To correct the armillae [Pro Armillis corrigendis]	21 31
Declination of the bright star of ♈ [Declin. Lucidæ ♈]	21 30⅔

DIE 5 MARTIJ. [5 March]

The distance of ♃ from the bright star of ♈ was taken [Capiebatur Diſtantia ♃ a Lucida ♈.]:

H. M. corr.	Distance [Diſt.]	Declination of ♃ [Decl. ♃]	Altitude of ♃ [Alt. ♃]	Canis Minor, east [Can. min. orient.]
7 16⅙	13 26⅙			4 38
7 17⅚	13 26	14 4*		4 12
7 19¼	13 26⅚		24 5	3 51

* It could not be taken with the other [* altero non poterat capi.].
Conversely, from Aldebaran [Vice verſa ab Aldebora.]

7 32	24 31	14 4½ 14 5	23 45	3 10

7 34⅙	24 31	14 5 14 4⅔	23 32	2 51
7 36	24 31	14 5 14 5⅙	23 15½	2 24

To correct the armillae, the following was taken [Pro corrigendis armillis capiebatur]:

Declination [Declinatio]	21 34½
of the bright star of ♈ [Lucidæ ♈]	21 35 0

DIE 9 MARTIJ. [9 March]
♃ was observed [Obſeruabatur ♃.]:

H. M.	Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	Declination [Declin.]	Canis Minor, east [Can. min. orient.]
6 36	23 44	14 23 14 22⅔	8 1
6 41½	23 44		7 0
6 45	23 43¾		6 13

Conversely, from the bright star of ♈ [Vice verſa a Lucida ♈]

6 51	13 53⅚	14 20½ 14 21	5 2
6 55	13 52¾		4 15

To correct the armillae, the following was taken [Pro corrigendis armillis capiebatur]:

bright star of ♈ [Lucida ♈]	21 40
	21 39

DIE 10 MARTIJ. [10 March]
The distance of ♃ was taken first from the bright star of ♈ [Capiebatur ♃ diſtantia primo a Lucida ♈.]:

H. M.	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	Canis Minor, west [Can. Minor occid.]
7 6	14 4⅓		22 45	0 3
7 10	14 5	14 25⅔	22 20	0 46
		14 26		
7 11½	14 4¼			1 0

Conversely, from Aldebaran [Vice verſa ab Aldebora]

7 19	23 29½		21 10	2 51
7 24	23 28¾	14 25½	20 40	3 47
		14 26⅙		
7 26	23 29¾	14 25½		4 13
		14 26		

To correct the armillae, there was observed [Pro corrigendis Armillis obſeruabatur]:

of the bright star of ♈ [Lucidæ ♈]	21 36½
Declination [Declinatio]	21 37

DIE 11 MARTIJ. [11 March]

♃ was observed with the old sextant [Obſeruabatur ♃ per veterem Sextantem.]:

H. M.	Distance of ♃ from the bright star of ♈ [Diſt. ♃ a Lucida ♈]	Declination [Declin.]	Altitude [Altit.]	Canis Minor, west [Can. min. occid.]
7 20	14 11¼		19 0	6 50
7 23	14 12	14 29⅓		7 32
		14 30		
7 26	14 11½		18 30	7 50

Conversely, from Aldebaran [Viceverſa ab Aldebora]

7 29	23 17½			8 45
7 36½	23 17½	14 29½	17 10	10 2
		14 30⅙		

It was not clear enough around the last observations [Non erat ſatis ſerenum circa poſtremas obſeruationes.].

DIE 12 MARTIJ. [12 March]

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

H. M.	Distance of ♃ from Aldebaran with the old sextant [Diſt. ♃ ab Aldeb. per veterem Sext.]	Declination [Decl.]	Altitude of ♃ [Altit. ♃]	Canis Minor, east [Can. min. orient.]
6 49	23 7	14 31½*	24 55	2 51

* It could not be taken with the other pinnule [* altero non poterat capi pinnacidio].

6 51	23 7		24 20	2 25
6 54	23 7	14 31	23 50	1 42
		14 31½		

Conversely, from the bright star of ♈ [Viceverſa a Lucida ♈]

6 58	14 18⅔	14 31		0 50	
		14 31½			
7 0	14 18¼			0 9	
7 2½	14 18	14 31¼	22 40	west [occid.]	
		14 31		0 26	

To correct the armillae [Pro armillis corrigendis]:

Declination [Declin.]	21 32
of the bright star of ♈ [Lucidæ ♈]	21 31⅓

It was quite clear [Erat bene ſerenum.].

DIE 14 MARTIJ. [14 March]

In the evening ♃ was observed [Veſperi obſeruabatur ♃]:

H. M.	Distance from Aldebaran [Diſt. ab Aldeb.]	Declination [Declin.]	Altitude [Altit.]
7 6	22 41½	14 40	
		14 40⅓	
7 14	22 41		21 0

DIE 15 MARTIJ. [15 March]

♃ was observed from the bright shoulder of Orion [Obſeruabatur ♃ a lucido humero Orionis.]:

H. M.	Distance [Diſt.]	Declination [Declin.]	Altitude [Altit.]	Canis Minor, west [Can. min. occid.]
7 53	43 13⅙		22 43	1 35
7 56	43 13	14 46 14 45⅓	22 23	2 13
7 58	43 12½		22 13	2 32

Afterwards ♃ was observed from Aldebaran [Poſtea ♃ obſeruabatur ab Aldebora]

8 9	22 26⅓	14 46 14 45½	21 3	4 39
8 11	22 25⅔		20 50	5 5
8 15	22 26	14 46 14 45½	20 25	6 0

To correct the armillae [Pro Armillis corrigendis]	21 37⅔
Declination of the bright star of ♈ [Declin. Lucidæ ♈]	21 38¼

It was then quite clear [Fuit tunc bene ſerenum.].
The place of ♃ for the same day follows [Sequitur ♃ locus ad eundem diem.].

Distance of ♃ from the bright star of Orion's shoulder [Diſt. ♃ a luc. hum. Orionis]	43 13
Declination of ♃ [Declinatio ♃]	14 45 45
Right ascension of the following shoulder of Orion [Aſc. recta humeri ſequentis Or.]	83 22 45
Declination of the same shoulder [Declin. humeri eiuſdem]	7 15 50
Angle of the ascensional difference [Angulus differ. aſcenſ.]	43 25 55
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	39 56 50

Conversely, from Aldebaran [Viceverſa ab Aldebora]

Distance [Diſtantia]	22 26
Declination of Aldebaran [Declin. Aldeb.]	15 38
Right ascension of the same [Aſc. recta eiuſdem]	63 13
Angle of the ascensional difference [Angulus differ. aſcenſ.]	23 14 25
Therefore the right ascension of ♃ [Ergo aſc. recta ♃]	39 58 30
Right ascension, limited [Aſcenſio recta limitata]	39 57 40
Corresponding longitude [Reſp. Longitudo]	12 9 50 ♉
Latitude [Latitudo]	1 10 45 B.

OBSERVATIONS OF VENUS [OBSERUATIONES VENERIS.]

DIE 11 FEBRUARIJ. [11 February]

In the morning ♀ was observed approaching ⊙ [Mane obſeruabatur ♀ ⊙^{l} appropinquans.]:

H. M.	Distance of ♀ from Arcturus with the semicircle [Diſt. ♀ ab Arcturo per Semicirculum]	Declination of ♀ [Declin. ♀]	Altitude of ♀ [Altit. ♀]
6 55	94 50	20 34 doubtful [dub.] 20 36 better [mel.]	6⅓
6 57	94 51		

Correct the clock from the preceding observations of ♄ [Corrige horologium ex præcedentibus obſeruationibus in ♄.].

N.B. We carried out these observations with difficulty, because ♀, entangled in the rather sparse little clouds lying near the horizon, was not sufficiently visible [N.B. Difficulter has obſeruationes peregimus, quod ♀ rariuſculis nubeculis apud Horizontem exiſtentibus implicata ſatis viſibilis non fuit.].

♂, however, which was otherwise to be observed, did not appear this morning [♂ autem hoc mane non apparuit, qui alias erat obſeruandus.].

OBSERVATIONS OF MERCURY [OBSERUATIONES MERCURIJ.]

DIE 3 MARTIJ. [3 March]

When it was also exceptionally clear, ☿ *was observed near its greatest evening elongation from the Sun, as follows. It was a very few days past the elongation, already beginning to return toward the Sun.* [Quando etiam apprime erat ſerenum, obſeruabatur ☿ circa maximam digreßionem a Sole veſpertinam vt ſequitur. Erat pauculis diebus vltra digreßionem iam incipiens redire ad Solem.]

N.B. ☿ at its farthest from ⊙ [N.B. ☿ remotißimus a ⊙.].

H. M. corr.	Distance of ☿ from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination [Declin.]	Altitude of ☿ by Q. min. [Altit. ☿ per Q. min.]	Bright star of Orion's shoulder, west [Luc. hum. Or. occ.]
6 36½	53 11⅙	6 49	9 30	9 42
		6 50		
6 39	53 7		9 5	10 31
6 42	53 6⅓	6 49⅔	8 40	11 8
		6 50		
6 44⅔	53 6	6 50	8 20	11 54
		6 50		

H. M. corr.	Distance of ☿ from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination [Declin.]	Altitude of ☿ by Q. min. [Altit. ☿ per Q. min.]	Bright star of Orion's shoulder, west [Luc. hum. Or. occ.]
6 47	53 5½	6 49⅚ 6 50½	7 50	12 38
6 49⅔	53 5½	6 50½	7 21	13 10
		6 50⅔		Canis Minor, east [Can. min. or.]
6 53½	53 4 } good [bona]	6 51 6 51	7 10	12 21

Afterwards the distance of ☿ from ☽ was taken [Poſtea ſumebatur diſt. ☿ a ☽.]

{ 7 10 / 6 57⅙ corr. }		28 13⅓		6 40	11 37
{ 7 12⅚ / 7 0 corr. }		28 13	6 51½ 6 51	6 20	11 4
7 3 corr.		28 13⅙	6 50 6 51½	6 0	10 24
7 5⅔		28 11⅔		5 45	9 55
7 8		28 11¼	6 51 6 51½	5 25	9 23

Distance from the bright star of the jaw of Cetus [Diſtantia a Lucida Mandibulæ Cete.]

7 13	30 42⅔	6 51½ 6 51	4 55	8 25
7 16	30 42		4 40	7 44

Afterwards ☿ was observed from the head of Andromeda [Poſtea obſeruabatur ☿ a Capite Andromedæ.]

7 19	23 25⅓ } good [*bona*]	6 51½ 6 51⅚	4 10	6 58
7 23¼	23 20½ } fair [*mediocris*]	6 52 6 51½	3 55	6 15
7 26	with one [vno]	6 52½	3 35	5 38
7 30⅙	with one [vno]	6 53	3 5	4 52

These observations, which were fairly good, were made with the sky very clear and the air calm, and that with the old sextant, which dist..... [Fiebant hæ obſeruationes,

quæ ſatis bonæ erant, cœlo admodum ſereno atque tranquilla aura, idque per ſextantem veterem qui diſt.....]

Afterwards, to correct the sextant, these distances of fixed stars were taken [Poſtea pro correctione Sextantis capiebantur diſtantiæ hæ fixarum.]:

H. M.	Distance between Aldebaran and the bright star of ♈ [Diſt. inter Aldeb. & Lucidam ♈]	Altitude of the bright star of ♈ [Altit. Lucidæ ♈]
7 58	35 32	22 35
8 0	35 31⅔ distance repeated [repetita diſtantia.]	

Afterwards the distance was taken, with the same sextant, between Aldebaran and the lower head of ♊ [Poſtea capiebatur diſtantia in eodem ſextante inter Aldeboram & infer. Caput ♊]:

	45 3⅙
	45 3¼

To examine the declination and refraction of ☿, the following were observed at almost the same altitude [Pro examinatione Declinationis ac Refractionis ☿ obſeruabantur ſequentia in conſimili altitudine quaſi.]:

	Declination [Declinatio]	Altitude [Altitudo]
Of the bright star of ♈ [Lucidæ ♈]	21 40	6
	21 41¼	
Of the preceding shoulder of Orion [Præced. humeri Orionis]	6 0	9 20
	6 0⅙	
Declination repeated [Iterata decl.]	6 1	8 25
	6 0⅚	
Declination of the same [Declin. eiuſdem]	6 1	7 45
	6 1⅙	

Hence, from the true declinations of these stars given for this time, the observed declinations of ☿ are freed, by the difference between them, from the error of refraction and of the instrument. [Hinc e datis harum ſtellarum veris ad hoc tempus declinationibus ex differentia inter obſeruatas ☿ Declinationes a refract. & inſtrum. errore liberantur.]

Die 3tio Martij veſperi. [3 March, evening]

At H. 6 M. 40, when ☿ was at an altitude of 9°, it was distant from Aldebaran [H. 6 M. 40 cum ☿ eßet in altit. 9 grad. diſtabat ab Aldebora] 53 6 50.

Declination of ☿, north, corrected [Declin. ☿ B. correcta]	6 49 10
Declination of Aldebaran, north [Declin. Aldeb. B.]	15 38 0
Right ascension of the same [Aſc. recta eiuſdem]	63 13 10
Angle of the ascensional difference [Ang. diff. aſcenſ.]	53 32 25
Therefore the right ascension of ☿ [Ergo aſc. recta ☿]	9 40 45

At H. 7 M. 13⅙, ☿, being at an altitude of 5°, was distant from the bright star of the jaw of Cetus [H. 7 M. 13⅙ ☿ exiſtens in altit. 5 graduum, diſtabat a luc. mand. Cete] 30 42⅔.

Declination of ☿, north, corrected [Decl. ☿ B. correcta]	6 50 35
Declination of the jaw of Cetus, north [Mandib. Cete Decl. B.]	2 26 15
Its right ascension [Eius aſc. recta]	40 16½
Angle of the ascensional difference [Ang. diff. aſcenſ.]	30 30 15
Therefore the right ascension of ☿ [Ergo Aſc. recta ☿]	9 46¼

On the same evening, at H. 7 M. 19, the altitude of ☿ was 4° 10′. Conversely, ☿ was observed from the head of Andromeda, at a distance of [Eadem Veſpera H. 7 M. 19, Altitudo ☿ 4° 10′. Vice verſa obſeruatus eſt ☿ a capite Andromedæ, habens diſtantiam] 23 25½.

Declination of ☿, north [Declin. ☿ B.]	6 51 0
Declination of the head of Andromeda, north [Cap. Androm. Decl. B.]	26 50 15
Its right ascension [Eius Aſc. recta]	356 50 15
Angle of the ascensional difference [Ang. diff. aſcenſ.]	12 50⅔
Therefore the right ascension of ☿ [Ergo Aſc. recta ☿]	9 40 55

Set, therefore, the right ascension of ☿ [Pone igitur Aſcenſionem rectam ☿]:

from Aldebaran [ex Aldebora]	9 41
Declination of ☿, north, corrected [Declin. ☿ B. correcta]	6 49⅙
Corresponding longitude [Reſp. Longitudo]	11 38 30 ♈
Latitude [Latitudo]	2 35 0 B.

DIE 4 MARTIJ, VESPERI. [4 March, evening]

Since the sky was again very clear, ☿ was observed near its greatest elongation from the Sun, *but already returning toward it* [Cum cœlum itidem erat admodum ſerenum, obſeruabatur ☿ circa digreſſionem a ☉[le] maximam *ſed iam ad illum rediens.*].

H. M. corrected [H. M. correcte]	Distance from Aldebaran [Diſt. ab Aldeb.]	Declination of ☿ [Decl. ☿]	Alti-tude [Altit.]	In the equator, bright star of Orion's shoulder, west [In æquat. luc. humer. Orion. occ.]
6 36⅓	52 [1]	7 19½	9 50	10 50
		7 18		
6 39	52 20⅙		9 19	11 31
6 41¾	52 19⅙	7 22	8 40	12 11
		7 23		
6 44⅔	52 19 0		8 25	12 55
6 47⅙	52 18½	7 21	7 45	13 32
		7 20		

Again the distance was taken from the head of Andromeda [Rurſum capiebatur diſt. a Cap. Andromedæ.]

				Canis Minor, east [Can. min. orient.]
6 49⅔	23 19	7 22	7 20	11 38
		7 21⅓		
6 50⅚	23 21 good [bona]		7 0	10 58
6 56	23 21	7 22½	6 40	10 21
		7 22		
6 58	23 20½		6 25	9 26
7 0½	23 20¼		6 5	9 1

Afterwards ☿ was observed from the bright star of the jaw of Cetus [Poſtea obſeruabatur ☿ a Luc. Mand. Cete.]

7 2	30 12	7 22½	5 45	8 49
		7 22		
7 6	30 12		5 25	8 13
7 9	30 11½	7 21½	5 5	7 34
		7 22		
7 11	30 9	7 23	4 45	7 0
		7 22½		

[1] In the codex 52 16, but struck through with lines. [In codice 52 16, ſed lineis inducta.]

Afterwards the distance of ☿ from Aldebaran was taken [Poſtea capiebatur diſt. ☿ ab Aldebora.]

7 15	52 17		4 20	6 7
7 18	52 16⅙	7 24	3 40	5 25
		7 24⅙		

7 20	52 15	3 5	5 1

Afterwards, for the declination and refraction, we observed the bright shoulder of Orion at an altitude similar to that of ☿ observed before, as follows [Poſtea pro declinatione & refractione obſeruabamus Lucidum humerum Orionis in conſimili altitudine cum ☿ antea obſeruato, vt ſequitur.]:

		Altitude [Altitudo]
Declination of the right shoulder [Decl. dext. hum.]	7 21	
of Orion [Orionis]	7 20½	10 18
Repeated [Reiterata]	7 21	9 20
Declination [Declinatio]	7 20¾	
The same [Eadem]	7 21	8 20
	7 22	

For the place of ☿ from the observations of the evening of the 4th. Altitude of ☿ 9 g. [Pro loco ☿ ex obſeruationibus diej 4 Veſperi. Alt. ☿ 9 g.]

H. 6 M. 38, distance of ☿ from Aldebaran [H. 6 M. 38 Diſt. ☿ ab Aldeb.]	52 19½
Declination of Aldebaran, north [Decl. Aldeb. B.]	15 38
Right ascension of Aldebaran [Aſc. recta Aldeb.]	63 13⅙
Angle of the ascensional difference [Ang. diff. aſcenſ.]	52 51 0
Therefore the right ascension of ☿ [Ergo Aſc. recta ☿]	10 22⅙
Declination of ☿, north [Decl. ☿ B.]	7 20
Corresponding longitude [Reſp. Longitudo]	12 24 16 ♈
Latitude [Latitudo]	2 37 24 B.

DIE 5 MARTIJ. [5 March]

In the evening ☿ was observed near its greatest elongation from the Sun [Veſperi obſeruabatur ☿ circa maximam digreßionem a ☉[le].].

H. M. S.	Distance of ☿ from Aldebaran [Diſt. ☿ ab Aldeb.]	Declination [Declin.]	Altitude [Altit.]	Canis Minor, east [Can. min. orient.]
6 59 55	51 36 } good [bona]	7 49	6 20	8 41
		7 50		
7 3	51 33 } doubtful [dubia]		5 30	7 46

N.B. The daily motion of ☿ from yesterday to today is 41′; on the preceding days it was 47′. It is therefore approaching the Sun again, contrary to what the Alfonsines hold, and a little more than Copernicus holds. [N.B. Motus diurnus ☿ ab heſterna die in hunc eſt 41′, prioribus erat 47′. Accedit itaque rurſus ad Solem, contra quam volunt Alphonſini, & paulo plus quam Copernicus.]

For the place of ☿ on the evening of 5 March [Pro loco ☿ ad diem 5^{tum} Martij Veſperi.]: at about H. 7 M. 0, ☿, being at an altitude of 6 20, was distant from Aldebaran [H. 7 M. 0 fere ☿ exiſtens in altitud. 6 20 diſtabat ab Aldebora] 51 36.

Angle of the ascensional difference [Ang. diff. aſcenſ.]	52 13⅙
Therefore the right ascension of ☿ [Ergo Aſc. recta ☿]	11 0 0
Declination of ☿, north [Decl. ☿ B.]	7 49 0
Corresponding longitude [Reſp. Longitudo]	13 10 ♈
Latitude [Latitudo]	2 48⅓ B.

DIE 6 MARTIJ. [6 March]
In the evening ☿ was observed [Veſperi obſeruabatur ☿.].

H. M. S. corr.	Distance from Aldebaran [Diſt. ab Aldeb.]	Declination [Declin.]	Altitude [Altit.]	Canis Minor, east [Can. min. orient.]
6 55 55	51 2	8 10⅓ 8 9½	6 55	8 41
6 58⅓	51 4		6 25	8 5
6 59⅚	51 3	8 10⅓ 8 10⅓	6 15	7 42
7 1⅚	51 3	8 10½ 8 11	6 10	7 12

Conversely, from Schedar in Cassiopeia [Vice verſa a Schedir Caßiopeæ.]

7 5⅔	46 30⅔		5 30	6 14
7 7⅔	46 30⅚	8 10½ 8 11	5 15	5 44
7 9⅔	46 30⅚		4 55	5 14
7 11¼	46 32	8 10⅔ 8 11	4 45	4 51
7 12⅔	46 30		4 30	4 30

Of the bright shoulder of Orion, for declination and refraction [Lucidi humeri Orionis pro Declinatione & Refractione]:

Declination [Declinatio]	Altitude [Altitudo]
7 21	7 40
7 22	
7 23	6 45
7 22⅙	

DIE 7 MARTIJ. [7 March]

In the evening ☿ was observed [Veſperi obſeruabatur ☿.].

H. M. S. corr.	Distance from Aldebaran [Diſt. ab Aldeb.]	Declination [Declin.]	Altitude [Altit.]	Canis Minor, east [Can. min. orient.]
6 53 25		8 26	7 0	8 18
		8 27		
7 3½	50 38⅚		5 45	5 47
7 9⅔	50 39⅙	8 29	5 25	4 14
		8 28		

From the bright star of the jaw of Cetus [A lucida Mandibulæ Cete.]

7 11	28 57	4 10	2 43

These observations of ☿ were taken among clouds, for while we were observing it was never clear enough. The earlier distances from Aldebaran are nevertheless fair, and they can be relied on well enough for finding its daily motion [Hæ ☿ obſeruationes inter nubes ſunt acceptæ, nam inter obſeruandum nuſquam fuit ſatis ſerenum, ſunt tamen priores diſtantiæ ab Aldebora mediocres, quibus pro motu eius diurno cognoſcendo ſatis fidere licebit.].

DIE 9 MARTIJ. [9 March]

This evening ☿ appeared for the first time, at an altitude of about 5°, very faint and quite unobservable, until it disappeared entirely [Hac veſpera apparuit ☿ primum circa altitudinem quaſi 5° admodum exilis & prorſus inobſeruabilis, quo ad plane diſparuit.].

The preceding observations of ☿, reduced by triangular calculation to longitude and latitude [Præcedentes ☿ obſeruationes per Calculum Triangularem in Longum & Latum diductæ.].

To correct the largest armillae, by which its declinations from the equator were taken each day, we observed among other things on 4 March the declination of the bright star of Orion's shoulder in a position similar to that of ☿ observed earlier, at altitude 9⅓, which we chiefly used [Pro armillarum maximarum correctione, per quas eius Declinationes ab Æquatore acceptæ ſunt ſingulis diebus, inter alia obſeruabamus die 4 Martij Declinationem Lucidi humeri Orionis in conſimili ſitu cum ☿ prius obſeruato, altitudinem 9⅓, qua potiſsimum vſi ſumus.].

Its true declination at the beginning of the year '97 is found to be [Huius vera declinatio ad initium 97 anni reperitur]	7 15 30
The refraction at altitude 9⅓ is [Refractio in Altitudine 9⅓ eſt]	5⅚′
From this, there is due to the declination [Ex hac debetur Declinationi]	4′ 50″

Therefore the armillae would give at that place [Ergo Armillæ ibidem darent]	7 20 20
Declination observed in the armillae [Declin. obſeruata in Armillis]	7 21 0,

so the error in the armillae is about ⅔ of one minute, to be subtracted from the declination of ☿ everywhere [vnde error in armillis eſt quaſi ⅔ vnius minuti, auferendæ ex declin. ☿ vbique.].

PLURES FIXÆ STELLÆ OBSERUATÆ ANNO 97[1]. [More fixed stars observed in the year '97]

Sixty are lacking to complete the thousand [Deſiderantur 60 pro complendo millenario.].

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

Diagram. A small star figure set below the date heading in the left column: four star marks, each with a numeral beside or below it. Star 3 stands at the top; star 4, drawn as a smaller cross-mark with its numeral below it, stands a little below and to the left of 3; star 2 stands lower and to the right; star 1 stands below 2 and slightly to its left.

- 3 (top): 3
- 4 (upper left, small mark): 4
- 2 (right, middle): 2
- 1 (bottom): 1

Distance of the first [star] above the Chair of Cassiopeia from the pole star [Diſt. primæ ſupra cathed. Caßiop. a Stella Polari]	16 25
Distance of the same from Capella [Diſt. eiusdem a Capella]	32 21 limited [limit.]
Distance of the 2nd from the pole star [Diſt. 2æ a Stella Polari]	14 51 limited [limit.]
from Capella [a Capella]	31 40½ limited [limit.]

DIE 10 FEBRUARIJ. [10 February]

Between the 3rd and the pole star [Inter 3am & ſtellam Polarem]	17 55⅚ twice [bis]
and Capella [& Capellam]	27 20⅔ twice [bis]
Between the 4th and the pole star [Inter 4tam & ſtellam Polarem]	18 28½ 18 29
and Capella [& Capellam]	27 0

	26 59⅙
Between the star at the tip of the small triangle nearest the pole of the zodiac and the root of the tail of Ursa Major [Inter eam quæ in cuſpide parui trianguli proximi poli Zodiaci & radicem caudæ Vrſæ maioris]	32 39⅓
	32 40⅙

Stars almost in a straight line with Capella and the pole star, whose arrangement is as follows [Stellæ in recta linea fere cum Capella & ſtella Polari, quarum ſitus talis eſt.].

Diagram. A row of star marks across the foot of the left column. At the left a star mark labelled "Cap:" above it; then four star marks numbered 1, 2, 3, 4 below them, the mark over 3 drawn smaller, as a cross; at the right, set somewhat higher, a star mark labelled "Polus" above it in script.

- Cap: (far left, above a star mark): Cap: [Capella]
- 1, 2, 3, 4 (under the four middle marks, left to right): 1, 2, 3, 4
- Polus (far right, above a star mark): Polus [the Pole]

Between the 1st and the pole star [Inter 1am & ſtellam Polarem]	30 25 limited [lim.]
and Capella [& Capellam]	12 58 limited [lim.]
Between the 2nd and the pole star [Inter 2dam & ſtellam Polarem]	28 55
	28 55⅚
and Capella [& Capellam]	14 28 limited [lim.]
Between the 3rd, the faint one, [Inter 3am obſcuram]	23 41⅓
and the pole star [& ſtellam Polarem]	23 42¼
Between the 4th and the pole star [Inter 4tam & ſtellam Polarem]	26 3½ limited, doubtful [lim., dubia]
and Capella [& Capellam]	20 28 limited, doubtful [lim. dubia]

These four stars must be observed again in winter, and from other stars, so that they form a triangle [Hæ quatuor ſtellæ hyeme rurſus obſeruari debent, & ab alijs ſtellis, ita vt triangulum conſtituant.].

The places of these stars [Loca harum ſtellarum]

DIE 8 FEBRUARIJ. [8 February]

	Corresponding longitude [Reſp. Long.]	Latitude [Lat.]
1	1 46 ♊	53 16 B.
2	6 12 ♊	53 32 B.[2]

DIE 10 FEBRUARIJ. [10 February]

	Corresponding longitude [Resp. Long.]	
3	0 11 ♊	52 4 B.
4	6 45 ♊	49 8 B.[3]
The one at the tip of the small △ nearest the pole of the zodiac [Quæ in cuſp. parui △ proximi poli Zodiaci]	17 17 ♊	35 50 B.[4]
1	17 28 ♊	37 20 B.[5]
2	17 45 ♊	40 13 B.
3	2 18 ♊	45 10 B.[6]
4	18 3 ♊	42 56 B.

[1] From codex G. A copy of these observations is found in cod. Vindob. lat. 10689[34] f. 26[r] ff.; in it alone are the places of nine stars observed on 8 and 10 February added [E Codice G. Apographum harum obſervationum in cod. Vindob. lat. 10689[34] f 26[r] sqq invenitur, in quo ſolo loca novem ſtellarum diebus 8 et 10 Februarii obſervatarum addita ſunt.].

[2] Star 1 is 48 Cassiopeiae, 2 = 50 Cassiopeiae [Stella 1 eſt 48 Caßiopeæ, 2 = 50 Caßiopeæ.].

[3] 3 = 5 H. Camelopardali, + 70°. 259. 4, which precedes 3 to the south, is + 70°. 257 [3 = 5 H. Camelopardali, + 70°. 259. 4 quæ præcedit 3 ad auſtrum eſt + 70°. 257.].

[4] This place is very wrong, and belongs to the star 11 Camelopardali (vol. III, p. 354. 9, and again p. 361. 32). The star near the pole of the zodiac is ψ Draconis (vol. III p. 356. 25) [Hic locus valde falſus eſt et pertinet ad ſtellam 11 Camelopardali (T. III, p. 354. 9 et iterum p. 361. 32). Stella prope polum Zodiaci eſt ψ Draconis (T. III p. 356. 25).].

[5] Stars 1 and 2 are 11 and 10 Camelopardali [Stellæ 1 et 2 ſunt 11 et 10 Camelopardali.].

[6] Stars 3 and 4 are 1 H. Camel. (+ 65°. 340) and 9 Camel. The distances from the pole star are to be interchanged [Stellæ 3 et 4 ſunt 1 H. Camel. (+ 65°. 340) et 9 Camel. Diſtantiæ a ſtella Polari permutandæ ſunt.].

DIE 3 MARTIJ. [3 March]

Stars in a straight line with the bright side of Perseus and the pole star, whose arrangement is as follows[1] [Stellæ in recta linea cum lucido latere Perſei & Stella Polari, quarum ſitus talis eſt[1].].

Diagram. A small star figure in the left column, drawn with handwritten labels. At the left a large star mark under the script label "Lucid: lat[9] Perſei"; to its right a smaller mark with "1" below it; then two marks close together with "2" and "3" below them; further right and set higher, a mark with "4" below it.

At the upper right of the column a large star mark with the script label "Polus" beside it.

- Lucid: lat⁹ Perſei (upper left, above the large star mark): the bright [star] … of Perseus
- 1 (below the second mark): 1
- 2, 3 (below the pair of marks): 2, 3
- 4 (below the right-hand mark): 4
- Polus (upper right, beside a large star mark): Polus [the Pole]

Between the first and Capella [Inter primam & Capellam]	19 1 twice [bis]
and the pole star [& ſtellam Polarem]	33 52
	33 51⅔
Between the second and Capella [Inter ſecundam & Capellam]	20 24⅔ twice [bis]
and the pole star [& ſtellam Polarem]	30 30
	30 29½
Between the third and Capella [Inter tertiam & Capellam]	21 1
	21 1½
and the pole star [& ſtellam Polarem]	29 23 limited [limit.]
Between the fourth and Capella [Inter quartam & Capellam]	25 2
	25 2½
and the pole star [& ſtellam Polarem]	23 42 twice [bis]

DIE 4 MARTIJ. [4 March]

Diagram. A star figure across the full width of the page, below the date heading: sixteen star marks, fourteen numbered and two labelled in script. At the lower left a large star mark under the label "Cap:". To its right, a mark with "1" below it and, above that, a mark with "2" above it; "3" stands beside a mark to the right of these; "4" stands to the left of a mark further right, with "5" to the right of the next mark and "6" to the right of a mark set lower down. In the middle of the figure "7" stands above a mark, "8" below a mark under it, "9" and "10" to the right of two marks further right. At the right "11" stands above a mark, "12" to the upper right of a mark beside it, "13" below a mark under 11, and "14" to the lower right of a mark beside 13. At the lower right a large star mark with the script label "Polaris Stella" beside it.

- Cap: (lower left, above a large star mark): Cap: [Capella]
- 1–14 (beside or below the fourteen numbered marks): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
- Polaris Stella (lower right, beside a large star mark): Polaris Stella [the pole star]

Distance² [Diſtantia²]

	from the lower head of ♊ [ab inf. cap. ♊]	from the bend of Cassiopeia [a flexura Caßiop.]
1st [1ma]	34 21 limited [limit.]	37 54
		37 53⅙

	from the lower head of ♊ [ab inf. cap. ♊]	from the bend of Cassiopeia [a flexura Caßiop.]
2nd [2da]	31 25	42 1
	31 25⅔	42 0
3rd [3tia]	32 52 limited [limit.]	40 15
		40 16
4th [4ta]	40 22	35 46
	40 22½	35 44¾
5th [5ta]	41 35 twice [bis]	35 21
		35 22
6th [6ta]	43 20	32 16 twice [bis]
	43 21	
7th [7ma]	49 13	32 13½ limited [limit.]
	49 12¼	
8th [8va]	52 5	30 23
	52 4⅔	30 22⅓
9th [9na]	51 27	33 40
	51 28	33 39⅙
10th [10a]	54 24⅓ limited [lim.]	31 22 limited [lim.]

	from Capella [a Capella]	from the bright star of Ursa Minor [a luc. Vrſæ min.]
11th [11a]	40 50	16 11½
	40 50½	16 12
12th [12a]	42 43 twice [bis]	14 6
		14 5⅔
13th [13a]	42 52	14 15
	42 53	14 15½
14th [14a]	46 41	11 10
	46 41½	11 8⅚

DIE 5 MARTIJ. [5 March]

Stars between the last and the next-to-last [stars] of the tail of Ursa Major, whose arrangement is as follows[3] [Stellæ inter extremam & penultimam caudæ Vrſæ maioris, quarum ſitus talis eſt[3].].

Diagram. A small star figure in the right column: a large star mark at the upper left; just to its right a small mark with "1" above it; further right a mark with "2" above it; lower down, below and slightly left of 2, a small mark with "3" to its right; at the bottom a large star mark, below and to the left of 3.

- 1 (above the small mark beside the upper-left large mark): 1
- 2 (above the upper-right mark): 2
- 3 (right of the lower small mark): 3

[1] These stars, which were placed by Tycho in the constellation of Perseus, now belong to Camelopardalis, and are 4 H. (+ 54°. 684), 3 H. (+ 58°. 607), 2 H. (+ 59°. 660), 1 H. (+ 65°. 340) [Hæ ſtellæ, quæ a Tychone in conſtellatione Perſei poſitæ ſunt, nunc ad Camelopardalum pertinent et ſunt 4 H. (+ 54°. 684), 3 H. (+ 58°. 607), 2 H. (+ 59°. 660), 1 H. (+ 65°. 340).].

[2] These are the "unformed little stars around Cassiopeia" [Hæ »informes ſtellulæ circa Caßiopeam« ſunt:]:

1 = 2 Lyncis	6 = 22 H. Camelop. = + 63°.371	11 = 1 H. Drac. = + 81°.302
2 = 15 Lyncis	7 = 24 H. — = + 77.266	12 = 30 H. Camelop. = + 83.297
3 = 14 Lyncis	8 = 23 H. — = + 79.212	13 = 29 H. — = + 84.234
4 = 42 Camelop.	9 = + 79.265	14 = 32 H. — = + 84.289
5 = 43 Camelop.	10 = 25 H. — = + 82.201	

[3] Between ζ and η of Ursa Major. The drawing is very wrong. 1 = 83 Ursae, 2 = 21 Canum venat., 3 = 24 Canum [Inter ζ et η Urſæ maioris. Delineatio valde falſa eſt. 1 = 83 Urſæ, 2 = 21 Canum venat., 3 = 24 Canum.].

Between the 1st [Inter 1mam]	20
	39½
and the bright star of Ursa Minor [& lucid. Vrſæ minoris]	20 40
and the neck of ♌ [& ceruicem ♌]	51 32
	51 31⅓
Between the 2nd and the bright star [Inter 2dam & lucidam]	26 15
	26 14¼
and the neck [& ceruicem]	46 10
	46 11
Between the 3rd and the bright star of Ursa Minor [Inter 3tiam & lucid. Vrſæ min.]	26 25
	26
	24¼
and the bright star of the neck of ♌ [& lucid. ceruicis ♌]	48 25
	48
	24½

Those [stars] below the unformed [star] between the tail of Ursa Major and the tail of ♌ — their arrangement is as follows[1] [Quæ ſub informi inter caudam Vrſæ maioris & caudam ♌, ſitus earum talis eſt[1].].

Diagram. A star figure in the left column, drawn with handwritten labels. At the upper left a large star mark with the script label "Informis" to its right. Below and to the right, nine star marks, each numbered in script: "4" above a mark; "3" to the upper right of a mark to its right; "2" to the right of a mark further right and slightly lower; "1" to the right of a mark at the far right; "5" below a mark under 4 and 3; "6" to the right of a mark below 5; "8" to the left of a mark at the left, level with 6; "7" to the right of a mark below 6; "9" to the right of a mark at the bottom, below 7.

- Informis (upper left, script): "unformed" star
- 1–9 (script numerals): the numbered stars

Between [Inter]	and the tail of Ursa Major [& caudam Vrſæ mai.]	and the heart of ♌ [& Cor ♌]
1st [1mam]	19 17 limited [limit.]	46 20 limited [limit.]
2nd [2dam]	12 40 good [bona]	48 12
		48 11½
3rd [3tiam]	11 3½	49 23
	11 3	49 23⅔
4th [4tam]	10 11	50 24
	10 11¼	50 24½
5th [5tam]	10 16	50 20
	10 17	50 19¼
6th [6tam]	36 45½	53 2
	36 45	53 2⅔
7th [7mam]	36 50 limited [limit.]	53 4
		53 4¼
8th [8vam]	36 46	55 0
	36 45	55 1

9th [9nam]	40 9	55 5 limited [limit.]
	40 8⅔	

DIE 9 MARTIJ. [9 March]

Some stars around the pole star, whose arrangement is as follows[2] [Stellæ quædam circa Polarem quarum ſitus talis eſt[2].].

Diagram. A small star figure in the right column, drawn with handwritten labels. At the top two star marks, "1" above the left one and "2" to the upper right of the right one. Below them a large star mark with the script label "pol:" to its right. Below that, "3" to the left of a star mark, and to its right a small × mark with "4" beside it; below, a × mark with "5" beside it; at the bottom a star mark with "6" beside it.

- 1, 2 (top): numbered stars
- pol: (script): the pole star
- 3 (star mark), 4 and 5 (× marks), 6 (star mark): numbered stars

Between [Inter]	and Capella [& Capellam]	and the tail of Ursa Major [& Caudam Vrſ. mai.]
1st [1mam]	43 15	32 45 limited [lim.]
	43 14½	
2nd [2dam]	47 56 limited [lim.]	29 36 limited [lim.]
3rd [3tiam]	42 13 limited [lim.]	44 21 limited [lim.]
4th [4tam]	45 9½ limited [9½lim.]	43 3½ limited [3½lim.]
5th [5tam]	44 46 limited [lim.]	45 45 limited [lim.]
6th [6tam]	44 47⅚ limited [47⅚lim.]	44 43 limited [lim.]

DIE 10 MARTIJ. [10 March]

The star nearest the pole star[3] [Stella proxima Polari[3].].

Diagram. A small figure in the right column, drawn with handwritten labels: a star mark at the upper left with the script label "Merid:" above and to its right; lower down and to the right, a star mark with the script label "Stella pol:" to its right.

- Merid: (script, upper): abbreviation as written, not expanded
- Stella pol: (script, lower): the pole star

Distance from Capella [Diſt. a Capella]	41 38 limited [limit.]
from the tail of Ursa Major [a cauda Vrſæ mai.]	41 7 limited [limit.]

Unformed [stars] above the head of Boötes, in a straight line with the head of Boötes and the last [star] in the bend of Draco[4] [Informes ſupra Caput Bootis in recta linea cum capite Bootis & vltima in flexura Draconis[4]].

Diagram. Two printed marks side by side in the right column: on the left a × mark with a small printed "2" above it; on the right a six-armed star mark with a small printed "1" above it.

- 2 (left, above × mark)
- 1 (right, above star mark)

1 from Arcturus [1 ab Arcturo]	30 0 limited [limit.]
from the pole star [a Polari]	43 1 limited [limit.]
2 from Arcturus [2 ab Arcturo]	30 7 limited [limit.]
from the pole star [a Polari]	42 57 limited [limit.]

[1] The unformed star below the tail of Ursa Major is α Canum Venaticorum. Star 1 is perhaps 14 Canum, but its distance from η Ursae is wrong. 2 = 15 Canum, 3 = 11 H, + 40°. 2633; 4 = 20 Canum, 5 = 23 Canum. 6 and 7 must belong to a single star, which, however, like 8 and 9 as well, we cannot identify with certainty. The distances of the sixth star, if we take the places of the stars from Argelander's *Uranometria*, give for the year 1840 α = 204° 49′, δ = + 16° 45′; the nearest star to this visible to the naked eye is 5 Bootis, α = 205° 26′, δ = + 16° 36′ (1840). The distances of the ninth star give for the same year 206° 10′ + 10° 0′; the nearest star to this is + 9°. 2835, α = 208° 22′, δ = + 9° 40′ [Stella informis ſub cauda Urſæ majoris eſt α Canum venaticorum. 1 eſt fortaße 14 Canum, cujus tamen diſtantia ab η Urſæ falſa eſt. 2 = 15 Canum, 3 = 11 H, + 40°. 2633; 4 = 20 Canum, 5 = 23 Canum. 6 et 7 debent ad unam ſtellam pertinere, quam tamen, ſicut etiam 8 et 9, certe agnoſcere non poßumus. Diſtantiæ ſextæ ſtellæ, ſi loca ſtellarum ex Uranometria Argelandri ſumamus, dant pro anno 1840 α = 204° 49′, δ = + 16° 45′, cui proxima ſtella ſolis oculis conſpicua eſt 5 Bootis, α = 205° 26′, δ = + 16° 36′ (1840). Diſtantiæ nonæ ſtellæ dant ad eundem annum 206° 10′ + 10° 0′, cui proxima ſtella eſt + 9°. 2835, α = 208° 22′, δ = + 9° 40′.].

[2] The first star is perhaps 1 H. Draconis, + 81°. 302. 2 = 4 H. Draconis, + 78°. 412. 3 = 43 H. Cephei, + 85°. 19. 4 = 32 H Cephei, + 85°. 383. 5 = 36 H Cephei, 83°. 640. 6 = 34 H. Cephei, + 82°. 703 [Stella prima eſt fortaße 1 H. Draconis, + 81°. 302. 2 = 4 H. Draconis, + 78°. 412. 3 = 43 H. Cephei, + 85°. 19. 4 = 32 H Cephei, + 85°. 383. 5 = 36 H Cephei, 83°. 640. 6 = 34 H. Cephei, + 82°. 703.].

[3] The star nearest the pole star is 51 H. Cephei [Stella proxima Polari eſt 51 H. Cephei.].

[4] The unformed stars above the head of Boötes are 44 and 47 Bootis [Informes ſupra caput Bootis ſunt 44 et 47 Bootis.].

DE OCCASIONE INTERRUPTARUM OBSERUATIONUM & DISCESSUS MEI. [On the occasion of the interruption of the observations, and of my departure]

After this I made no further observations while present on the island of Hven [Inſula Venuſia]. Instead, leaving there with my household immediately after the feast of Easter, on 29 April[1], I had the astronomical instruments (with a few exceptions), together with my whole library and the printing press [Typographia], moved one after another to my house in Copenhagen [Haffniam]. What I left there were these four: the greatest armillae [Armillæ maximæ], with their fixed equator coated with brass; and the great steel quadrant [Quadrans Chalybeus magnus], fitted with a brass plate on the side that carries the divisions and also enclosed in a steel square. These two are in the Stjerneborg observatory [Obſeruatorio Stellæburgico] outside the castle [Arcem]. In the castle itself, in its southern tower, is the great semicircle [Semicirculus magnus], standing on a steel azimuthal horizon [Horizonti Azimuthali Chalybeo], with its columns and screws arranged below it; and in the room towards the south-west [verſus Notolybicum], against the wall that faces exactly south, is the quadrant cast solid in brass. It is fixed to the wall itself, and on its inner side it carries my portrait together with some architectural pictures and pictures representing the observations and the pyronomic work [Pyronomica]. I chose to leave these four there partly because their size (some are 10, some 12 and even 14 feet in diameter) meant they could not conveniently be carried off in boats, and partly also for certain other reasons, to be made known in due course.

Further, of the instruments I had moved to Copenhagen, I wanted to set some up in a tower near my house, so that I could add some observations taken there to the earlier ones of this year. But the Master of the Court [Aulæ Magiſtro], in the name of the King — although the King was then away in Germany — had this convenience forbidden me through the prefect of the city [Vrbis Præfectum]. So I packed these instruments with the rest; and soon, the printing equipment too having been put into casks and chests and stored, together with my whole library and my other belongings, which I had set up there in order to complete certain parts of my works, I emigrated to Germany with my whole household shortly before the summer solstice. I left behind an ungrateful fatherland — though the fatherland in itself was not at fault, but

only one or two people in it, who presume to steer the public fortunes almost by themselves.

The cause of this unexpected change arose chiefly from this. Immediately after the King's coronation I had been deprived of the Norwegian fief [feudo Noruagico], which had been the principal support of my astronomical work, and whatever I did with the Master of the Court, I could not recover it. So at about the beginning of this year I finally wrote to the Chancellor [Cancellarium], sending him at the same time a copy of the letters of the Councillors of the Realm [Regni Senatorum], who had promised otherwise. I discreetly reminded him of his duty to take care that astronomy be preserved, at least for the sake of the fatherland's honour, and I gave him fair warning of what would otherwise follow. But he wrote back at once that the fief could not be restored, and that the King was not at liberty to spend anything on the upkeep of the astronomical instruments. Indeed, afterwards the salary that King Frederick [Rege Friderico], of most praiseworthy memory, had assigned to me annually for this purpose was also taken from me. I say nothing now of what happened, out of hatred of me, in the matter of those reprobate islanders and the parish priest [Parochum].

Therefore, with the means of restoring astronomy taken away, and seeing that I and my studies — which I hold it a sin to abandon — were so hated and held in contempt in my fatherland, nothing remained but to leave and to provide better for myself and for them elsewhere, so that the labours and expenses of so many years should not be made vain. Yet I had scarcely left the fatherland when the Chancellor acquired my prebend at Roskilde [præbendam meam Roſkyldenſem] and turned it to his private use, so as to shut off in this way any opportunities for my return (if any remained). And perhaps this is where the whole course was heading [Et forte huc curſus fuit].

[1] So in the codex. Easter Sunday, however, was on 27 March [Sic in codice. Dominica autem Paſchalis erat d. 27 Martii.].

After that I stayed at Rostock [Roſtochij] with my household for a quarter of a year, not without danger, because of the epidemic plague [luem Epidemicam] that was raging there continually. I did so in order that, being still devoted to my fatherland, I might leave our countrymen time enough to consider the matter more rightly. But at last the most noble Lord Henricus Ranzouius [Heinrich Rantzau] affectionately called me away from there by letter, so that I might escape that contagion. I withdrew into Holstein and took up residence in his castle of Wandesburg [Arcem Wandesburgicam], only half a mile from Hamburg, which he kindly granted me to live in. There, during the winter's leisure, I resolved — if the Maker of the heavens so wills — to carry the astronomical observations further and to complete certain things in my works. I have thought it right to note these things briefly here, for the record; elsewhere, in their own time and place, I shall say more about them.

AD DANIAM ELEGIA. [Elegy to Denmark]

Denmark, what have I deserved? In what have I wronged you, my fatherland, that you should be so far from fair to my affairs?

No doubt this was it — the harm I am rebuked for having done you: that through me you bear a greater name in the world.

Come, tell me: who before had done so many and such great things for you, to carry your fame through all the stars?

Who will do them hereafter? Who will set in order the precious things I left behind, making them ready and fit for their own uses?

That man is sent to Hven [Huennam] with a single companion, a man they think knows well the secrets of Urania.

He came, and when he saw the goddess's greatest spectacles (though few remain), they say he stood dumbfounded.

What is a man ignorant of the matter to do? How is he to explain such things, never seen before, nor ever known to him?

He stands there inexperienced; he asks the names of the structures [Fabricarum], asks (a shameful thing) how they are to be handled.

Yet so that the ignorant man should not be said to have come in vain, out of envy he carps at what he cannot unlock.

No wonder, since perhaps my enemy had briefed him, who has long been secretly preparing every evil for me.

This too, native land, I must thus bear from you; this too is the thanks to be given for my services:

that you carp at what you cannot understand, burden it with cavils in every manner, and diminish our honour.

I strove by my services to make you more renowned throughout the world, but you, in return, disparage me undeservedly.

But I count these things small; I bore far heavier ones than these: there, there was scarcely any care or favour for me.

In my fatherland I lay hidden, though well known to the whole world (as it is plain that many have lain hidden at other times).

Others are enriched with estates, titles and honours, whose age or lineage can be no match;

but I, a Brahe [Brahæus], one of five brothers, and born the first, was scarcely taken into account.

Yet I do not envy them; rather I pity those who have pursued such things, which have nothing solid in them and are all too perishable.

Scarcely anyone there looked up to my labours, though one may set them beside those of Hercules.

Alcides (so the story goes) came to the help of weary Atlas, lest the vast machine of the heavens [poli] should come crashing down;

but I myself, Ptolemy, meeting your lapses — and yours, Alfonso and Copernicus — take my stand.

I have shown how the orbit of the heaven deceived your diligence, though that diligence was remarkable;

and I have strengthened the vaulted ceiling of the heaven with new props, so that it should not crack hereafter, nor fall.

Posterity will testify, as with grateful lips — though for now our thanks lie mute and silent —

how much I have achieved as well by the Machaonian art, which readily relieves the sick of their diseased limbs.

Denmark, if you are silent, the people of Noricum [Norici] and the Swedes will speak, where a great many sick people have felt our help.

Yet I did not seek profit from it, as is the custom everywhere; indeed I gave freely what had been won by heavy labour.

No doubt this was why I felt such envious hatreds; from this flows the old origin of my departure,

which long lay hidden and was not openly disclosed, until there was a poison of envy to confirm it.

So vice drove out virtue — the cause was not a bad one; it is a comfort that there is no guilt in my departure.

How many cares did I bear, how much expense, so that the work I was planning might rise lofty?

To how many, too, have I opened the mysteries of Wisdom [Sophiæ], whom I myself long maintained at my own expense.

And many things besides, which I fear to recount in full, lest I be said to be listing my own praises.

For these things (O gods above!) such thanks have been returned to me, that I with my six children and their mother should live as an exile.

Yet I am no exile; an ample freedom has fallen to me: it was rather in my fatherland, before, that I bore exile.

Now I fare prosperously, now I am my own master [proprij iuris alumnus]; now in place of a fatherland the whole great world is open to me.

And others will take me in — so Jehovah [JEHOVA] provides — and my labour will be welcome to all, everywhere.

You, though, may refuse it, spurn it, and harass it with losses, O fatherland, O you who have become prodigal of your own glory!

So farewell, ungrateful one; any shore is a fatherland to me that will be willing, in fairness, to make offering at the ethereal rites,

and that will be willing to acknowledge our labours with gratitude, and will not, for my services, bring me what I have not deserved.

But Denmark (I confess) is excusable enough in herself; she shares the grief, and herself groans under her own ills.

You too, heroic offspring of great-souled Frederick [Friderici], noble King, being unaware of it, are free of blame here;

and these things are done against the will of others whose minds are upright: may the gods grant that nothing worse follow.

There are a few, whom I myself nevertheless never harmed, who harm me by whatever art and guile they can;

let them fare as they will, and carry off what their deserts have earned, as the dread laws of God the Avenger shall decree.

Hail, venerable Heinrich, scion of the Rantzaus [Ranzoum … Henrice], you who are the first to take Urania in as your guest,

here, where the lofty castle of Wandsbek [Wandesburga] has new buildings near the ample walls of Hamburg,

which that excellent hero I have named built for himself, having completed eight five-year spans [lustra] of his life.

May God, the wise ruler of star-bearing Olympus, grant that we may enjoy this lot and this place to good purpose,

so that His wonders may be laid open to all lands, which have long lain hidden in the abstruse aether.

Indeed, Rantzau [Ranzoui], so long as heaven claims the stars as its own, the fame of your hospitality will survive you.

T. B. made this [feci].

In the year of the Lord 1597, on the 20th day of October, when I began at Wandsbek [Wandesburgi] to continue the astronomical observations that I had earlier, around the vernal equinox, broken off at Uraniborg [Vraniburgi] against my will: may God, the Author of things celestial and terrestrial, be pleased to prosper this.

Observations at Wandsbek [OBSERUATIONES IN WANDESBURG.]

OBSERVATIONS OF SATURN [OBSERUATIONES SATURNI.]

DIE 27 OCTOBRIS. [27 October]

In the morning ♄ was observed as follows [Mane obſeruabatur ♄ in hunc modum].

H. 6¾ πλατικῶς [Greek: platikōs, "broadly" — i.e. approximately]: distance of ♄ by the radius from the more southern wing of ♍ [Diſtantia ♄ per radium ab Auſtraliori ala ♍] 5^{G} 52^{M}, exactly, twice [exacte bis].

Conversely, distance of ♄ from the breast of ♍ [Vice verſa diſtantia ♄ a pectore ♍]: H. 7 M. 0 πλατ: Dist. by the radius 7 6, twice [bis]. At that moment the tail of Cygnus was precisely in the plumb-line with the pole star [Erat tunc præciſe in perpendiculo ad polarem Cauda Cygni].

Afterwards ♄ was observed from Vindemiatrix ♍ [Poſtea obſeruabatur ♄ a Vindemiatrice ♍]. H. 7⅙ πλατ: Dist. by the radius 16 2, once [ſemel].

Nothing more could be taken because of the dawn and the clouds, and before this, from the rising of ♄ on, no clear sky had shone [Nec amplius ob Auroram & nubes capi potuit, neque prius ab ortu ♄ vlla ſerenitas affulſit].

DIE 30 OCTOBRIS. [30 October]

H. 5¾ πλατικῶς: Dist. of ♄ from the more southern wing of ♍ 3 23. Nothing could be taken in the plumb-line at that time because of the clouds [Nulla tunc in perpendiculo capi potuit ob nubes]. Nor is this observation to be trusted [Nec huic obſeruationi fidendum].

Afterwards, when a better clear sky shone, ♄ was observed again from the more southern wing of ♍ [Poſtea obſeruabatur ♄ denuo, cum melior affulgeret ſerenitas, ab auſtraliore ala ♍]. 6^{H} 12^{M} πλατ: Dist. by the radius 3 25, twice, exactly [bis exacte]. At that moment the breast of Cygnus was precisely in the plumb-line with the pole star [Fuit tunc præciſe in perpendiculo ad Polarem pectus Cygni].

Conversely, ♄ from the breast of ♍ [Vice verſa ♄ a pectore ♍] 6¼ Dist. by the radius 7 56, twice, exactly. At that moment the tail of Cygnus was in the plumb-line with the pole star.

6 25 πλατικῶς: afterwards, distance of ♄ from Vindemiatrix ♍ by the Radius 14 43, once.

Nothing more could be had because of the clouds [Nec ob nubes amplius haberi potuit].

Nor is this last observation to be trusted [Neque huic poſtremæ obſeruationi fidendum]. Nothing could be taken in the plumb-line.

DIE 6 DECEMBRIS, MANE. [6 December, morning]

♄ was observed as follows [Obſeruabatur ♄ in hunc modum]. 6^{H} 15^{M} πλατ: Dist. of ♄ from the more southern wing of ♍ 6 54, twice, exactly [bis exactis].

Nothing was seen in the plumb-line, nor on the meridian [Nulla in perpendiculo neque meridiano viſa eſt].

Conversely, ♄ from the breast of ♍ 6 18 πλατ: Dist. by the Radius 8 2, twice, most exactly [bis exactiß.]. H. 6⅓: that star which is in the curvature of Cassiopeia was in the plumb-line with the pole star, arranged in this way[1] [fuit in perpendiculo cum Polari ſtella illa quæ in curuatura Caßiopeæ ad hunc modum diſpoſita[1]]. 6 30 Then ♄ from Vindemiatrix ♍ 9 55, once, exactly [ſemel exacte]. Afterwards ♄ from the highest [star] in the hand of ♍ [a ſuprema in manu ♍] 6 32 Dist. by the Radius 11 15, once. This observation is less to be trusted, because of the dawn and the apparent faintness of the star's body [Huic obſeruationi ob auroram & exilitatem apparentem corporis ſtellæ minus fidendum].

On the same day, in the evening, the following were observed [Eadem die veſperi obſeruabantur hæc ſequentia]. First, to examine the Radius, the distance between the two shoulders of Orion was found three times, most exactly, G. 7 M. 28 [Primum pro Radio examinando inuenta eſt diſtantia vtriuſque humeri Orionis ter exactißime G. 7 M. 28]. Afterwards the distance between the two heads of ♊ was found twice 4 19½ [Poſtea diſtantia vtriuſque Capitis ♊ inuenta fuit bis 4 19½].

DIE 11 DECEMBRIS. [11 December]

In the morning ♄ was observed as follows. 6^{H} 1^{M} πλατ: distance of ♄ from the more southern wing of ♍ 5^{G} 8^{M}, exactly. Still nothing in the plumb-line or on the meridian [Nulla etiamnum in perpendiculo vel Meridiano].

Conversely, ♄ from the upper wing of ♍ [Vice verſa ♄ a ſuperiore ala ♍] H. 6¼ πλατ: 10 5, twice. At that moment the upper [star] in the bend of Cassiopeia was in the plumb-line with the pole star [Fuit tunc in perpendiculo ad Polarem ſuperior in flexura Caßiopeæ]. 6 19 πλατ: the upper [star] in the square of ♌ was on the meridian [Fuit in Meridiano ſuperior in □^{to} ♌].

Afterwards ♄ from the [star] that is in the breast of ♍ [Poſtea ♄ ab illa quæ in pectore ♍] 6 36 Distance by the Radius 7 52. At that moment Spica ♍ was on the meridian [Fuit tunc in Meridiano Spica ♍].

These observations are not to be trusted all that far, because of the wind blowing against the eyes and the most intense cold [His obſeruationibus ob ventum oculis aduerſum & intenſißimum frigus non vſque adeo fidendum].

On the intervening days no clear sky shone here [Hiſce intermedijs diebus nulla hic affulſit ſerenitas].

[1] No figure in the codex [Nulla figura in codice.].

OBSERUATIONES IOUIS. [Observations of Jupiter]

DIE 21 OCTOBRIS. [21 October]

In the evening ♃ was observed with the astronomical Radius in this way [Veſperi obſeruabatur ♃ per Radium aſtronomicum in hunc modum].

At exactly the middle of the tenth hour on the clock [Hora in horologio media decima præciſe], corrected H. 9⅓ from the small globe, 356° of the equator were then on the meridian [fuit tunc in Meridiano 356 Gradus æquat.].[1]

Distance of ♃ from Aldebaran 11 36, three times. At that moment the lower of the two [stars] nearest the tail in the square of Ursa Major was in the plumb-line with the pole star [Fuit tunc in perpendiculo cum ſtella Polari inferior duarum ex Caudæ proximis in □ Vrſæ Maioris].

Conversely, distance of ♃ from the northern horn of ♉ 6 2, three times. H. 9¾ on the clock. The upper [star], the one nearest the tail, was exactly in the plumb-line with the pole star [Fuit in perpendiculo ſuperior & Caudæ proxima cum ſtella polari præciſe].

The beginning of ♈ was on the meridian, in the equator 0° 0′ [Fuit in Merid. initium ♈ in æquat. 0° 0′].

Shortly afterwards ♃ was observed at exactly 10ᴴ on the clock, at a distance from the southern horn of ♉ 4 1, twice.

For the correction of the times [Pro correctione temporum]

When the clock stood at 10 25, the first [star] in the tail of Ursa Major was, by estimation, in a straight line to the plumb-line with the pole star. Corresponding on the meridian, about 8° of the equator [Cum horologium eßet 10 25 æſtimatiue fuit in recta linea ad perpendiculum cum ſtella polari prima in Cauda Vrſæ Maioris. Reſp. in Meridiano quaſi 8 gradus æquatoris].

H. 11½ Distance of ♃ from the bend of the knee of ♊ 9 33. This observation is less to be trusted because of the clouds coming on and the brightness of the ☾ [Obſeruationi huic ob nubes ingruentes & ☾ ſplendorem minus fidendum].

Nor could any star around the Bear be seen [Nec ſtella vlla circa Vrſam videri potuit].

To test the Radius [Pro Radio examinando]

Distance of the two shoulders of Orion 7 28, most exactly, three times. From the restoration 7 30⅔ [Ex reſtitutione 7 30⅔].

Distance of the two heads of ♊ 4 10, twice, exactly, as far as the brightness of the ☾, which was too near, allowed [quatenus per ☾ ſplendorem nimis vicinum licuit[2]].

DIE 22 OCTOBRIS[3]. [22 October]

Conversely [Vice Verſa] 10ᴴ 30ᴹ Distance of ♃ from the northern horn of ♉ 5 57, twice. 10 35½ Repeated distance of ♃ from Aldebaran 11 45.

H. 11 M. 35 the position of ♃ relative to certain fixed stars was as follows. These stars were in a straight line with ♃ to the eye [H. 11 M. 35 talis fuit poſitus ♃ ad fixas aliquas. Fuerunt hæ ſtellæ in recta linea cum ♃ ad viſum].

Diagram. Set in the right column beside the entry for 22 October, in a facsimile of handwriting: five star marks (✳) joined by a dotted line running from top to bottom, each with a handwritten label.

- Top: "dexter hum. Erichtonij" [the right shoulder of Erichthonius]
- Second: "boreale cornu", with below it a sign written in the form of a figure 8 [the northern horn; the sign stands where the text sets ♉]
- Third: "♃" (a handwritten Jupiter sign) to the right of the star mark
- Fourth: "austral. cornu", with below it the same 8-shaped sign [the southern horn], the label to the left of the star mark
- Bottom: "luc. pes ♊" (the sign handwritten and underlined) [the bright foot of ♊]

DIE 23 OCTOBRIS. [23 October]

In the evening ♃ was observed as follows [Veſperi obſeruabatur ♃ vt ſequitur]. 8^{H} 9^{M} Distance of ♃ from Aldebaran 11 27, twice. At that moment the first of the lowest [stars] in the square of the Bear was exactly in the plumb-line with the pole star [Erat tunc præciſe in □ Vrſæ prima ex infimis ad perpendiculum cum Polari].

Conversely, ♃ from the northern horn of ♉. 8 20 Distance by the Radius 5 54, three times. At that moment the upper of the first [stars] in the square of Ursa Major was exactly in the plumb-line with the pole star [Erat tum ſuperior ex primis in □ Vrſæ maioris præciſe ad perpendiculum cum Polari].

8 40 Afterwards ♃ was taken from the southern horn of ♉ with the Radius 4 22 [Poſtea capiebatur ♃ a Meridionali ♉ Cornu per Radium 4 22].

DIE 24 OCTOBRIS. [24 October]

♃ was observed as follows [Obſeruabatur ♃ vt ſequitur]. H. 9¼ on the clock, πλατ: Distance of ♃ from Aldebaran 11 26, twice, exactly. At that moment the lower of the [stars] nearest the tail in the square of Ursa Major was in the plumb-line with the pole star [Erat tunc in perpendiculo cum Polari inferior ex Caudæ proximis in □ Vrſæ maioris].

Conversely, ♃ from the northern horn of ♉ H. 9⅓ πλατ: Distance by the Radius 6 8, three times.

[1] Written in the margin [In margine adſcriptum.].

[2] Here is written: "☉ in 8⅙ ♏, right ascension of ☉ 15 G 45 M." It should be 215° 45′ [Adſcriptum eſt hic »☉ in 8⅙ ♏, Aſcenſio recta ☉ 15 G 45 M.« Debet eße 215° 45′.].

[3] At the beginning some observations have been deleted, as being considered doubtful [Ad initium nonnullæ obſervationes deletæ ſunt, utpote quæ dubiæ haberentur.].

Afterwards ♃ was observed from the southern horn of ♉ with the Radius. 9^{H} 30^{M} πλατ: Distance 4 18, twice, exactly. At that moment the upper of the [stars] nearest the tail in the square of Ursa Major was in the plumb-line with the pole star [Erat tunc in perpendiculo cum Polari ſuperior ex Caudæ proximis in □ Vrſæ maioris].

DIE 13 NOUEMBRIS. [13 November]

7^{H} 55^{M} on the clock, πλατ: Distance of ♄ from Aldebaran with the Radius 9 15, twice. No star could be caught in the plumb-line because of the clouds [Nulla ſtella in perpendiculo ob nubes capi potuit].

No star could be observed after that because of the clouds, and this observation is doubtful because of the brightness of the ☾ [Nulla ſtella deinceps ob nubes obſeruari potuit, & hæc obſeruatio ob ☾ ſplendorem dubia].

DIE 25 NOUEMBRIS. [25 November]

At night ♄ was observed, around its ☍ with the ☉, in this way [Noctu obſeruabatur ♄ circa ☍ ☉ in hunc modum]. 9^{H} 48^{M} Before this, the first and lower [star] in the square of Ursa Minor was in the plumb-line with the pole star [Antea fuit in perpendiculo cum ſtella polari prima & inferior in □ Vrſæ minoris]. H. 9⅝ Distance of ♄ from Aldebaran 8 16, twice, exactly. 10^{H} 2^{M} 7 54, twice, exactly. At that moment [star] 1 was exactly in the plumb-line with the pole star. *It cannot be good* [Fuit tunc præciſe in perpendiculo ad Polarem 1. *Non poteſt bona eße.*].

Diagram. Set in the left column under the entry for 25 November, in a facsimile of handwriting: an uncaptioned field of small marks with no connecting lines.

- Top: "Polaris ✳ Stella", the star mark standing between the two words
- Below it, running downward and slightly to the right: three small ×-shaped marks, then a + mark
- To the right of the +: a mark like a + with an extra stroke, and below it, to its left, a ×-shaped mark
- Lower left: a ×-shaped mark with the handwritten numeral "2" above it
- Lower, to the right of that: a ×-shaped mark with the handwritten numeral "1" above it

Conversely, distance of ♄ from the northern horn of ♉ 10^{H} 31⅝′ 8 14, twice, exactly. No star could then be seen in the plumb-line [Nulla tunc in perpendiculo ſtella videri poterat].

10 35½ Afterwards ♄ from the southern horn of ♉: distance with the Radius 8 11, twice. There was none in the plumb-line [Nulla fuit in perpendiculo]. 10 45½ Afterwards the distance of ♄ from the bright shoulder of Orion 18 47, twice. This observation is less to be trusted than the others [Huic obſeruationi minus fidendum quam cæteris]. 10 55 [Star] 2 was in the plumb-line with the pole star. Distance of the two fixed stars that were taken in the plumb-line 6 26 [Fuit in perpendiculo ad Polarem 2. Diſtantia duarum fixarum quæ ſumptæ ſunt in perpendiculo 6 26].

DIE 26 NOUEMBRIS. [26 November]

♄ was observed in this way [Obſeruabatur ♄ in hunc modum]. 9^{H} 35½′ πλατικῶς: Distance of ♄ from Aldebaran 8° 3′, twice, exactly. No star could be caught in the plumb-line because of the clouds [Nulla ſtella ob nubes in perpendiculo capi potuit[1]].

Conversely, ♄ from the northern horn of ♉. 9 46½ πλατ: Distance with the Radius 8 4, most exactly. Still no star towards the north was seen that could be

caught in the plumb-line [Nulla etiamnum ſtella verſus Boream viſa eſt, quæ caperetur in perpendiculo].

Afterwards ♄ from the southern horn of ♉. 9 58 Distance 8 12, exactly.

Then ♄ from the star that lies between it and the Pleiades, somewhat brighter [Deinde ♄ ab ea quæ inter ipſum eſt & Pleiades paulo lucidior]. 10 9⅝ Distance 7 56, exactly.

Then from the left foot of Erichthonius [Deinde a ſiniſtro pede Erichtonij]. 10 15½ Distance of ♄ with the Radius 10 35, twice. 11 4 It was in the plumb-line with the pole star, the first of those we took the previous evening [Fuit in perpendiculo cum ſtella Polari prima ex ijs quas præcedente veſpera accepimus].

DIE 28 NOUEMBRIS. [28 November]

♄ was observed in this way [Obſeruabatur ♄ in hunc modum]. 7^{H} 0^{M} πλατ: Distance of ♄ from Aldebaran 7 47, twice, most exactly. Still none was in the plumb-line [Nulla etiamnum fuit in perpendiculo].

Conversely, ♄ from the northern horn of ♉. 7 7 πλατ: Distance with the Radius 8 31, twice.

When the hour was the 7th and about 4 minutes, the first [star] in the tail of Ursa Major was in the plumb-line with the pole star [Cum hora eßet 7^{tima} & minutor. 4 circiter fuit in perpendiculo ad Polarem prima in Cauda Vrſæ maioris].

Afterwards ♄ from the southern horn of ♉. 7 17 Distance with the Radius 8 34, most exactly.

[1] All this has been struck through with lines [Hæc omnia lineis inducta ſunt.].

Next, ♄ from the left foot of Erichthonius [Deinde ♄ a ſiniſtro pede Erichtonij]. 7 28 πλατ: Distance with the Radius 10 55, exactly. 7 30 πλατ: The second [star] in the tail of Ursa Major was in the plumb-line with the pole star [Fuit in perpendiculo ad Polarem ſecunda in Cauda Vrſæ mai.]. 7 35 Distance of ♄ from the brighter [star] between ♄ and the Pleiades 7 53, exactly [Diſtantia ♄ ab ea quæ inter ♄ & Pleiades lucidior 7 53 exacte].

DIE 29 NOUEMBRIS. [29 November]

In the evening ♄ was observed in this way [Veſperi obſeruabatur ♄ in hunc modum]. $7^{H}20^{M}$ πλατ: The second [star] in the tail of Ursa Major was exactly in the plumb-line with the pole star [Fuit præciſe in perpendiculo ad Polarem ſecunda in Cauda Vrſæ maioris]. 7 33 πλατ: Distance of ♄ from Aldebaran with the Radius 7 33, three times. At that moment there was none, either in the plumb-line or on the meridian [Nulla tunc neque in perpendiculo nec meridiano fuit].

Conversely, ♄ from the northern horn of ♉. H. 7¾ πλατ: Distance with the Radius 8 32, twice. At that moment the last [star] in the tail of Ursa Major was in the plumb-line with the pole star [Fuit tunc in perpendiculo ad polarem vltima in Cauda Vrſæ mai.].

Afterwards ♄ from the southern horn of ♉. H. 8⅓ πλατ: Distance 8 43, twice. 8 29 πλατ: Distance of ♄ from the left foot of Erichthonius with the

Radius 10 28, once. H. 8⅔ The upper and first [star] in the square of Ursa Minor was in the plumb-line with the pole star [Fuit in perpendiculo ad Polarem ſuperior & prima in □ Vrſæ minoris].

Afterwards ♄ from the lower [star] in the ear of ♉ [Poſtea ♄ ab inferiore in auricula ♉]. H. 8¾, a little more [paulo plus]. Distance with the Radius 7 52, once.

DIE 30 NOUEMBRIS. [30 November]

In the evening ♄ was observed in this way [Veſperi obſeruabatur ♄ in hunc modum]. H. 7⅓ πλατ: Distance of ♄ from Aldebaran with the Radius 7 28, twice. Still there was none, either in the plumb-line or on the meridian [Nulla etiamnum neque in perpendiculo neque meridiano fuit].

Conversely, ♄ from the northern horn of ♉. H. 7½ πλατ: Distance with the Radius 8 28½, twice. At that moment the second [star] in the tail of Ursa Major was exactly in the plumb-line with the pole star [Fuit tunc præciſe in perpendiculo ad ſtellam polarem ſecunda in Cauda Vrſæ maioris].

Afterwards ♄ was observed from the southern horn of ♉ [Poſtea obſeruabatur ♄ a Meridionali Cornu ♉]. H. 7¾ πλατ: Distance with the Radius 8 52, twice. At that moment there was none in the plumb-line or on the meridian [Nulla tunc in perpendiculo vel meridiano fuit].

Afterwards ♄ from the left foot of Erichthonius [Poſtea ♄ a ſiniſtro pede Erichtonij]. H. 7¾, a little more [paulo plus]: Distance with the Radius 10 36, exactly. At that moment the last [star] in the tail of Ursa Major was in the plumb-line with the pole star [Fuit tunc in perpendiculo ad polarem vltima in Cauda Vrſæ mai.].

Next, ♄ from the lower [star] in the ear of ♉ [Deinde ♄ ab inferiore in auricula ♉]. 8^{H} 3^{M} πλατ: Distance with the Radius 7 39. 8 5 πλατ: A certain brighter star between the lower and first [star] in the square of Ursa Minor and the second in the tail of Ursa Minor was in the plumb-line with the pole star [Fuit in perpendiculo ad polarem ſtella quædam lucidior inter inferiorem & primam in □ Vrſæ minoris & ſecundam in Cauda Vrſæ minoris].

Afterwards, to find the parallax of the Radius, the distance of the two shoulders of Orion was observed with the channel, and it was found 7° 28′, most exactly, twice [Poſtea obſeruabatur pro parallaxi Radij Diſtantia vtriusque humeri Orionis cum canali, eaque inuenta fuit 7° 28′ exactißime bis]. H. 8¼ The following and upper [star] in the jaw of Cetus was on the meridian [Fuit in Meridiano ſequens & ſuperior in Mandibula Cete]. Afterwards the same distance of the two shoulders of Orion, without the channel, was found 7° 26½′, most exactly, twice [Poſtea eadem diſtantia vtriusque humeri Orionis ſine Canali inuenta eſt 7° 26½′ exactißime bis].

From this it follows that the observations made on the 2 preceding days are in excess by about 2 minutes. In those made today, the 30th, the channel was absent, and therefore this correction is not needed, although it is in itself very slight [Ex quibus colligitur quod obſeruationes 2 antecedentium dierum factæ

abundent quaſi 2 minutis. In ijs quæ hodie die 30 factæ ſunt canalis aberat, ideoque hac correctione non eſt opus, quamuis per ſe leuicula.].

DIE 5 DECEMBRIS. [5 December]

In the evening ♄ was observed in this way [Veſperi obſeruabatur ♄ in hunc modum]. 7^{H} 1^{M} πλατ: Distance of ♄ from Aldebaran 6 57, most exactly, twice. At that moment there was none in the plumb-line, nor could any be seen near the meridian because of the clouds [Nulla tunc in perpendiculo fuit, nec circa meridianum aliqua ob nubes videri potuit].

Conversely, ♄ from the northern horn of ♉. $7^{H}13^{M}$ πλατ: Distance with the Radius 9 9½, most exactly. At that moment the second [star] in the tail of Ursa Major was exactly in the plumb-line with the pole star [Fuit tunc præciſe in perpendiculo ad Polarem ſtellam ſecunda in Cauda Vrſæ maioris].

Afterwards ♄ from the southern horn of ♉. 7 29 πλατ: Distance with the Radius 9 27, exactly, twice. Because of the clouds none was seen in the plumb-line [Nulla ob nubes in perpendiculo viſa eſt].

Next, ♄ from the left foot of Erichthonius [Deinde ♄ a ſiniſtro pede Erichtonij]. 7 36 Distance with the Radius 10 53, exactly. 7 34 The last [star] in the tail of Ursa Major was in the plumb-line with the pole star [Fuit in perpendiculo ad Polarem Vltima in Cauda Vrſæ maioris]. H. 7¾ πλατ: Distance of ♄ from the lower [star] in the ear of ♉ 9 53. This observation is less certain because of the brightness of the Moon [Hæc obſeruatio ob Lunæ ſplendorem minus certa].

DIE 6 DECEMBRIS. [6 December]

♄ was observed as follows [Obſeruabatur ♄ vt ſequitur]. $10^{H}48^{M}$ Distance of ♄ from Aldebaran 6 56½, twice.

Conversely, ♄ from the northern horn of ♉. 10 52 Distance with the Radius 9 20, exactly. None was now in the plumb-line [Nulla nunc in perpendiculo fuit].

Afterwards ♄ from the southern horn of ♉. H. 10⅝ πλατ: Distance with the Radius...[1] [Diſtantia per Radium…[1]] At that moment the second [star], the one in the head of Draco, was in the plumb-line with the pole star [Fuit tunc in perpendiculo ad Polarem ſecunda illa in Capite Draconis]. No more could be taken because of the roof [Plura capi non potuerunt ob tectum].

OBSERUATIONES MARTIS. [Observations of Mars]

DIE 21 OCTOBRIS. [21 October]

In the evening ♂ was observed in this way [Veſperi obſeruabatur ♂ in hunc modum]. H. 10¾ Distance of ♂ from the upper head of ♊ 9 20, twice.

Conversely, ♂ from the lower head of ♊. H. 10⅝ Distance with the Radius 8 16, twice. It was not altogether clear [Non usque adeo ſerenum]. At that moment the second [star] of the tail of Ursa Major was exactly in a straight line to the plumb-line with the pole star [Fuit tunc præciſe ſecunda Caudæ Vrſæ maioris in recta linea ad perpendiculum cum Polari ſtella]. Therefore, from the small globe, on the meridian, of the equator 16½° [Ergo ex globo paruo in Meridiano de æquatore 16½°.].

Afterwards ♂ from the bright foot of ♊. Distance with the Radius 10 37, once; it could not be observed more often because of the clouds [Diſt. per Radium 10 37 ſemel, nec enim ob nubes obſeruari ſæpius potuit]. H. 11¼ At that moment the third [star] in the tail of Ursa Major was in a straight line, perpendicular, with the pole star, but because of the clouds it could not be observed well [Fuit tum tertia in Cauda Vrſæ maioris in recta linea ad Polarem perpendicula, ſed non bene ob nubes obſeruari potuit]. Of the equator on the meridian, G. 21 [De æquatore in merid. G. 21.].

DIE 22 OCTOBRIS. [22 October]

♂ was observed from the upper head of ♊ [Obſeruabatur ♂ a ſup. Cap. ♊]. $10^{H}\ 55^{M}$ Distance with the Radius 9 21, three times. At that moment the first [star] in the tail of Ursa Major was exactly in the plumb-line with the pole star [Fuit tum in perpendiculo ad polarem prima in Cauda Vrſæ maioris exacte].

Conversely, ♂ from the lower head of ♊. 11 5 With the Radius 8 0, twice, exactly.

Afterwards ♂ from the bright foot of ♊. 11 10⅙ With the Radius 11 0, three times, exactly.

Afterwards, for the latitude of ♂, the distance of ♂ 11 16½ from the brighter [star] in the upper hand 10 48, twice [Poſtea pro latitudine ♂, diſt. ♂ a lucidiore in ſuperiori manu]. 11 27⅓ The second [star] in the tail of Ursa Major was exactly in the plumb-line with the pole star [Fuit ſecunda in cauda Vrſæ maioris præciſe ad perpendiculum cum Polari]. The Moon's brightness prevented observation of the very small [star] that is in the bend of the knee [☾ⁿæ ſplendor prohibuit eam obſeruare, quæ in curuatura genu eſt minutula].

DIE 23 OCTOBRIS. [23 October]

In the evening ♂ was observed in this way [Veſperi obſeruabatur ♂ in hunc modum]. $8^{H}55½'$ Distance of ♂ from the upper head of ♊ with the Radius 7 58,[2] twice, exactly [per radium 7 58[2] bis exacte]. 9 6½ 8 53, twice. At that moment the lower of the [stars] nearest the tail was exactly in the plumb-line with the pole star [Erat tunc inferior ex caudæ proximis præciſe ad perpendiculum cum Polari].

Afterwards ♂ from the bright foot of ♊. 9 16 Distance with the Radius 11 0, twice. 9 23 Distance of ♂ from the bend in the knee of ♊ 7 8, exactly [Diſt. ♂ a curuatura in genu ♊ 7 8 exacte]. At that moment the upper [star] in the square of Ursa Major, the one nearest the tail, was exactly in the plumb-line with the pole star [Fuit tunc præciſe ad perpendiculum cum Polari ſuperior in □ Vrſæ maioris & Caudæ proxima].

[1] No distance in the codex [Nulla diſtantia in codice.].

[2] Thus in the codex. It should be 8° 58′ [Sic in codice. Debet eße 8° 58′.].

9 31 Distance of ♂ from the brighter [star] in the hand of ♊ [Diſt. ♂ a Lucidiore quæ in manu ♊] 11 16, twice. 9 44 Distance of ♂ from the one in the lower side of ♊ [Diſtantia ♂ ab illa quæ in latere inf. ♊] 2 4, twice. At that moment the brighter [star] in the square of Ursa Minor was in the plumb-line with the last [star] in the tail of Ursa Major, and it stood in the plumb-line

roughly below ♂ [Fuit tunc in perpendiculo lucidior in □ Vrſæ minoris cum vltima in Cauda Vrſæ maioris. Eratque in perpendiculo quaſi infra ♂.].

DIE 30 OCTOBRIS. [30 October]

♂ was observed as follows [Obſeruabatur ♂ vt ſequitur]. 8^{H} 18⅚′ Distance of ♂ from the upper head of ♊ with the Radius 8 39, twice, exactly [Diſt. ♂ a ſuper. Cap. ♊ per Radium 8 39 bis exacte]. At that moment the lower of the following [stars] in the square of Ursa Major was exactly in the plumb-line with the pole star [Erat tunc præciſe in perpendiculo ad Polarem inferior ex ſequentibus in □ Vrſæ maioris.].

Conversely, ♂ was taken from the lower head of ♊ [Vice verſa capiebatur ♂ ab infer. Cap. ♊]. 8 28 Distance with the Radius 7 24. Nor could any star be taken in the plumb-line, because of the clouds [Nec vlla ſtella ob nubes capi potuit in perpendiculo.].

More could not be observed, because clouds suddenly rose. ♂, moreover, was still subject to refractions when these things were noted down from the sky [Plura obſeruare non licuit ob nubes ſubito exorientes. ♂ vero refractionibus adhuc fuit obnoxius, cum hæc cœlitus denotarentur.].

DIE 29 NOUEMBRIS. [29 November]

I, however, first observed ♂ by straight lines, when Canis Minor had risen above the horizon by the amount of the distance between the bright shoulder of Orion and his belt. I saw that ♂ lay on the straight line that runs precisely from the lower head of the Twins to Propus. On the other side, it lay crosswise on the line drawn from the topmost [star] in the hand of the northern Twin to the one next to the knee of the lower Twin — that is, the one nearest, in that triangle, to its bend towards the bright [star] in the feet — so that it is almost on a straight line with the lower [star] of the Head and the bright [star] in the feet, though a little more southerly. At that time the clock showed hour 8⅓ [Ego autem per lineas rectas primum ♂ obſeruaui, quando Canis Minor eleuabatur ſupra Horizontem ad quantitatem diſtantiæ lucidi humeri Orionis & balthei eiuſdem. Videbam quod ♂ eßet in linea recta quæ exquiſite tendit ab inferiori Capite Geminorum in Propum, ab altera vero parte decußatim erat in linea ducta a ſuprema in manu borealis Gemini in eam, quæ eſt iuxta genu inferioris Gemini, proxima nimirum in eo triangulo ad eiuſdem curuaturam verſus lucidam in pedibus, ita vt ſit quaſi in linea recta cum inferiore Capitis & lucida in pedibus, paululum tamen meridionalior. Erat autem tunc in horologio Hora 8⅓.].

On a certain star in Cetus [De ſtella quadam in Cete.].

When a straight line was drawn from Scheat of Pegasus — the brighter [star] that is next to the forefeet — to the star next to the tail of Cetus, of the third magnitude, a certain other, somewhat reddish [star] appeared on the same line, towards the horizon. On the other side, too, it was almost in one straight line with the extreme and most westerly [star] in the square of Cetus and the bright star of Aries, except that the bright star of Aries was a little more westerly on that line. It must be examined whether or not this star is the bright

one in the tail of Cetus.[1] Canis Major was rising around these times, when ♂ was being observed [Ducta linea recta a Scheat Pegaſi, quæ eſt iuxta pedes anteriores lucidior in ſtellam iuxta Caudam Cete, tertiæ magnitudinis, apparuit quædam alia rubicundiuſcula in eadem linea verſus Horizontem, quæ etiam ab altera parte fuit cum extrema & maxime occidentali in quadrato Cete & Lucida Arietis quaſi in vna linea recta, niſi quod Lucida Arietis paululum eßet in ea linea occidentalior. Videndum an hæc ſtella ſit lucida in Cauda Cete necne[1]. Oriebatur circa hæc tempora Canis Maior, quando ♂ obſeruabatur.].

Afterwards ♂ was observed with the Radius as follows [Poſtea obſeruabatur ♂ per Radium vt ſequitur]. $9^{H}31^{M}$ πλατ: Distance of ♂ from the upper head of ♊ 9 16, twice. At that moment there was none in the plumb-line [Nulla tunc fuit in perpendiculo.]. 9 43 πλατ: Conversely, distance of ♂ from the lower head of ♊ 10 20. None in the plumb-line [Nulla in perpendiculo.]. 9 49 Afterwards ♂ from the bright foot of ♊ [Poſtea ♂ a lucido pede ♊] 10 12. None in the plumb-line [Nulla in perpendiculo.]. H. 10⅙ πλατ: Afterwards the first [star], the one we took before, was in the plumb-line with the pole star [Fuit in perpendiculo poſtea cum Polari prima illa quam antea accepimus.].

It should be noted that in the observations of these two preceding days — namely 28 and 29 November — the observing was done with the Radius with a certain brass channel fitted near its very beginning, where the eye was applied. The goldsmith had carelessly left this channel fixed, so that it could not be removed. The channel was ⅔ of one degree thick. Hence the parallax, or aberration of sight, has to be computed geometrically. The same can, however, be done more easily by mechanical means, namely by observing a distance between fixed stars similar to the earlier ones, both without and with that addition; for in this way the deficiency or excess will become apparent, as [will be done] in what follows, when the sky is clear [Notandum quod in obſeruationibus horum duorum antecedentium dierum obſeruatum ſit cum Radio, nimirum die 28 & 29 Nouembris circa ipſius initium vbi oculus applicabatur, appoſito quodam orichalcico canali, quem aurifaber per imprudentiam fixum reliquerat, ita vt amoueri nequiret. Erat autem is canalis craßus ⅔ vnius gradus. Hinc parallaxis ſeu aberratio viſus geometrice ſupputanda venit. Poteſt autem idem fieri mechanice facilius, obſeruando nimirum fixarum diſtantiam prioribus ſimilem & abſque & cum illo additamento, ſic enim patebit defectus aut redundatio, vt in ſequentibus, vbi fuerit ſerenum.].

DIE 30 NOUEMBRIS. [30 November]

♂ was observed as follows [Obſeruabatur ♂ vt ſequitur]. H. 8¾, nearly [fere]. Distance of ♂ from the upper head of ♊ 9 32, exactly. At that moment the bright star of ♈ was on the meridian, approximately [Fuit tunc in Meridiano Lucida ♈ πλατικῶς.]. At the same time the preceding and upper [star] in the square of Ursa Minor was in the plumb-line with the pole star [Eodem tempore fuit in perpendiculo ad polarem prior & ſuperior in □ Vrſæ minoris.].

[1] It was in fact the bright star of the tail, or β Ceti [Erat revera lucida caudæ ſeu β Ceti.].

Conversely, ♂ from the lower head of ♊ [Vice verſa ♂ ab infer. cap. ♊]. $8^{H}50^{M}$ πλατ: Distance with the Radius 10 22. At that moment there was none in the plumb-line or on the meridian [Nulla tunc fuit in perpendiculo aut Meridiano.]. 9 1½ πλατ: Afterwards ♂ from the bright foot of ♊ [Poſtea ♂ a lucido pede ♊] 10 18, exactly. 9 3, approximately: the second and lower star in the square of Ursa Minor was in the plumb-line with the pole star [9 3 πλατικῶς Fuit in perpendiculo ad Polarem ſtellam ſecunda & inferior in □ Vrſæ minoris.].

Afterwards ♂ from the upper head of ♊ [Poſtea ♂ a ſuper. Capite ♊]. 9 13 πλατ: Distance with the Radius 8 28, exactly. At that moment none could be taken in the plumb-line [Nulla tunc in perpendiculo capi potuit.].

DIE 5 DECEMBRIS. [5 December]

In the evening ♂ was observed in this way [Veſperi obſeruabatur ♂ in hunc modum.]. $7^{H}17^{M}$ πλατ: Distance of ♂ [from the] upper head of ♊ [Diſt. ♂ ſuper. cap. ♊] with the Radius 10 54, twice, exactly. 8 32 πλατ: Distance of ♂ from the lower head of ♊ 12 4, twice, exactly. At that moment the upper and preceding [star] in the square of Ursa Minor was exactly in the plumb-line with the pole star [Fuit tunc præciſe in perpendiculo ad Polarem ſuperior & prior in □ Vrſæ minoris.].

Afterwards ♂ from the upper foot of ♊ [Poſtea ♂ a ſuper. pede ♊]. 8 43 πλατ: with the Radius 6 53, exactly. At that moment none could be taken in the plumb-line or on the meridian [Nulla tunc in perpendiculo vel Meridiano capi potuit.].

Next, ♂ from the bright foot of ♊ [Deinde ♂ a Lucido pede ♊]. 8 50, about [circiter]. Distance with the Radius 9 52, most exactly. Still there was none in the plumb-line [Nulla etiamnum in perpendiculo fuit.]. H. 8⅚ πλατ: The lower and preceding [star] in the square of Ursa Minor was exactly in the plumb-line with the pole star [Fuit in perpendiculo ad Polarem exacte inferior & prior in □ Vrſæ minoris.].

To test the Radius, the distance between the two shoulders of Orion was afterwards taken, and it was found several times to be 7 26. From this the other observations, which fall short by 4′, are to be corrected [Pro Radio examinando poſtea capiebatur diſtantia vtriusque humeri Orionis, eaque inuenta fuit aliquoties 7 26. Exinde cæteræ obſeruationes corrigendæ, quæ 4 minutis deficiunt.].

H. 9 M. 32 By straight lines, ♂ was seen, first, [to lie] towards the pole from the line that is drawn from the uppermost hand of the more northerly ♊ to the more southerly foot of the lower one. On the other side, it lay along the course of the zodiac from the lower head of ♊ to the lower horn of ♉, except that it went a little beyond this line towards the north, and that only by the amount of the diameter of its own body, or at most 1/12. It also seemed to be on a straight line from the bright shoulder of Erichthonius, or Capella, with the [star] that is in the bend of the lower ♊, except that it seemed to have gone a little beyond this line towards the east, though by an imperceptible difference [Videbatur

♂ per lineas rectas primum verſus Polum ab ea, quæ ducitur a ſuprema manu borealioris ♊ vsque in pedem inferioris auſtraliorem: ab altera parte ſecundum ductum Zodiaci ab inferiori Capite ♊ vsque in inferius Cornu ♉ niſi quod hanc lineam verſus Boream paululum excederet, idque ſolummodo pro quantitate diametri ſui corporis vel ad ſummum 1/12. Videbatur quoque in linea recta a Lucido humero Erichtonij ſiue Capella cum ea quæ eſt in curuatura inferioris ♊, niſi quod hanc lineam paululum verſus ortum exceßiße videretur inſenſibili tamen differentia.]. H. 9⅝ Distance of ♂ from the upper [star] in the knee of the northern Twin [Diſt. ♂ a ſuperiore in genu Borealis Gemini] 1 43.

DIE 6 DECEMBRIS. [6 December]

♂ was observed as follows [Obſeruabatur ♂ vt ſequitur.]. 9ʰ12ᴹ πλατ: The lower of the preceding [stars] in the square of Ursa Minor was exactly in the plumb-line with the pole star [Fuit exacte in perpendiculo ad Polarem inferior e prioribus in □ Vrſæ minoris.]. 9 26 πλατ: Distance of ♂ from the upper head of ♊ 11 15, three times, most exactly. At that moment none was seen in the plumb-line or on the meridian [Nulla tunc in perpendiculo vel Merid. viſa eſt.].

Conversely, ♂ from the lower head of ♊ [Vice verſa ♂ ab infer. Cap. ♊]. 9 31½ πλατ: Distance with the Radius 12 32, twice, exactly. There was none in the plumb-line or on the meridian [Nulla in perpendiculo fuit aut Mer.].

Next, ♂ from the bright foot of ♊ [Deinde ♂ a Lucido pede ♊]. H. 9¾, a little more [paulo plus]. Distance with the Radius 10 7, twice, exactly. At that moment none could be taken in the plumb-line, nor on the meridian, because of the nearby brightness of the Moon [Nulla tunc in perpendiculo capi potuit nec in Merid. ob vicinum Lunæ ſplendorem.].

Next, ♂ from the upper foot of ♊ [Deinde ♂ a ſuper. pede ♊]. 9 56 πλατ: Distance with the Radius 6 48, three times. None in the plumb-line [Nulla in perpendiculo.]. 10 3 Afterwards ♂ from the upper [star] in the knee of the northern ♊ [Poſtea ♂ a ſuperiore in Genu bor. ♊] 1 28, twice, exactly. At that moment the lower and brighter [star] in the head of Draco was, I think, exactly in the plumb-line with the pole star [Fuit tunc præciſe in perpendiculo ad Polarem inferior & lucidior in Capite Draconis vt puto.].

When these observations are limited, ♂ falls at 5° 24 M. of ♋, with a latitude of 3° and 21 minutes[1] [Limitatis hiſce obſeruationibus ♂ cadit in 5 Gradum 24 M. ♋ cum latitudine 3° & 21 minut[1].].

[1] Written in the margin [In margine adſcriptum.].

Afterwards ♂ from the one in the hand of the upper ♊ [Poſtea ♂ ab illa quæ in manu ſuperioris ♊.]. H. 10⅓ Distance with the Radius...[1] [Diſt. per Radium...[1]] None in the plumb-line or on the meridian [Nulla in perpendiculo vel Merid.]. ♂ could not be taken from more stars [A pluribus ſtellis ♂ capi non potuit.]. 10 34 πλατ. The eye of ♉ was on the meridian [Fuit in Meridiano oculus ♉.]. 10 36 ♂ was on a straight line with the upper foot and the upper head of ♊, except that ♂ was a little higher. Conversely, ♂ [was] on a straight line from the one in the hand of the upper ♊ and the bright foot of ♊ [Fuit ♂

in linea recta cum ſuper. pede & ſuper. Cap. ♊, niſi quod ♂ paulo eleuatior eßet. Vice verſa ♂ in recta linea ab illa, quæ in manu ſuper. ♊ & lucido pede ♊.].

DIE 10 DECEMBRIS. [10 December]

In the evening ♂ was observed in this way, *approaching the ☌ of the Sun* [Veſperi obſeruabatur ♂ in hunc modum *appropinquans ☌ Solis.*]. $7^{H}38^{M}$ πλατ. Distance of ♂ from the upper head of ♊ [Diſt. ♂ a ſuper. Cap. ♊] 12 26, twice, most exactly [12 26 bis exactiß.]. About a minute and a half before, the bright star of ♈ was on the meridian. None could be detected in the plumb-line [Minuto ſesquialtero circiter ante erat lucida ♈ in meridiano. In perpendiculo nulla deprehendi poterat.].

Conversely, ♂ from the lower head of ♊ [Vice verſa ♂ ab infer. Cap. ♊]. 8 12 πλατ. Distance with the Radius 13 49, twice, most exactly. At that moment the preceding and upper [star] in the square of Ursa Minor was exactly in the plumb-line with the pole star [Diſt. per Rad. 13 49 bis exactiß. Fuit tunc præciſe in perpendiculo ad Polarem prior & ſuperior in □ Vrſæ minoris.].

Longitude [Longitudo] ♂	4°20′ ♋	Corr.	4 15[2]
Latitude [Latitudo]	3 0 B.	Latit.	3 2½[2]

Afterwards ♂ from the lower foot of ♊ [Poſtea ♂ ab inferiori pede ♊]. $8^{H}30^{M}$ πλατ. Distance with the Radius 9 57, most exactly [Diſt. per Rad. 9 57 exactiß.]. At that moment there was none in the plumb-line or on the meridian [Nulla tunc in perpendiculo vel meridiano fuit.].

Next, ♂ from the upper [star] in the knee [Deinde ♂ a ſuperiore in Genu] 8 51 of the northern ♊ 1° 16′, twice, exactly [Borealis ♊ 1° 16′ bis exacte]. 8 47 πλατ. The lower of the preceding [stars] in the square of Ursa Minor was exactly in the plumb-line with the pole star [Fuit præciſe in perpendiculo ad polarem inferior e prioribus in □ Vrſæ minoris.].

		Taking the mean, there results [Sumpto medio prouenit]	
Longitude [Longitudo]	3 32½ ♋	Place of ♂ [Locus ♂]	3 49 ♋[3]
Latit.	3 8 Bor.	Latit.	3 5 B.[3]

On the globe the plumb-line of the vertical circle cannot be applied to these two stars, for both are found below the meridian towards the north [In globo perpendiculum circuli verticalis hiſce duabus ſtellis non poteſt applicari, reperiuntur enim ambæ ſub meridiano verſus ſeptentrionem.].

$9^{H}11^{M}$ πλατ. ♂ was on a straight line with Capella and Canis Minor, except that Canis Minor inclined somewhat towards the south; and it was placed thus [Erat ♂ in linea recta cum Capella & Cane minore, niſi quod Canis minor inclinaret nonnihil verſus Meridiem, fuitque poſitus talis:]:

Diagram. A hand-drawn figure in the right column: a single straight line runs from a star mark at its upper end down to a star mark at its lower end. A star mark stands on the line in its middle part, with ♂ written beside it; just to the right of it and slightly lower is a second star mark with a two-line label.

- Upper end of the line: "Capella"
- Star on the line: "♂"
- Star beside the line, right: "Sup. in genu bor. ♊" (the upper [star] in the knee of the northern ♊)
- Lower end of the line: "Canis minor"

$9^{H}26^{M}$ πλατ. ♂ was exactly on a straight line with the left foot of Erichthonius, and it was placed thus [Erat præciſe ♂ in linea recta cum ſiniſtro pede Erichtonij, eratque poſitus talis.].

Diagram. A second hand-drawn figure in the right column, set to the left of the text that follows: a single straight line runs from a star mark at its upper left down to a star mark at its lower right. A star mark stands on the line in its middle part, with ♂ written beside it.

- Upper end of the line: "Sinister pes Ericht." (the left foot of Erichthonius)
- Star on the line: "♂"
- Lower end of the line: "Canis minor"

On the globe Capella corresponds fairly exactly, while the foot of Erichthonius falls away far towards the south, by about 12° [In globo correſpondet Capella ſatis exacte, pede Erichtonij multum verſus auſtrum grad. 12 circiter recedente.].

To test the Radius, the distance between the two shoulders of Orion was found three times to be G. 7 M. 27½ [Pro Radio examinando inuenta fuit diſtantia vtriusque humeri Orionis ter G. 7 M. 27½.].

♂ could not be taken from more stars because of the nearby brightness of the ☾, much less ♃, to which the ☾ was nearer still [A pluribus ſtellis ♂ ob ſplendorem ☾ vicinum capi non potuit, multo minus ♃ cui adhuc vicinior erat ☾.].

With the Radius corrected, and a great circle drawn through the star in the right arm of Erichthonius as far as Canis Minor, the place of ♂ from the distance from the two [stars] in the foot and knee of ♊ falls on the same straight line: longitude 3 30 ♋, latitude 3 20 B.; and when a line is drawn from Capella through the same place [Correcto Radio & acto Circulo maximo per ſtellam in dextro brachio Ericht. ad Canem minorem vsque, Locus ♂$^{ti^{s}}$ e diſtantia a duabus in pede & genu ♊ in eandem lineam rectam incidit Longit. 3 30 ♋, Lat. 3 20 B., ductaque linea a Capella per eundem locum]

[1] No distance in the codex [Nulla diſtantia in codice.]. [2] Added afterwards in the margin [In margine poſtea adſcriptum.]. [3] Added afterwards [Poſtea adſcriptum.].

♂ leaves Canis Minor on its right side by about ⅔ of one degree [♂ Canem minorem a latere dextro relinquit ⅔ quaſi vnius gradus.].

And this agrees as nearly as possible with the truth. Master David Fabricius found ♂ *at about the 12th hour [at] long. 3 40* ♋, *lat. 3 22 B.* [*Atque hoc quam proxime vero conſonum. M. Dauid Fabricius repperit iuxta horam 12* ♂ *long. 3 40* ♋, *lat. 3 22 B.*]

DIE 28 DECEMBRIS. [28 December]

In the evening ♂ was observed in this way [Veſperi obſeruabatur ♂ in hunc modum.]. H. 9⅓ πλατ: Distance of ♂ from the upper head of ♊ with the Radius 12 16, once, exactly, the sky being cloudy [Diſt. ♂ a ſuper. Cap. ♊ per Radium 12 16 ſemel exacte, cœlo nubiloſo.]. At that moment the second [star] in the square of Ursa Minor was in the plumb-line with the pole star; on the meridian none was seen, because of the clouds [Fuit tunc in perpendiculo ad Polarem ſecunda in □ Vrſæ minoris, in Merid. nulla ob nubes viſa fuit.].

Conversely, ♂ from the northern horn of ♉ [Vice verſa ♂ a Bor. Cornu ♉.]. H. 9⅔ πλατ: Distance with the Radius 9 54, twice, among clouds [Diſt. per Rad. 9 54 bis inter nubes.]. None was seen in the plumb-line or on the meridian [Nulla in perpendiculo vel Meridiano viſa fuit.]. Afterwards nothing at all could be seen of the stars, although we waited for clear sky right up to the twelfth [hour] [Nihil omnino poſtmodum ex ſtellis videre licuit, quamuis ſerenitatem ad duodecimam vsque præſtolati fuerimus.].

N. B. The preceding observations made here at Wandsbek with the Radius are of no great weight, nor do they agree with one another. I shall therefore set down other acronychal records of the three superior planets, which Master David Fabricius took this year and the next in East Frisia, at Resterhafe, at a pole elevation of p. 53 M. 38 and a longitude of p. 30, approximately. He communicated them to me in the year 1598, in the month of May. There are also some other observations and certain astrological matters, and likewise [notes] on the eclipses of the ☾ *and* ☉ *of the year 1598 in February.*[1] *But I shall first set out those that the same Master Fabricius sent earlier, around the beginning of the year 1598.* [*N. B. Antecedentes obſeruationes per Radium hic Wandesburgi factæ non ſunt magni momenti, neque inter ſe conſentientes. Ideo apponam alias Achronichias trium ſuperiorum planetarum denotationes, quas hoc anno & ſequenti in Orientali Friſia habuit Dominus David Fabricius Reſterhauiæ in eleuatione poli p.53 M.38 & long. p.30 circiter. Eas mecum communicauit A° 1598 menſe Maio. Adſunt etiam aliæ nonnullæ obſeruationes & quædam aſtrologica, item de eclipſibus* ☾ *&* ☉ *Anni 1598 in Februario*[1]*. Sed præmittam eas quas prius miſit idem Dominus Fabricius circa initia anni 1598.*]

[1] You will find all these observations in the Appendix to the observations of the year 1598. Cf. T. VIII p. 13, 425 ff., 430 [Omnes has obſervationes in Appendice ad obſervationes anni 1598 invenies. Cf. T. VIII p.13, 425 ſqq, 430.].

APPENDIX TO THE OBSERVATIONS OF THE YEAR 1597. [APPENDIX AD OBSERVATIONES ANNI 1597.]

THE EARLIER OBSERVATIONS WHICH MASTER DAVID FABRICIUS SENT ME. [*PRIORES OBSERUATIONES QUAS MISIT MIHI DOMINUS DAVID FABRICIUS.*]

I would not, nor ought I to, pass over this: I did not take the distances of ♄ from stars following and preceding it that have the same course with respect to the equator, as you instruct and advise — and not without reason, about which [I wrote] in my letter. But Your Excellency should know that my instrument does not take distances greater than 35° or thereabouts. I therefore had of necessity to use other stars in part. Otherwise I understand very well what that sincere admonition, or rather caution, of yours is meant to achieve [Hoc prætermittere nolui nec etiam debui quod diſtantias ♄ a ſtellis ſequentibus et præcedentibus eundem ductum reſpectu æquatoris habentibus non ſumpſerim prout iubes & ſuades non ſine cauſa, de qua in literis. Sed ſciat T.Exc. meum inſtrumentum diſtantias maiores 35 gradibus vel circiter non capere. Ideo alijs ſtellis ex parte neceßario mihi fuit vtendum. Alias optime intelligo, ad quid conducat iſta tua ſyncera admonitio vel potius cautio.].

My observation on the time of the ☌ of ♄ and ♂ around 19 August of this year [De tempore ☌ ♄ & ♂ circa 19 Auguſti huius anni obſeruatio mea.].

DIE 21 AUGUSTI [21 August]

that is, the day of the ☉, in the morning at hour 4 [die videlicet ☉ mane hora 4.].

Distance of ♄ and ♂ [Diſt. ♄ & ♂]	1°14′
Distance of ♄ and Aldebaran [Diſt. ♄ & Aldeb.]	11 20
♄ and the following shoulder of Orion [♄ & Hum. ſeq. Orionis]	17 35
Distance of ♂ and the following shoulder of Orion [Diſt. ♂ & Hum. ſeq. Orionis]	17 10½
Distance of ♂ and Aldebaran [Diſt. ♂ & Aldeb.]	12 30

From this a reckoning of the time of the ☌ can be made [Hinc de tempore ☌ ratiocinatio fieri poterit.].

Making a proportion of the motions, on 19 August ♂ and ♄ were about 12′ apart to the eye [Facta motuum proportione die 19 Auguſti ♂ & ♄ circiter 12 minut. ad viſum diſtabant.].

On the time of the station of ♂ in the year 97, in November [De tempore ſtationis ♂ anno 97 in Nouembri.].

NOUEMBRIS DIE 3. [3 November]

♂ was distant [♂ diſtabat]

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from the southern head of ♊ [ab auſtrali capite ♊]	7 15
from Procyon [a Procyone]	19 21

DIE 6 NOU. [6 November] (that is, the day of the ☉) [(die videlicet ☉).]

♂ was distant [♂ diſtabat]

from the same southern head of ♊ [ab eodem cap. auſt. ♊]	7 10 exactly [exacte]
from Procyon [a Procyone]	19 25
Distance of ♃ and ♂ [Diſt. ♃ & ♂]	28 52

7 NOUEMB. [7 November] (the day of the ☾) [(die ☾).]
♂ was distant [♂ diſtabat]

from the same southern head [ab eodem cap. auſtr.]	7 10 exactly [exacte]
from Procyon [a Procyone]	19 29
♃ and ♂ were distant [♃ & ♂ diſtabant]	28 58

17 NOU. [17 November] at hour 6 in the morning [hora 6 matut.]

♂ and the southern head of ♊ were distant [♂ & caput Merid. ♊ diſtabant]	7 45
♂ and Procyon [♂ & Procyon]	20 25

On the time of the entry of ♄ into 0 ♎ in the year 97 [De tempore ingreßus ♄ in 0 ♎ anno 97.].

In the year 97, on 23 October, the day of the ☉, in the morning, the distance of ♄ and Arcturus was g. 33 57′, the distance of ♄ and Regulus 35 33 [Anno 97 23 Octobris die ☉ mane diſtantia ♄ & arcturi g. 33 57′, diſtantia ♄ & Reguli 35 33.].

On 30 October, the day of the ☉, in the morning, ♄ and Arcturus were 33 33 apart, ♄ and the tail of ♌ 17 35′ [30 Octobris die ☉ mane ♄ & arcturus diſtabant 33 33, ♄ & cauda ♌ 17 35′.].

From these two observations, or from the distance of Regulus and ♄ alone (since I do not think there is any notable difference in the latitudes that could introduce an error into the longitude), it appears, roughly, that ♄ entered 0 ♎ on 25 October. On that day the *Ephemerides* of Stadius give the place of ♄ as 1 Gr. 16 ♎ — a large difference indeed from the sky itself [Ex his duabus obſeruationibus vel ex ſola diſtantia Reguli & ♄ (quia in latitudinibus non puto notabile diſcrimen eße, quod longitudini errorem ingerere poßit) vtcunque apparet ♄ ingreßum in 0 ♎ die 25 Octobris, quo die Ephemerides Stadij dant locum ♄ 1 Gr. 16 ♎, magna ſane differentia ab ipſo cœlo.].

Observations made of a certain adventitious star that appeared in the constellation of Cetus in the year 96[1]. [Obſeruationes in aſcititia quadam Stella in aſteriſmo Ceti anno 96 apparente habitæ[1].]

In the year already mentioned, on the 3rd day of the month of August, I was about to observe Jupiter in the morning and to observe with my instrument its distances from the more conspicuous neighbouring stars (for, because of the

summer air and the dawn, the smallest were scarcely visible). I then caught sight, towards the south in the constellation of Cetus, of an unusual star, never before seen in that place at that magnitude. Careful inspection of it, and consideration of its place, at once raised in me the suspicion that a new comet had arisen. I immediately examined my star globe and went through the Prutenic star catalogue, to see whether a star of that magnitude might perhaps exist there; but I found nothing that matched as to place, much less [Anno prædicto die 3 menſis Auguſti obſeruaturus matutino tempore Iouem eiusque diſtantias a vicinis ſtellis inſignioribus (quia ob æſtiuum aërem & auroram minimæ vix apparebant) per inſtrumentum meum obſeruaturus, conſpexi verſus meridiem in aſteriſmo Ceti inſolitam, & antea ea magnitudine in iſto loco non viſam ſtellam, cuius aſpectus diligens & loci conſideratio ſuſpitionem de nouo Cometa exorto ſtatim mihi mouit. Inſpiciebam mox globum meum ſtelliferum, perluſtrabam canonem ſtellarum Prutenicum, an forte eius magnitudinis ſtella illic exiſteret, ſed nihil reperi, quod ad locum, multo minus]

[1] This is the variable star o Ceti [Hæc eſt ſtella variabilis o Ceti.].

as to the magnitude seen [ad magnitudinem viſam quadraret.].

So at hour 1½ before the rising of the ☉, on the day already mentioned, I took the distance of ♃ and Aldebaran exactly as 24° 9′ [Hora igitur 1½ ante ☉ ortum die prædicto diſtantiam ♃ & Aldebar. accepi exactam Gr.24 Min.9.]. The distance of ♃ and the bright star towards the south (for that is how I was noting the new star, since nothing certain about it was known to me) was 20 22′ or thereabouts [Diſtantia ♃ & ſtellæ claræ verſus meridiem (nam in hunc modum, cum nihil certi de illa mihi conſtaret, ſtellam nouam notabam) 20 22′ circiter.]. With the Sun already risen, I found the exact meridian altitude of ♃ with the quadrant to be Gr. 50 M. 2 [Sole iam exorto altitudinem Meridianam exactam ♃ per quadrantem reperi Gr. 50 M. 2.].

On 9 August, in the morning, at about the same time, the distance of ♃ and Aldebaran was 23 Gr. 55 minut. The distance of ♃ and the star towards the south, that is, the new star, was 20 Gr. 31 Min., and the exact meridian altitude of ♃ at the very rising of the ☉ was Gr. 50 M. 7 [9 Auguſti mane circa idem tempus diſtantia ♃ & Aldeb. erat 23 Gr. 55 minut. Diſtantia ♃ & ſtellæ verſus Meridiem vel ſtellæ nouæ 20 Gr. 31 Min., altitudo Meridiana ♃ in ipſo ☉ ortu exacta erat Gr. 50 M. 7.].

On 11 August, in the morning, I took the altitude of this new star (from which, as from an unknown star, I had observed ♃ until then) exactly as Gr. 30[1] M. 31, nearly [11 Auguſti mane altitudinem huius nouæ ſtellæ (a qua tanquam incognita hactenus ♃ obſeruaueram) accepi exactam Gr. 30[1] M. 31 fere.].

The distance of ♃ and the new star was then Gr. 20 35′. This star was on the meridian when the bright star of ♈ had already passed it by about two degrees [Diſtantia ♃ & nouæ ſtellæ tunc erat Gr. 20 35′, ſtella hæc erat in Meridiano cum lucida ♈ iam eundem duobus circiter gradibus tranſijßet.].

On 14 August I had an exact observation in the morning: the distance of ♃ and Aldebaran 23 43, the meridian altitude of ♃ 50° 12′. ♃ and the new star were

Gr. 20 M. 36 apart, and the altitude of this new star was 31° 31′. The distance of this star from the tail of Cetus 27 50′, nearly. This new star and the jaw of Cetus 12 Gr. 51′. The same new star and the bright star of ♈ 26 36. (In my notes I then added the observation: "This ✳ is of the 2nd magnitude, a little larger than the bright star of ♈, reddish like ♂.") [14 Auguſti exactam habui obſeruationem mane: Diſtantia ♃ & Aldeb. 23 43, altitudo Meridiana ♃ 50° 12′. ♃ & noua ſtella diſtabant Gr. 20 M. 36, altitudo huius ſtellæ nouæ 31° 31′. Diſtantia huius ſtellæ a cauda Ceti 27 50′ fere. Hæc noua ſtella & mandibula Ceti 12 Gr. 51′. Eadem noua & lucida ♈ 26 36 (addidi in ſcriptis meis obſeruationem tunc: Hæc ✳ 2^{dae} magnitudinis eſt, paulo maior lucida ♈, rubens vt ♂).]

On 17 August, in the morning, I took the distance of this new star and the bright star of ♈ as 26 37′; of the new star and the jaw, 12° 50′. Whether it came about through a fault of observation that the distance of the bright star of the jaw and the new star now differed by one minute, I do not know. That could easily happen with an instrument that has only two slits. At the same time the distance of ♃ and Aldebaran was G. 23. 42, and the meridian altitude of ♃ 50 12′ or a little more [17 Auguſti mane diſtantiam huius nouæ ſtellæ & lucidæ ♈ accepi 26 37′. Nouæ & mandibulæ 12° 50′ an vitio obſeruationis euenerit, vt nunc vno minuto diſtantia lucidæ mandibulæ & nouæ ſtellæ diſcreparet, non ſcio. Quod facile in inſtrumento duas rimulas tantum habenti fieri potuit. Eodem tempore diſtantia ♃ & Aldeb. erat G. 23. 42, altitudo meridiana ♃ 50 12′ vel paulo plus.].

On 21 August, in the morning, the distance of ♃ and Aldebaran 23 40′. There corresponded at that time the distance of the bright star of ♈ and the comet, 26 37, and of the comet and the jaw, 12 51 or 50½ [21 Auguſti mane diſtantia ♃ & Aldeb. 23 40′. Reſpondebant tunc diſtantia lucidæ ♈ & Cometæ 26 37, Cometæ & mandibulæ 12 51 vel 50½.].

The difference between the observations of the distances of the new star from the bright star of ♈ and from the jaw (which was sometimes one minute greater or smaller, as is plain from the observations set out above) I believe has its origin in the refractions (in which you have now instructed me): that is, I observed the same distances sometimes earlier, sometimes a little later. For the jaw, being nearer the horizon, will give a greater refraction and hence a smaller distance. And if perhaps the difference in the distance of the comet and the bright star cannot be excused in this way, because the altitude of the bright star around that time was free of refraction, I nevertheless think it can be excused thus: the new star, having risen higher, had a smaller refraction and accordingly a greater distance from the bright star. But Your Excellency, with your keen mind, will examine all these points, each and every one, more carefully [Differentiam obſeruationum diſtantiarum nouæ ſtellæ & lucidæ ♈ & mandibulæ (quæ aliquando erat vno minuto maior vel minor vt ex præpoſitis obſeruationibus liquet) credo ex refractionibus (qua me nunc inſtruxiſti) originem habere, quod videlicet aliquando citius, aliquando paulo ſerius easdem

diſtantias obſeruauerim. Nam mandibula Horizonti propior maiorem refractionem & proinde minorem diſtantiam dabit, & ſi forte hoc modo in diſtantia Cometæ & lucidæ differentia excuſari non poßit, quod altitudo lucidæ circa illud tempus refractionis expers fuit, puto tamen ſic excuſari, quod noua ſtella ſublimior facta minorem refractionem habuerit & perinde diſtantia a lucida maiorem. Sed T. E. pro ſubtili ſuo ingenio hæc omnia & ſingula diligentius rimabitur.].

After 21 August I no longer observed its place with instruments, because I could detect no motion from the preceding observations. Afterwards, however, I saw the star already mentioned several times up to the first days of September, but it seemed to diminish from day to day. Since I presumed it owed that magnitude to the illumination of ♃, I now likewise supposed that it was diminishing with the departure of ♃; and for that reason I paid it no further attention, taking it perhaps for a fixed star standing out. Nor, because of the almost continuous murkiness of the air, did I observe the other planets for some weeks at that time — except that on 1 Sept., in the morning, I found the distance of ♃ from Aldebaran to be 23 54′ and its meridian altitude 50° 4½′ [Poſt 21 Auguſti inſtrumentis locum ipſius non obſeruaui amplius, quia nullum motum ex præcedentibus obſeruationibus animaduertere potui. Vidi tamen prædictam ſtellam poſtmodum aliquoties vsque ad dies priores Septembris, ſed quotidie quaſi diminui. Ex receßu ♃, cuius illuminatione eam magnitudinem habere præſumebam, nunc item diminui exiſtimabam, & propterea amplius, vt forte fixam exſtantem non curabam, nec etiam propter continuas fere aëris obſcuritates cæteros planetas tunc aliquibus ſeptimanis obſeruabam, niſi quod ♃ diſtantiam ab Aldeb. 1 Sept. mane inuenirem 23 54′, altitudinem eius Meridianam 50° 4½′.].

If these observations of the adventitious star were such as could serve to confirm your opinion, I would certainly be glad. I did, however, as much as could be done at the time, for the reasons given in my letter. And I testify that I have written nothing — no, not one iota — otherwise than I observed it, as the distances of ♃ to the same star will also make plain [Si obſeruationes hæ de aſcititia ſtella eiusmodi eßent, quæ ad confirmationem tuæ ſententiæ facere poßent, gauderem vtique. Feci tamen quantum potuit tunc fieri propter cauſas in literis adductas. Teſtor autem nihil imo ne iota quidem aliter me ſcripſiße quam obſeruarim, quod et diſtantiæ ♃ ad eandem ſtellam patefacient.].

[1] So in the codex. It should be 31° [Sic in codice. Debet eße 31°.].

OBSERVATIONS OF THE YEAR 1598. [OBSERUATIONES ANNI 1598.]

OBSERVATIONS OF THE SUN. [OBSERUATIONES SOLIS.]

From the end of the previous year, through the whole of January and into the first ten days of February, no steady clear weather suitable for observations shone forth; instead the sky — or rather the state of the air — was almost continually wet, dark, windy and unpleasant. Therefore the observations had to be put off into the month of February, and indeed into its first ten days, not

yet complete, when I began to fit for use once more some of my astronomical instruments, recently brought here to Wandsbek from Denmark and then set up for the first time in the observatory arranged earlier [Quoniam a fine antecedentis anni per totum Januarium vsque in primam Februarij decuriam nulla affulſit conſtans ſerenitas obſeruationibus opportuna, ſed perpetuum fere vdum, obſcurum, flatulentum & inamœnum cœlum ſeu potius aëris conſtitutio; idcirco in menſem Februarium obſeruationes differre, adeoque incompletam eius primam decuriam, quando nonnulla ex organis meis aſtronomicis e Dania nuper huc Wandesburgum allatis & in obſeruatorio prius ordinato tunc primum diſpoſitis, vſui denuo adaptare incipiebam.].

There follows, then, what I recorded from the heavens in the following month of February [Sequuntur itaque ea, quæ ſequenti menſe Februarij cœlitus deſignaui.].

DIE 11 FEBRUARIJ. [11 February]

One hour after noon, while the ☉ was shining clear, we attended to the testing of the clock in this way [Vna hora a meridiano cum ☉ ſerenus ſplenderet, ad horologij examinationem attendimus in hunc modum.].

At H. 1 M. 15 on the clock the ☉ was distant from the meridian by 22° 30′ in degrees of the Equator. From this it is clear that the clock had advanced a quarter of an hour slower than it should [H. 1 M. 15 in horologio diſtabat ☉ a meridiano per gradus Æquatoris 22° 30′. Vnde liquet horologium iuſto tardius promotum per horæ quadrantem.].

At H. 1 M. 23 the ☉ was distant from the meridian [H. 1 M. 23 ☉ diſtabat a Meridie]	25°38′
and its altitude [eiusque altitudo]	22 35
At H. 1 M. 28 the equatorial distance was [H. 1 M. 28 Fuit diſtantia æquatoria]	26 45
And when the clock showed exactly H. 1½, the distance of the ☉ from the meridian was 27°56′, and the altitude of the ☉ [Cumque in horologio monſtraretur exacte H. 1½, erat diſt. ☉ a Meridie 27°56′, Altit. vero ☉]	21 55
Afterwards, at hour 1¾, the distance of the ☉ was [Poſtea hora 1¾ erat ☉ diſt.]	30 46

At the same time the proper altitude was 21 2 by the iron quadrant, but 21 15 parts by the smaller gilt one [Eadem iuſta altit. 21 2 per ferreum quadrantem, part. vero 21 15 per minorem inauratum.].

With the clock striking exactly hour 2, the distance of the ☉ from the meridian [Horam exacte 2 horologio ſonante diſtantia ☉ a meridie]	34 30
Altitude of the ☉ in the smaller quadrant [Altit. ☉ in min. quadrante]	2⅙[1]
in the other [in altero]	19 58
With the clock showing 2½, the ☉ was distant from the meridian [Horologio monſtrante 2½ ☉ diſtabat a Meridie]	41 43

Finally, when the equatorial armilla, directed at the ☉, showed exactly 45°, and three hours ought to have elapsed since noon, the clock showed only 2¾; so

here too a quarter of an hour is wanting. The altitude of the ☉ was also 15° 50′ by the iron quadrant, but 16 by the smaller one, with at least 5′ lacking [Tandem cum æquatoria Armilla ad ☉lem directa oſtenderet ad amußim 45° & tres horæ debebant a meridie effluxiße, horologium monſtrabat ſolummodo 2¾, vt & hic deſideretur quarta horæ pars. Fuit & ☉lis altitudo 15° 50′ per Quadrantem ferreum, per minorem vero 16, deficientibus ſaltem 5′.].

And from this the times can be verified [Atque hinc tempora verificari poterint.].

All the preceding was written by Oligerus Rosenkrantzius [Holger Rosenkrantz] in his own hand, since he was present at the observation of the eclipse, as was noted before. Yesterday, namely the 15th, he left here, Wandsbek, and went back to Denmark, after he had kept company with me for 14 days — first for a little while at Lübeck, then further here [Antecedentia omnia ſcripſit Oligerus Roſenkrantzius ſua manu, ſiquidem is obſeruationi Ecclipſeos, vti prius annotatum, interfuit, qui heri, die nimirum 15 hinc Wandesburgo diſcedens Daniam repetijt, cum per 14 dies primum Lubecæ paululum, poſtea hic vlterius conuerſatus mecum fuißet.].

DIE 21 FEBRUARIJ. [21 February]

Altitude of the ☉ in the meridian, by the corrected meridian line [Altitudo ☉ in meridiano iuxta lineam meridiani correctam]

by the revolving instrument [per Volubilem]	29 37
by...² [per...²]	29 45
...² [...²]	29 40
Altitude [Altitudo]	29 35 30
	2 35
True altitude [Altitudo vera]	29 38 5
☉ in 12 49 ♓, true declination [☉ in 12 49 ♓, Declin. vera]	6 45 30
	36 23 30
	53 36 30

Set the elevation of the pole, therefore, at 53 35, as a first trial. These preceding values must be verified from the altitudes, for none of them has yet been precisely corrected [Pone itaque eleuationem poli 53 35 prima experientia. Hæc antecedentia debent ex altitudinibus verificari, nulla enim adhuc ad amußim correcta ſunt.].

DIE 24 FEBRUARIJ. [24 February]

The meridian altitude of the ☉ was observed by the revolving quadrant [Obſeruabatur Altitudo ☉ meridiana per Quadr. Volub.]	30 50

These too must be verified from the altitudes [Et hæc ex Altitudinibus verificari debent.].

[1] So in the codex. Perhaps it should be 20⅙ [Sic in codice. Fortaße debet eße 20⅙.].

[2] We could not read this word [Hoc verbum legere non potuimus.].

ON THE GREAT ECLIPSE OF THE ☉ ON 24 FEBRUARY, A LITTLE BEFORE NOON. [DE ECCLIPSI ☉ MAGNA DIE 24 FEBRUARIJ PAULO ANTE MERIDIEM.]

When the instruments — the armillae as well as the quadrants — had been set up to observe this eclipse, some clear weather did indeed shine at first, both from the morning hours of that day and up to the moment of the eclipse. But a little before the Moon appeared to touch the solar body by its interposition, the sky was covered over with clouds, so that the ☉ could not be seen. Yet whenever the clouds grew somewhat thinner, so that the ☉ showed through them in some way, we attended carefully to its phases with several observers [Cum diſpoſita eßent inſtrumenta ad obſeruandum hanc Ecclipſin, tam Armillæ quam Quadrantes, ſerenitas quidem ab initio aliqualis, tam a matutinis eius diej horis quam ad inſtans Ecclipſeos affulgebat. Verum paulo antequam Luna ſolare corpus ſuo interiectu attingere videretur, cœlum nubibus obducebatur, ita vt ☉ videri nequiuit, quotiescunque tamen aliquo modo nubes rariores factæ ſunt, vt aliquo modo per eas ☉ tranſpareret ad eius faces per aliquot obſeruatores diligenter attendimus.].

Examining it in succession, we noticed about hour 9 min. 52 that it was still round all about on its whole limb, so that the eclipse had not yet begun [Animaduerſus eſt autem ſucceßiue conſiderando circa horam 9 min. 52, quod adhuc toto ſuo limbo circumquaque rotundus fuerit, vnde necdum Ecclipſis inceperat.].

But at hour 10 M. 3½ by the equinoctial armillae, with all the care that could be taken, the ☉ was seen to have lost a small portion on its western side through the interposition of the ☾ — about 1¼ digit — in roughly the manner this figure shows [At hora 10 M. 3½ per Armillas æquinoctiales qua fieri potuit diligentia, viſus eſt ☉ aliquantulam interiectu ☾^{ae} ab occidua ſui parte portionem amiſißе ad digitum quaſi 1¼ ad eum fere modum quem hæc figura repræſentat.].

Diagram. A single circle drawn in outline. On its right-hand side as printed, a dark, solid-shaded lens-shaped segment lies along the rim. A broken, dotted line runs across the disk from a small mark on the left rim to the shaded segment. Two short tick marks stand on the upper rim. To the right of the circle, in italic type, the printed label:

- Label (right of the circle): "At 10^{H} 3½^{M}, 1¼ digit was missing, that is, 3½′, very nearly." [10^{H} 3½^{M} abfuit digitus 1¼ id eſt Mta 3½ proxime.]

So about 3½′ could be missing from the ☉, as nearly as possible, which make about 7 minutes in time; hence the eclipse began at 9^{H} 56′ — so far as could be made out from this by any means. For the first visible entry cannot have been more than 1 minute earlier or later [Poterant itaque de ☉^{le} abeße 3½ Minuta quam proxime, quæ quaſi 7 minuta in tempore efficiunt, adeo vt deliquium

inceperit 9ᴴ 56′. Quantum hinc vlla ratione diſcernere licuit. Neque enim vltra 1 minutum ante vel poſt primus viſibilis ingreßus eße potuit.].

At hour 10 M. 28, as far as could be seen among the thinned clouds, half of the ☉ was covered by the Moon, after the likeness of the configuration you see here [Hora 10 M. 28 dimidia pars ☉ˡⁱˢ quoad viſum inter rarefactas nubes a Luna obtegebatur, ad inſtar eius figurationis quam hic vides.].

Diagram. Three circles drawn side by side in a row, each partly shaded; no letters or labels are printed on or beside them.

- Left circle: a dark, densely shaded region fills roughly the right half of the disk, bounded on its left by a curved edge; the left part is unshaded.
- Middle circle: a cross-hatched region occupies the right part of the disk, bounded by a curve; a faint dotted line runs down the left part of the disk.
- Right circle: a cross-hatched region covers most of the disk, leaving an unshaded crescent along the left rim.

At hour 10 M. 33 a little more than half of the ☉ was missing, so that about 7 digits were wanting, as this figure shows [Hora 10 M. 33 paulo plus quam medietas de ☉ˡᵉ aberat, ita vt quaſi 7 digiti deſiderati ſint, quemadmodum hæc figura repræſentat.].

When it was hour 11⅛, the ☉ could not indeed be seen because of the rather thick clouds lying between. Nevertheless the darkness of the air, like morning twilight — such that the daylight was very greatly diminished — indicated that the ☉ was labouring in the middle of the eclipse around that time, and this until hour 11⅙ or a little after. For when it was a quarter of an hour past hour 11, the air was a little brighter than before, which was a sign that the middle of the eclipse had already passed and that the ☉, from the interposition of the ☾, more and more [Cum vero hora eßet 11⅛ ☉ quidem non videbatur ob nubes denſiuſculas interiectas, ſed nihilominus aëris obſcuritas inſtar crepuſculi matutini ita, vt lux diej plurimum remißa fuerit, innuebat ☉ˡᵉᵐ circa id tempus in medio deliquij laboraße, Idque vsque in horam 11⅙ vel paulo poſt. Nam cum quadrans horæ eßet poſt horam 11 aër paulo lucidior erat quam antea, quod indicio erat medium Ecclipſis iam præterijße & ☉ˡᵉᵐ a ☾ᵃᵉ interiectu magis magisque]

had been freed [liberatum fuiße.]. After that, nothing more of the ☉ could be seen right up to the end of the eclipse, although we sat attentively until past hour 12, because thicker clouds covered it completely [Poſtea nihil amplius vsque ad finem deliquij, licet vltra horam 12 ſedulo aßederimus, de ☉ˡᵉ videre licuit, propter nubes denſiores eum prorſus obtegentes.].

From these it is clear that, so far as a firm certainty may be drawn from these observations, the beginning of the eclipse proper was about hour 9 M. 56, and the middle at hour 11⅙, or perhaps one or two minutes earlier. For these could not be made out precisely enough, because of the thicker clouds covering the ☉, since it was not open to sight at all [Ex quibus patet quod, quatenus ex iſtis

obſeruationibus certitudinem ratam elicere liceat, puri deliquij initium iuxta horam 9 M. 56, Medium autem hora 11⅙, vel forte vno aut altero minuto antea. Neque enim hæc ob nubes craßiores ☉lem obtegentes cum viſui is omnino non pateret, ſatis præciſe diſcernere licuit.].

It is certain, however, that the middle of the eclipse fell within hour 11 complete and 16 minutes besides. So if we take the middle of this span as the middle of the eclipse, the error will be imperceptible — unless one would perhaps prefer to come somewhat closer to the 6th part of the hour after 11, which, however, is uncertain. For the required certainty could not be reached here. From what was visible in one way or another, however, it is clear that from the beginning to the middle very nearly 1 hour and a quarter passed. And so almost the whole ☉ was cut off from our view by the body of the ☾, to 11 digits if not more. The air, too, which grew darker around the middle of the eclipse, showed this [Certum tamen eſt medium deliquij fuiße intra horam 11 completam & minut. inſuper 16. Adeo vt ſi medium huius pro deliquij medietate aßumpſerimus inſenſibiliter aberrare contingat, niſi forte aliquantum propius ad 6tam horæ partem ab 11 accedere lubeat, quod tamen incertum eſt. Neque enim requiſitam certitudinem hic aßequi dabatur. Ex ijs vero, quæ vtcunque patuerunt, liquet ab initio ad medium tranſiuiße quam proxime horam 1 cum quadrante. Ideoque totum pene ☉lem ☾ae corpore noſtro intuitui interceptum fuiße ad 11 digitos ſi non eo amplius. Quod & aër circa medium deliquij tenebroſior redditus arguebat.].

These can be compared with both of the customary calculations, the Alfonsine as well as the Copernican, and also with our own; and it will become evident that in this solar eclipse, no less than earlier in the other, lunar one, our restoration agrees well enough with the celestial appearances, so far as we were able to search them out in each by means of the eclipse — as will be made plain by the following calculations, applied here in three ways [Poterint hæc conferri cum vtroque vſitato calculo tam Alphonſino quam Copernicco, tum quoque noſtro, & manifeſtum euadet noſtram reſtitutionem in hac Ecclipſi ſolari non minus quam antea in altera Lunari apparentijs cœleſtibus ſatis correſpondere, quatenus eas in vtroque ob deliquium rimari nobis dabatur, quemadmodum ex ſubſequentibus calculis tripliciter huc applicatis manifeſtabitur.].

NB. After I had examined more carefully the equatorial armillae with which I measured these times, I found that they differed by 1° from the exact position of the meridian, so that when the ☉ was actually in the meridian they showed 181° instead of 180°. They therefore drew the time out by 4 minutes more than was right, and these 4 minutes are to be taken away everywhere from the times, in hours and minutes, noted earlier. So the beginning of the eclipse was $9^{H}\ 52^{M}$ very nearly, and the other times are readily to be rectified from this [NB. Poſtquam examinaui diligentius Armillas æquatorias, quibus hæc tempora demenſus ſum, deprehendi eas 1° differre ab exacto meridiej ſitu, ita vt cum ☉ reuera in Meridiano eßet, monſtraret 181° pro 180°. Ideoque 4 minutis tempus iuſto plus producerent, quæ 4 minuta vbique auferenda veniunt a temporibus

horis & minutis prius denotatis. Ita vt fuerit initium deliquij 9^{H} 52^{M} quam proxime, atque cœtera momento hinc rectificanda.].

Set the beginning of this eclipse here at Wandsbek [Pone initium huius deliquij hic Wandesburgi]	$9^{H}51^{M}$
at Rostock [Roſtochij]	10 3
and you will be out by an imperceptible amount. [& inſenſibiliter aberraberis.]	
End at Rostock [Finis Roſtochij]	12 25

Between Viborg and Mariager, under the meridian of the town of Hobro, Christianus Iohannis Ripensis, who for three years before had been a member of my household, observed the eclipse of the ☉: at about one eighth of an hour after ten, about two digits, or perhaps a little more, were missing from the body of the ☉ on its western side [Inter Viburgum & Mariagriam ſub meridiano oppidi Hobro obſeruauit Chriſtianus Iohannis Ripenſis, qui per triennium antea mihi fuit domeſticus, Ecclipſin $\odot^{l_i^s}$, & quidem quaſi vna octaua horæ poſt decimam circiter duos digitos vel forte paulo plus abfuiße a corpore $\odot^{l_i^s}$ a parte occidentali.].

Diagram. A facsimile drawing in a hand-drawn style, set at the left of the lower part of the page with the text running beside it on the right. An outer circle drawn in outline encloses a slightly smaller disk, densely hatched with diagonal strokes; the hatched disk touches the outer circle along its upper right, leaving an unshaded crescent between the two outlines along the left and lower rim. A straight horizontal line runs across the figure from beyond the left rim to beyond the right rim; a second straight line runs across it obliquely, from upper left to lower right. Dotted marks run down the middle of the hatched disk and along parts of the two lines. Handwritten-style labels:

- Top, above the circle: "Sept:" [north]
- Bottom, below the circle: "Mer:" [south]
- Left end of the horizontal line, above it: "ORT^{9}" [rising]; below it: "via" [path]
- Right end of the horizontal line, above it: "occaſ^{9}" [setting]; below it: "Solis viſa" [of the Sun, as seen]
- Upper left, on the oblique line: a handwritten word not resolved [?] — the line runs through it; its initial is not a V
- Lower right, along the oblique line: "Lūna viſa" [the Moon, as seen]

When it was the middle of the eclipse, the ☉ was seen covered by the ☾ as the adjoining figure shows, so that about eleven digits were missing on the upper side. And the eclipse appeared at that time exactly in the way it is drawn. The time on the small clock was then about the eleventh hour, or a little beyond it, by about an eighth part of an hour. The end was not observed. But at that time [Cum autem medium eßet deliquij videbatur ☉ ita a ☾ tectus vt appoſita monſtrat figura, ita vt quaſi vndecim digiti abfuerint de parte ſuperiori. Atque

hoc plane modo vti appictum eſt, tunc apparuit deliquium. Fuit autem tunc tempus in horologio paruo circa horam vndecimam vel paululum vltra etiam quaſi per octauam horæ partem. Finis non obſeruabatur. Atqui tum]

the light of the ☉ was rather dim and very pale, as in morning or evening twilight, so that the grass on the surface of the earth looked somewhat pale, and the ☉ cast a barely perceptible shadow, so very little light did it shine with [☉$^{l_i^s}$ lumen ſubobſcurum ac pallidum admodum tanquam in crepuſculo matutino aut veſpertino, ita vt gramina in ſuperficie terræ ſubpallida apparerent & ☉ vix perceptibilem vmbram faciebat, tam pauculo lucebat lumine.]. The part that was covered by the ☾ was dark, so that its colour could not be made out. The other small portion, which remained free like a little moon, as it is drawn, did give out some light, but not as brilliant as usually happens with the Sun. Nor was the colour as golden-red as at other times, when it shines in full; instead the colour was whitish, and did not strike the eyes as it otherwise does [Ea pars quæ a ☾ tegebatur obſcura erat, ita vt color eius diſcerni nequiret. Altera vero portiuncula quæ libera inſtar lunulæ veluti appictum eſt reſtabat, lumen quidem aliquale edebat, ſed non adeo fulgidum prout alias in Sole fit. Neque erat color ita rutilus vt alias totaliter fulgente. Sed erat color ſubalbicans, nec oculos ita percellens ſicuti alias fit.]. To one looking intently, its image also appeared in the eye even when the eye was closed — the same as appears here on the limb of the ☉ — as though the image of the ☉ were imprinted on the eye itself; this, however, was momentary and did not last long [Acute etiam intuenti apparebat imago eius in oculo etiam clauſo, eadem quæ hic in limbo ☉$^{l_i^s}$ apparet, quaſi imprimeretur imago ☉$^{l_i^s}$ ipſi oculo, quod tamen erat momentaneum nec diu durauit.]. The clock by which he had searched out these times had been corrected to the ☉ by setting the hand, by estimate, at the hour and minute at which the ☉ ought to have risen there that day so that its whole circumference stood above the visible horizon, which guarded against refraction [Horologium per quod hæc tempora rimatus erat, ad ☉$^{l_{em}}$ erat correctum ponendo indicem in hora & minuto æſtimatiue quo ☉ eo die ibi oriri debuit, ita vt tota circumferentia eius exſtaret ſupra Horizontem viſibilem, id quod refractionem caueret.].

At noon itself, viewed against the wall of a certain church, there remained a space of about between a third and a fourth of the ☉ still covered by the ☾, as you see dotted along the upper part, and in about the same arrangement. The clock, moreover, was then also showing the twelfth hour [In ipſo meridie ad murum cuiusdam templi conſiderata reſtabat quaſi ſpatium inter tertiam & quartam ☉ a ☾ adhuc obtectum quemadmodum iuxta ſuperiorem partem punctatum vides, atque in eadem quaſi diſpoſitione. Monſtrabat vero Horologium etiam tunc horam duodecimam.].

About this eclipse of the ☉, Christiernus Longomontanus, formerly a member of my household, wrote to me from Rostock as follows [De hac Eclipſi

$\odot^{lis}$ ſic perſcripſit ad me Chriſtiernus Longomontanus olim mihi domeſticus Roſtochio.].

The eclipse of the ⊙ observed at Rostock [Ecclipſis $\odot^{lis}$ Roſtochij obſeruata.]

At hour 10 M. 5 the ⊙ appeared perceptibly eclipsed. [Hora 10 M. 5 ſenſibiliter ⊙ ecclipſatus apparuit.]	On the 25th, at H. 10 M. 4 or a little before [Die 25 ſub H. 10 M. 4 vel paulo ante,]	Beginning [Initium]
	H. 12 M. 25 exactly [H. 12 M. 25 exacte]	End [Finis]

Therefore its middle, H. 11 M. 10 [Ergo huius medium H. 11 M. 10].

The magnitude of the greatest eclipse, between 9 and 10 dig. [Quantitas maximi deliquij inter 9 & 10 dig.]

The whole duration, however, H. 2 M. 22, taking the beginning as H. 10 M. 3 [Tota autem duratio H. 2 M. 22 poſito initio H. 10 M. 3.].

At Wittenberg, from the observation of M. Melchior Jostelius [Melchior Jöstel] [Wittebergæ ex obſeruatione M. Melchioris Joſtelij.]

The eclipse seemed to be at its greatest strength about H. 11 M. 29 A. M. [Videbatur Eclipſis in ſummo vigore circiter H. 11 M. 29 A. M.]

The end of the eclipse was at about ⅔ of an hour after noon; almost two digits were shining on the southern side, whereas the Prutenic Tables, on the contrary, show ⅓ of a digit on the northern side [Finis Eclipſeos erat circiter horæ ⅔ a meridie, duo ferme digiti a parte auſtrali lucebant, cum contra Tabulæ Prutenicæ ⅓ digiti a parte ſeptentrionali exhibeant.].

These times are not exact, since the difference of the meridians cannot be 15 M. [Hæc tempora non ſunt exacta, ſiquidem non poteſt eße differentia meridianorum 15 M.]

In observing the eclipse of the ⊙, however, we applied such precision as could be achieved by us here. The times come not only from the quadrant but also from the horizontal planisphere, on which we had found the meridian line exactly on the day before that day, so that no error, or a wholly imperceptible one, can be present here [In $\odot^{lis}$ autem Ecclipſi obſeruata præciſionem quam a nobis hic fieri potuit, adhibuimus. Tempora non modo ex quadrante ſed etiam ex Planiſphærio horizontali, in quo exacte lineam meridiej pridie eius diej adinuenimus, adeo vt nullus aut plane inſenſibilis error hic eße queat.].

The same eclipse at Wittenberg, as Master M. Jostelius writes, was not observed all that exactly, because they used clepsydras, set by a meridian line that had not been found exactly enough there. For when I was there, I warned that the use of the quadrant in searching out times from the ⊙ around noon would be of no use, or else unreliable and uncertain [Eadem Eclipſis Wittebergæ, vt ſcribit Magiſter M. Joſtelius, adeo exacte non eſt obſeruata, quod clepſidris vſi ſint, ad lineam Meridiej non ſatis exacte illic inuentam. Etenim cum ibidem

eßem, admonui quadrantis vſum in temporibus ex ☉ circa meridiem rimandis nullum fore aut lubricum & incertum.].

M. Joachimus Radenicius[1] wrote these observations of the ☉ to me in a certain letter [Has obſeruationes ☉ ſcripſit in quibuſdam litteris ad me M. Joachimus Radenicius[1].]

To observe the solar eclipse more exactly, on the preceding day I investigated the meridian line on the planisphere (about whose correctness, however, I am myself doubtful) and made a tube 10 feet long. When, through it, the Moon was first noticed to have entered upon the Sun, its altitude was 26° 5′. At that very same moment of time the distance of the ☉ from the meridian was found on the planisphere to be 33° 55′. The corresponding time, computed from the altitude of the ☉, is 10ʰ 5½′ [Pro Eclipſi ☉$^{\text{la}^{\text{r}}_{\text{i}}}$ exactius obſeruanda, die præcedente lineam Meridiej in Planiſphærio inueſtigaui (de cuius tamen veritate ipſe ſum dubius) & canalem 10 pedum longum fabricaui, per quem cum primum Luna Solem ingreßa animaduerteretur, fuit eius Altitudo 26° 5′. Eodem ipſo temporis momento fuit Diſtantia ☉$^{\text{l}_{\text{i}^{\text{s}}}}$ a Meridie in Planiſphærio deprehenſa 33° 55′. Reſpondet tempus ad altitudinem ☉$^{\text{l}_{\text{i}^{\text{s}}}}$ ſupputatum 10ʰ 5½′.].

[1] He was born at Rostock in the year 1575, and died in 1603 [Natus hic erat Roſtochii anno 1575, mortus eſt a. 1603.].

When the ☾ had entered the Sun to the amount of ⅓, the altitude of the ☉ was 26° 45′, the distance from the meridian 29° 25′ [Cum ☾ ad quantitatem ⅓ Solem ingreßa eßet, fuit Altitudo ☉ 26° 45′, Diſtantia a Meridiano 29° 25′.].

When a quarter of the ☉ was in shadow, the altitude of the ☉ was 27° 45′, the distance of the ☉ from the meridian 25° 10′ [Cum quarta pars ☉ obumbrata eßet, ☉$^{\text{l}_{\text{i}^{\text{s}}}}$ Altitudo 27° 45′, Diſtantia ☉$^{\text{l}_{\text{i}^{\text{s}}}}$ a Meridiano 25° 10′.].

When a 3rd part of the ☉ was darkened, the altitude of the ☉ was 28° 20′ exactly, the distance from the meridian 22° 0′ [Cum 3$^{\text{tia}}$ pars ☉ obſcurata eßet, Altitudo ☉ 28° 20′ exacte, Diſtantia a Meridiano 22° 0′.].

When it was darkened by half, the altitude of the ☉ was 29° 10′, the distance from the meridian 18° 5′ [Cum media parte obſcuratus eßet, ☉ Altit. 29° 10′, Diſtantia a Meridiano 18° 5′.].

When the clock of the church of St. James was striking eleven, the distance of the ☉ from the meridian was 12⅙°. From this one can detect an error either in the meridian line or in the clock. About this time the darkening of the ☉ was at its greatest, so much so that ♀ too showed through the clouds; a little later its altitude, taken in order to correct the time and to find the meridian line more exactly, was found to be 34° 35′. And at that very time the distance of the ☉ from the meridian was 9° 35′ [Horologia templi D. Jacobi ſonante vndecimam, diſt. ☉ a mer. 12⅙°. Hinc vel lineæ Meridianæ, vel horologij errorem deprehendere licet. Circa hoc tempus maxima erat ☉ obſcuratio, adeo vt & ♀ per nubes tranſpareret, cuius paulo poſt altitudo pro tempore rectificando & linea meridiana exactius inuenienda deprehenſa 34° 35′. Et ☉$^{\text{l}_{\text{i}^{\text{s}}}}$ eo ipſo tempore diſtantia a Meridiano 9° 35′.].

Although the greatest magnitude of this eclipse could not be made out very exactly either in the tube or by eye, because the rays were very weak, it was nevertheless clear enough that more than ¾ of the solar body had been darkened (about 9 digits and ⅓); and at the middle of the eclipse the Moon had worked its way into the Sun so far that it appeared horned. At the very end of this eclipse, which I observed exactly enough both in the tube and by eye, the distance of the ☉ from the meridian — and that after noon — was 7° 25′, to which the time 12ʰ 26′ corresponds; at that time the altitude of the ☉ could not be had because of the height of the buildings [Etſi autem nec in canali nec viſu adeo exacte maxima huius deliquij quantitas diſcerni poterat, quod radij debiles admodum eßent, attamen vltra ¾ corporis ☉$^{la}{}^{ri}{}^{s}$ obſcuratas fuiße ſatis conſtabat (quaſi 9 digitorum ⅓) & Luna ☉^{li} in media Ecclipſi ita inſinuata erat, vt corniculatus appareret. In vltimo autem huius deliquij fine, quem ſatis exacte obſeruaui tum in canali tum viſu diſtantia ☉ a meridiano & quidem poſt meridiem 7° 25′, cui reſpondet tempus 12ʰ 26′, quo tempore ob ædium altitudinem ☉ altitudo haberi non licuit.].

From the observation, therefore, the beginning of this eclipse was 10ʰ 3′, the middle 11ʰ 14′, the end 12ʰ 26′ [Erat itaque huius Eclipſis ex obſeruatione initium 10ʰ 3′, medium 11ʰ 14′, Finis 12ʰ 26′.].

ECLIPSE OF THE SUN OF THE YEAR 1598, IN THE MONTH OF FEBRUARY, ON THE 25TH DAY, OBSERVED AT URANIBORG[1]. [ECCLIPSIS SOLIS ANNI 1598 MENSE FEBR. DIEJ 25 VRANIBURGI OBSERUATA[1].]

A truer reckoning from my tables gives 9½ digits; and the Sun was also found to be eclipsed by this amount by one of my students, whom I had left behind there at Uraniborg (to take care of the 4 remaining instruments, which because of their size could not be carried away so quickly). The times, besides, were noted from the sky from beginning to end by an equatorial armilla 18 feet in diameter (for the sky there was clear the whole time), in very close agreement with my restoration. They were of this kind: the eclipse began there at H. 10.10′ and ended at H. 12.19′, and so the middle fell at M. 11.12′ [Verior ratio ex meis tabulis præbet digitos 9½, qua etiam quantitate Sol deficere a quodam ex meis Vraniburgi iſthic (vt 4 reſiduorum inſtrumentorum, quæ præ magnitudine efferri tam cito nequibant, curam haberet) relicto ſtudioſo deprehenſus eſt, & tempora alias per armillam æquatoriam 18 pedum in diametro a principio vſque ad finem (fuit enim toto iſthic tempore ſerenum) meæ reſtitutioni apprime congruentia cœlitus denotata ſunt, quæ erant eiuſcemodi, vt deliquim inciperet iſthic H. 10.10′, finem haberet H. 12.19′, ideoque medium exiſteret M. 11.12′.].

Diagram. Four circles in a hand-drawn style, set in two columns divided by a printed vertical rule, two circles in each column, with printed text beside each circle. Each circle carries a handwritten-style numeral at its left. Left column, upper: circle marked "1", with a small dark sliver on its lower right rim. Left column, lower: circle marked "2" (drawn in a form like a barred z), with a hatched crescent along its lower right rim. Right column, upper: circle

marked "3" (drawn with a flat top), with a hatched segment along its right side. Right column, lower: circle marked "4", with a larger hatched segment along its right side. Printed text beside the circles:

- Beside circle 1 (to its right): "Then the Sun was east, 26° 25′, H. 10.14⅓. Set the beginning at 28°." [Tunc fuit Sol orientalis 26° 25′ H. 10.14⅓. *Pone initium 28 graduum.*] — the second sentence set in italic
- Beside circle 2 (to its right): "The Sun east, 25° 2′, T. H. 10.20[1]" [Sol orientalis 25° 2′ T. H. 10.20[1]]
- Beside circle 3 (to its left, across the rule): "The Sun east, 22° 30′" [Sol orientalis 22° 30′]
- Beside circle 4 (to its left, across the rule): "The Sun east, 20° 0′" [Sol orientalis 20° 0′]

[1] The following figures are found on folio 131 recto and verso of codex H, which seems to have been inserted into it later and was perhaps sent to Tycho by the observer himself. In Tycho's hand nothing is written except the words »Vraniburgi obſervata« [observed at Uraniborg] and »Pone initium 28 grad.« [set the beginning at 28°]. The observer's name was David Petri (in Danish, Pedersen). We have put first an excerpt from Tycho's letter to Kepler of 9 Dec. 1599 (see vol. VIII p. 210) [Figuræ ſequentes in folio 131 recto et verſo codicis H inveniuntur, quod poſtea illi inſertum eße videtur et fortaße ab ipſo obſervatore Tychoni mißum eſt. Manu Tychonis nihil præter verba »Vraniburgi obſervata« et »Pone initium 28 grad.« conſcriptum eſt. Nomen obſervatoris erat David Petri (danice Pederſen). Præmiſimus excerptum ex epiſtola Tychonis ad Keplerum d. 9 Dec. 1599 (vid. T. VIII p. 210).].

[2] Kepler added (as it seems): »Digits 2, M. 5′. 6″ make, of time, 9, if you set..... 33.30 from the ☉. Here Tycho, in a letter to me, has the beginning at H. 10.10« [Addidit Kepler (ut videtur): »Digiti 2, M. 5′. 6″ faciunt temporis 9, ſi ponis..... 33.30 a ☉. Hic Tycho literis ad me initium H. 10.10«.].

Diagram. The series of circles begun on p. 137 continues: twelve circles in a hand-drawn style, set in two columns divided by a printed vertical rule running the height of the figure, six circles in each column, with printed text beside each circle. Each circle carries a handwritten-style numeral at its left. In the left column the circles stand at the left and the text to their right; in the right column the text stands at the left, against the rule, and the circles to its right. Left column, top to bottom:

- Circle "5": a hatched area along the right side, its inner edge curved. Text: "The Sun east, 18° 5′" [Sol orientalis 18° 5′]
- Circle "6": a larger hatched area along the right side. Text: "The Sun east, 15° 15′" [Sol orientalis 15° 15′]
- Circle "7": a hatched disk covering most of the right and middle of the circle. Text: "The Sun east, 12° 5′" [Sol orientalis 12° 5′]
- Circle "8": a hatched disk covering most of the circle, leaving an unshaded crescent along the left and lower rim. Text: "The Sun east, 9° 0′" [Sol orientalis 9° 0′]

- Circle "9" (the numeral drawn in a reversed-looking form): a hatched area over the upper part of the circle. Text: "The Sun east, 5° 35′" [Sol orientalis 5° 35′]
- Circle "10": a hatched segment at the upper left. Text: "The Sun east, 3° 20′" [Sol orientalis 3° 20′]

Right column, top to bottom:

- Circle "11": a hatched segment along the top. Text: "The Sun in the meridian, 0° 0′" [Sol in Merid. 0° 0′]
- Circle "12": a smaller hatched segment at the top, toward the left. Text: "The Sun west, 1° 35′" [Sol occident. 1° 35′]
- Circle "13": a small dark segment at the upper left. Text: "The Sun west, 3° 15′" [Sol occident. 3° 15′]
- Circle "14": a very small dark sliver on the upper left rim; the lower left of the outline is drawn heavier. Text: "The Sun west, 4° 40′, H. 0 M. 18[1]" [Sol occident. 4° 40′ H. 0 M. 18[1]]
- Circle "15": plain outline, no shading. Text: "The Sun west, 7° 15′" [Sol occident. 7° 15′]
- Circle "16": plain outline, no shading. Text: "The Sun west, 7° 30′" [Sol occident. 7° 30′]

[1] Kepler added: »Tycho, in a letter to me, takes the end as H. 12.19« [Addidit Kepler: »Tycho ſumit ſinem H. 12.19 literis ad me«.].

DIE 3 MARTIJ. [3 March]

The altitude of the ☉ was observed in the meridian [Obſeruabatur Altitudo ☉ in Meridie]	33 32½
Place of the ☉ at 22°47′ ♓; declination [Locus ☉[ijs] in 22°47′♓, Decl.]	2 52½
	36 25
Parallax [Parallaxis]	1 40
	36 26 40
The altitude of the pole comes out [Provenit Altitudo Poli]	53 33½

DIE 7 MARTIJ. [7 March]

Meridian altitude of the ☉ [*Altitudo* ☉ *Meridiana*]	*35 5 1/12*

By the revolving instrument, exactly. It was exceptionally clear and calm, as it had been all the preceding night [*per Volubilem exacte. Erat apprime ſerenum & tranquillum velut tota nocte antecedente.*].

Our place of the ☉*, 26 45½* ♓*, reduced* [*Locus* ☉ *noſter 26 45½* ♓ *reductus*]

Observed altitude [*Altitudo obſeruata*]	*35 5 0*

Parallax, to be added [*Parallaxis addenda*]	*2 27*
Refraction, subtract [*Refractio ſub.*]	*0 35*
Corrected altitude [*Altitudo correcta*]	*35 6 52*
Declination [*Declinatio*]	*1 17 35* M.
Altitude of the equator [*Altitudo æquatoris*]	*36 24 27*
Altitude of the pole [*Altitudo poli*]	*53 35 33*

So you can use, absolutely and precisely, an altitude of the pole of 53 35 33 [*Potes itaque abſolute & præciſe vti altitudine poli 53 35 33.*].

DIE 12 MARTIJ. [12 March]

Meridian altitude of the ☉ by the revolving quadrant [Alt. ☉ Merid. per Q. Volub.]	37 3⅔

DIE 14 MARTIJ. [14 March]

Meridian altitude of the ☉ by the larger revolving quadrant [Alt. ☉ Merid. per Quadr. maiorem Volub.]	37 50½
or [vel]	37 50 35

Toward evening [Circa Veſperam]

6ʰ 57½ᵐ Meridian altitude of Procyon [6ʰ 57½ᵐ Alt. Procyonis Mer.]	42 39
The Greater Dog, west [Canis maior occid.]	11 30
Meridian altitude of the heart of ♌ [Altitudo Merid. Cordis ♌]	50 19⅙
Declination [Declinatio]	13 54¼ 36 24 55 53 35 5
8 58 The heart of Hydra crossed the meridian, having an altitude, by the larger revolving quadrant, of [8 58 Tranſiuit Cor Hydræ per Meridianum habens in Altitud. per Quadrantem Volub. maiorem]	29 31¼
9 35⅔ The heart of ♌ crossed the meridian, having an altitude of [9 35⅔ Tranſiuit Cor ♌ per Meridianum habens altit.]	50 19⅙

Place of the ☉ at noon, 3 40½ ♈ [*Locus ☉ in meridie 3 40½ ♈*]

Declination [*Declinatio*]	*1 28*
Observed altitude [*Altitudo obſeruata*]	*37 50½*
Parallax, add [*Parallaxis add.*]	*2⅓*
Refraction, take away [*Refractio aufer.*]	*0⅓*
True altitude [*Vera altitudo*]	*37 52½*
Altitude of the equator [*Altitudo æquatoris*]	*36 24½*
Altitude of the pole [*Altitudo poli*]	*53 35½*
	as before [*vt prius*]

DIE 15 MARTIJ. [15 March]

Meridian altitude of the ☉ by the revolving quadrant [Altitudo ☉ mer. per Quadrantem Volub.]	38 13 doubtful [dubia]

The clock we used had advanced correctly since yesterday noon, for it ran only a quarter of a minute faster than it should [Horologium quo vſi ſumus rite fuit promotum ab heſterna meridie. Nam quarta tantum minuti parte iuſto celerius proceßit.].

The same evening [Eadem veſpera]

the meridian altitude of Canicula was observed by the larger revolving quadrant [obſeruabatur Altitudo meridiana Caniculæ per Q. Volub. maior.]	42 39
7^{H} 1⅚^{M} The Greater Dog, west [7^{H} 1⅚^{M} Canis maior occid.]	11 30

DIE 16 MARTIJ. [16 March]

Meridian altitude of the ☉ by the larger revolving quadrant [Altitudo ☉ merid. per Quadr. Volub. maiorem]	38 38

The clock we used showed 11^{H} 58⅓^{M} at that time [Horologium quo vſi ſumus monſtrauit tunc temporis 11^{H} 58⅓^{M}.].

So at least about one and a half minutes are lacking [Ergo deſideratur ſaltem circiter ſeſquialterum minutum.].

6^{H} 53⅙′ Canicula crossed the meridian, having an altitude, by the larger revolving quadrant, of [6^{H} 53⅙′ Tranſiuit Canicula per meridianum habens in altitud. per Q. Volub. maiorem]	42 39

Our place of the Sun, 5 39 ♈ [*Locus Solis noſter 5 39* ♈]

Declination [*Declinatio*]	*2 15 7*
Altitude [*Altitudo*]	*38 38*
Parallax, add [*Parallax add.*]	*2 20*
Refraction [*Refractio*]	*0 15*
Corrected altitude [*Altitudo correcta*]	*38 40*
Altitude of the equator [*Altitudo æquatoris*]	*36 25*
Altitude of the pole [*Altitudo poli*]	*53 35*

This falls short of the true altitude of the pole by at least half a minute [*quod dimidio ſaltem minuto deficit a vera altitudine poli.*].

DIE 17 MARTIJ. [17 March]

Meridian altitude of the ☉ by the larger revolving instrument [☉ Altit. Merid. per Vol. mai.]	38 56½
The clock showed [Horologium monſtrabat]	48½

min.; it had therefore advanced 11½ minutes more slowly than it should [min., promotum igitur fuit iuſto tardius 11½ minutis.].

DIE 18 MARTIJ. [18 March]

The meridian altitude of the ☉ was observed by the larger revolving quadrant [Obſeruabatur Altit. ☉ Merid. per Q. Volub. maior.]	39 22
The clock then showed [Monſtrabat tunc horolog.]	11 51½

So it had advanced 8½ minutes more slowly than it should [Quare promotum fuit iuſto tardius 8½ minutis.].

DIE 20 MARTIJ. [20 March]

Meridian altitude of the ☉ by the larger revolving quadrant [Alt. ☉ Merid. per Q. Volub. maior.]	40 10½

The meridian line found earlier by the larger revolving quadrant agrees entirely with the one that was found by the smaller brass azimuthal quadrant. It can therefore be safely relied on in the observations that follow [Linea Meridiej per Quadrantem maiorem volub. prius adinuenta omnino conuenit cum ea quæ per Quadr. minorem orichalcicum azimuthalem fuit adinuenta. Quare tuto ej in ſubſequentibus obſeruationibus fidi poteſt.].

DIE 21 MARTIJ. [21 March]

The meridian altitude of the ☉ was observed by the larger revolving quadrant [Altitudo ☉^{lis} Meridiana per Q. Volub. maiorem obſeruabatur]	40 32⅔

DIE 22 MARTIJ. [22 March]

Meridian altitude of the ☉ observed by the larger revolving quadrant [Altit. ☉ Merid. per Q. Volub. maiorem obſeruata]	40 55 precisely [præciſe]

DIE 30 MARTIJ. [30 March]

The meridian altitude of the ☉ was observed by the larger revolving quadrant [Obſeruabatur Altit. ☉ Merid. per Q. Volub. maiorem]	44 8½

DIE 31 MARTIJ. [31 March]

Meridian altitude of the ☉ by the larger revolving quadrant [Altit. ☉ merid. per Q. Volub. maiorem]	44 21

The clock then showed 12^{H} 45½′. So it had advanced M. 45½ faster than it should [Monſtrabat tunc horologium 12^{H} 45½′ Promotum ergo fuit iuſto celerius M. 45½.].

DIE 12 APRILIS. [12 April]

Meridian altitude of the ☉ [*Altitudo* ☉ *Meridiana*]	48 35

DIE 19 APRILIS. [19 April]

The meridian altitude of the ☉ was observed by the larger revolving quadrant [Obſeruabatur Altit. ☉ merid. per Q. Volub. maiorem]	50 52½

DIE 20 APRILIS. [20 April]

The meridian altitude of the ☉ was observed by the larger revolving quadrant [Obſeruabatur Altit. ☉ merid. per Q. maiorem Volub.]	51 9

DIE 21 APRILIS. [21 April]

The meridian altitude of the ☉ was observed by the larger revolving quadrant [Altitudo ☉ merid. obſeruabatur per Q. Volub. maiorem]	51 27⅔

DIE 22 APRILIS. [22 April]

The meridian altitude of the ☉ was observed [Obſeruabatur Altit. ☉ Merid.]	51 44½

DIE 26 APRILIS. [26 April]

The meridian altitude of the ☉ was observed by the larger revolving quadrant [Obſeruabatur Altit. Merid. $\odot^{l}_{i}{}^{s}$ per Q. Volub. maiorem]	52 55⅓

Doubtful because of the boarding [Dubia propter tabulatum.].

WITTEBERGÆ. [At Wittenberg]

First, for finding the altitude of the pole [Primo pro Altitudine Poli cognoſcenda.].

As the winter solstice approached, although the meridian line had not yet been established well enough, and the instrument had been set up only roughly by compass, I found the following for investigating the altitude of the pole at Wittenberg [Inſtante Solſtitio Hyberno licet linea Meridiej nondum ſatis eßet comperta, ſed ſolummodo per compaßum vtcunque diſpoſito inſtrumento, ſequentia pro altitudine poli Wittebergæ exploranda adinueni.].

DIE 9 DECEMBRIS. [9 December]

Around noon the altitude of the ☉, by the brass sextant set up for taking altitudes, was observed as follows and taken into use [Circa meridiem Altitudo $\odot^{l}_{i}{}^{s}$ per Sextantem orichalcicum pro capiendis altitudinibus diſpoſitum ſic obſeruabatur & ad vſum adhibita eſt]	14 43

| Parallax added [Parallaxis addita] | 3 || Altitude with the parallax [Alt. cum parallaxi] | 14 46 || Refraction [Refractio] | 7½ || Altitude, clear and true [Alt. libera & vera] | 14 38½ || Declination of the ☉, add [Declin. $\odot^{l}_{i}{}^{s}$ add.] | 23 30 || Altitude of the equator [Altitudo æquatoris] | 38 8½ || Altitude of the pole [Altitudo poli] | 51 51½ |

The same evening [Eadem Veſpera]

the greatest altitude of the pole star was observed, when it was above the pole [obſeruabatur altitudo Polaris maxima cum ſupra polum eßet]	54 42 50
But rather, take [Sed aßumetur potius]	54 43
Distance from our pole, subtract [Diſt. a polo noſtro, ſubtr.]	2 51½
Altitude of the pole [Altitudo Poli]	51 51½

This agrees with the earlier one [quod concordat cum priori.].

Altitude of the star at the end of the tail of the Great Bear, but a doubtful observation [Alt. ſtellæ in fine caudæ Vrſæ maioris, ſed dubia obſeruatio,]	20 4 50
Declination of the third-last in the tail [Decl. antepenultimæ in cauda]	58 11 20 B.
Complement of the declination [Complementum declinationis]	31 48 40
Altitude of the pole [Altitudo Poli]	51 53 30

DIE 10 DECEMBRIS. [10 December]

Altitude of the ☉ in the meridian [Alt. ☉ in meridie]	14 42 50
True altitude [Altitudo vera]	14 38 20
Altitude of the pole [Altitudo Poli]	51 50 40

DIE 20 DECEMBRIS. [20 December]

Altitude of the ☉ in the meridian [Alt. ☉ in meridie]	14 58 50
True altitude [Altitudo vera]	14 54 20
Altitude of the pole [Altitudo Poli]	51 51 20

OBSERUATIO DELIQUIJ LUNARIS PENE TOTALIS DIE 10 FEBRUARIJ POST MED. NOCT. SEQ. VERSUS CREPUSCULUM MATUTINUM. [Observation of an almost total lunar eclipse on 10 February, after the following midnight, towards morning twilight]

At the outset I computed, by the method we usually use, when the ☾ would be passing the nonagesimal degree of the ecliptic from the horizon, where of course it is without parallax of longitude. I found that this would happen at $13^{H}37'$, that is, one hour and ⅗ after midnight. So around that time I paid careful attention to its distance from the heart of ♌, which the ☾ was near, having passed beyond its place by a very few degrees. The difference in latitude on either side was of no great moment; and this was done in the following manner [Supputaui ab initio ratione nobis vſitata quando ☾ tranſitura eßet nonageſimum Eccliptiçæ

gradum ab Horizonte, vbi nimirum Parallaxi Longitudinis deſtituitur. Inueni id fieri 13ʰ37′, nempe vna hora cum ⅗ a media nocte. Quare circa id tempus attendi diligenter ad eius diſtantiam a Corde ♌, cui ☾ propinqua erat, eiusque locum pauculis gradibus prætergreßa. In Latitudine vtrobique non magni momenti exiſtente diſcrimine, idque in hunc modum vt ſequitur.].

When Procyon, or Canis Minor, was raised 19¼° by the smaller gilt quadrant, the western limb of the ☾, the one nearest Regulus, was 5° 37′ from that star. And soon afterwards, when the same fixed star had 19° of altitude, exactly the same distance was found, since in so tiny an interval of time it would vary imperceptibly. Afterwards, when the same star of Canis Minor was raised 17⅚°, the former distance from the same limb of the ☾ was found to be 5° 42′. At an altitude of Procyon of 17¼°, however, the distance of the other, eastern limb, which was farther from the Moon [a Luna], was 6° 11′. But when the same star was raised 16¼°, the same distance was found to be 6° 18′; these two are to be reduced to one another [limitanda] [Cum Procyon ſiue Canis Minor eleuaretur iuxta Quadrantem minorem inauratum 19¼° diſtabat limbus ☾ occidentalis Regulo proximus ab eadem ſtella 5° 37′. Et mox eadem fixa 19 gradus alt. habente eadem prorſus adinuenta eſt diſtantia, vtpote quæ tantillo temporis interſtitio inſenſibiliter variaretur. Poſtea cum eadem Canis minoris ſtella exaltaretur 17⅚° adinuenta eſt prior diſtantia ab eodem limbo ☾≏ 5° 42′. In altitudine vero Procyonis 17¼° fuit diſtantia alterius limbi orientalis, qui remotior erat a Luna, 6° 11′. Sed cum eadem ſtella attolleretur 16¼°, deprehenſa eſt eadem diſtantia 6° 18′, quæ duo ad inuicem limitanda veniunt.].

When the ☾ was thought to be near the meridian, the altitude of the upper limb was found to be 48° 30′, and that of the lower 47° 55′. But this observation is not to be trusted too far, because the position of the meridian was not yet known precisely enough. Later the same night I investigated it more carefully, as far as could be done so quickly, by directing the equatorial armillae to the position of the pole and to the declinations of stars on either side [Quando ☾ putabatur eße iuxta Meridianum, deprehenſa eſt Altitudo ſupremi limbi 48° 30′, inferioris autem 47° 55′, ſed huic obſeruationi non nimium fidendum, eo quod ſitus Meridiej non ſatis adhuc præciſe innotuerat, quem poſtea eadem nocte dirigendo armillas æquatorias ad Poli ſitum & ſtellarum hinc inde declinationes diligentius inquiſiui, quoad tam cito fieri poterat.].

Afterwards, so that something certain might be established about the elevation of the pole at this place, on which the other observations depend and through which they are put to use, I paid careful attention to the position of the pole star when it was in the meridian below the pole. I found this with a plumb-line held to the eye, at the moment when Schedir of Cassiopeia — or rather the middle of the space between it and the head of the same Cassiopeia — was in the same vertical circle as the pole star. The least altitude of the pole star was then found, by the iron quadrant of a cubit and a half, to be 50° 54′. If the distance of the same star from the pole is added to this — which at this time, according to our earlier observations, is 2° 52′ — the true elevation of the

pole comes out at 53° 46′. In place of this I now take 53¾°, until with larger instruments I have searched out the very minute, or its half, as the need may be. And I used this elevation of the pole in setting up the equatorial armillae directly afterwards, the same night [Poſtmodum vt conſtaret aliquid certi de poli huius loci ſublimitate, vnde cœteræ obſeruationes dependent, atque in vſum deducuntur, animaduerti diligenter ad ſitum ſtellæ Polaris, quando in Meridiano erat infra Polum, quod perpendiculo ad oculum applicato quando Schedir Caßiopeæ, ſeu potius medium ſpatium inter hanc & Caßiopeæ eiusdem caput erat cum eadem Polari ſtella in eodem verticali circulo, comperi. Fuit autem tunc per Quadrantem ferreum ſeſquicubitalem adinuenta ſtellæ Polaris minima altitudo 50° 54′. Quibus ſi addatur eiusdem ſtellæ a Polo remotio, quæ hoc tempore eſt iuxta priora noſtra obſeruata 2° 52′, prouenit vera Poli ſublimitas 53° 46′, pro quibus ego nunc accipio 53¾°, donec per maiora inſtrumenta ipſißimum minutum aut eiusdem ſemißem, prout opus fuerit, rimatus fuerim. Atque hac eleuatione Poli in diſponendis Armillis æquatorijs mox eadem nocte vſus ſum.].

Then I again examined the distance of the ☾ from Regulus, when Canis Minor was raised 11¾°, and found it to be 6° 20′, and that with respect to the limb of the ☾ farther from the heart of ♌ [Deinceps rurſus ☾ diſtant. a Regulo ſcrutatus ſum, quando Can. Min. eleuabatur 11¾°, inuenique eam eße 6° 20′, idque quoad remotiorem limbum ☾ a Corde ♌.].

From these preceding distances of the ☾ from Regulus, observed about 90°, its place before the eclipse can be examined and checked against the fixed stars at the same time — provided the parallax of the ☾ is carefully guarded against, and due account is taken, as you know, of its latitude and declination. Afterwards, by the diurnal motion of the ☾, which at that time exceeded 12° by the very least amount, the same place can be carried to the middle of the eclipse, taking, of course, one minute in degrees for every two minutes in time [Ex his antecedentibus in ☾ a Regulo diſtantijs circa 90° obſeruatis poterit eius locus examinari ante Ecclipſin, vnaque fixarum fieri comprobatio, modo parallaxis ☾ diligenter præcaueatur atque eius latitudinis & declinationis conueniens vti ſcis habeatur ratio, poſteaque per motum ☾ diurnum qui 12 gradus eo tempore quam minimum exceßit fieri eiusdem loci ad medium deliquij applicatio, aßumendo nimirum pro quibuslibet duobus minutis in tempore vnum minutum in gradibus.].

The time of this lunar eclipse, with such diligence as was then possible, was recorded in the following way [Tempus autem huius deliquij lunaris qua fieri tunc potuit diligentia ſequenti modo denotatum eſt.].

A little before the darkening, the ☾ was covered by some clouds, which afterwards dissolved little by little, so that the beginning of the ingress could be noticed somehow without any very appreciable error, though through rather thin clouds. But because no stars could be made out distinctly, owing to the interposition of these same rather thin clouds, there was observed, at the moment when the eastern limb of the ☾, facing somewhat towards the horizon,

[Paulo ante obfuſcationem ☾ obtegebatur nubibus quibusdam, quæ poſtea ſucceßiue dißoluebantur, ita vt principium ingreßus vtcunque animaduerti potuerit ſine admodum ſenſibili errore, per rariuſculas tamen nubes. At quia nullæ ſtellæ diſcrete cernebantur ob earundem nubium rariuſcularum interpoſitionem, obſeruata eſt tunc, cum limbus ☾ orientalis horizontem nonnihil]

was seen to be tinged by the shadow of the Earth, the altitude of the uppermost circumference of the ☾, by the smaller gilt quadrant: 23½°. But because the eclipse could have begun a little earlier — although, through the thin small clouds and because of the thinness of the Earth's shadow, this could not be made out at its edges — we shall err imperceptibly if we take the altitude of the upper limb of the Moon at the very beginning of the eclipse as 24° absolutely. You can rely on this. *By the calculation it gives $4^{h}\ 14^{m}$*1 [reſpiciens, vmbra terræ tingi cerneretur, altitudo ſupremæ circumferentiæ ☾^{æ} per Quadrantem minorem inauratum 23½°. At quia paululum antea poterat incepiße Ecclipſis, licet per tenues nubeculas & ob raritatem vmbræ terræ, iuxta ſua extrema id dignoſci nequiuerit, inſenſibiliter aberrabimus, ſi altitudinem ſupremi limbi ☾$^{na^{r}i^{s}}$ in ipſißimo deliquij principio aßumpſerimus abſolute 24°. Cui te potes fundare. *Dat hor. 4 m. 14 iuxta calculum*1.].

When the upper limb of the ☾ was raised 20°, the ☾ appeared to have entered the shadow with about half of itself [Quando ſuperior limbus ☾ eleuabatur 20°, ☾ quaſi media ſui parte videbatur vmbram ingreßa.].

The head of Ophiuchus was then observed towards the east, at an equatorial distance from the meridian of 26° 24′, by the brass equinoctial armillae, which had been set up the same night as well as could be done [Obſeruabatur tunc Caput Ophiuchi verſus ortum in diſtantia a meridiano æquatoria per Armillas orichalcicas æquinoctiales eadem nocte quoad fieri potuit diſpoſitas 26° 24′.].

And a little before, Spica ♍ was likewise moving away from the meridian towards the west. When a third part of the ☾ remained, the altitude of the upper limb was 19° 0′. The head of Ophiuchus was then observed 35° 25′ from the meridian. Around the fifth hour, as it struck both in the town and on the clocks, 9′ of the ☾ were seen to remain, observed with the Radius; the tail of ☋ then had an altitude of 31° 0′ by the somewhat larger iron quadrant, and the distance of Spica ♍ from the meridian was also taken at that time by the equatorial armillae: 36° 30′. From this the preceding clock times can be verified, a comparison being made with the following ones as well. Around these times, moreover, it was exceptionally clear, all the clouds having been driven off on every side, so that both the ☾ and the stars appeared quite distinctly [Et paulo ante Spica ♍ pariter remouebatur a meridiano verſus occaſum. Quando tertia pars ☾ reſtabat, fuit altitudo ſupremi limbi 19° 0′. Obſeruabatur tunc Caput Ophiuchi 35° 25′ a meridiano. Circa horam quintam ſonantem tam in vrbe quam horologijs videbantur de ☾ reſtare 9′ per Radium obſeruata, habuit autem tum Cauda ☋ altitudinem 31° 0′ per maiuſculum ferreum quadrantem, accipiebatur etiam tunc per æquatorias armillas diſtantia Spicæ ♍ a meridiano 36° 30′. Hinc poterint verificari antecedentia horologiorum tempora collatione

etiam facta cum ſequentibus. Erat autem apprime ſerenum circa hæc tempora depulſis vndiquaque omnibus nubibus, ita vt tam ☾ quam ſtellæ ſatis dilucide apparerent.].

At hour 5 and one third on the oblong square clock that strikes the hours — which I used in all these observations of the eclipse of the ☾ for want of the others (for my other clocks, which show hours, minutes and seconds, had at that time only recently been brought, had been damaged in some way on the road, and had lost certain parts, and were not yet fully restored) — at that time, I say, the bright part of the ☾, where it was thicker, was observed with the Radius to fill only 6′, and that with all the accuracy possible. The tail of ☋ was then at an altitude of 28° 27′ by the iron quadrant, and Spica ♍ at the same instant 18° 45′ by the smaller quadrant. In the armillae, however, the distance of the same Spica from the meridian was 41° 10′ [Hora 5 cum vna tertia in horologio quadrato oblongo, quod horas ſonat (nam alia mea horologia, quæ horas, minuta & ſecunda monſtrant tunc quod nupere allata eßent atque in via aliquo modo læſa & quædam in ijs amißa in integrum necdum erant reſtituta) quo in omnibus hiſce ☾ Ecclipſeos obſeruationibus ob aliorum defectum vſus ſum, tunc inquam per Radium obſeruabatur ☾^{æ} pars lucida, vbi craßior erat 6′ ſolummodo adimplere idque qua fieri potuit accuratione. Erat tunc Cauda ☋ in altitudine 28° 27′ per Quadrantem ferreum. Et Spica ♍ eodem inſtanti 18° 45′ per minorem quadrantem. In armillis vero Spicæ eiusdem a meridiano diſtantia 41° 10′.].

At about hour 5½ the illuminated part of the ☾ remaining was 5′ by the Radius; the altitude of the tail of ☋, part. 27 21′, by the somewhat larger iron quadrant; the altitude of Spica 17° 45′ by the smaller quadrant [Hora 5½ fere reſtabat pars ☾ illuminata 5′ per Radium, Altitudo Caudæ ☋ part. 27 21′ per maiuſculum ferreum quadrantem. Altitudo Spicæ 17° 45′ per Quadrantem minorem.].

At hour 5 35′ by the said clock, the part still illuminated was likewise taken with the Radius as 3½′. The altitude of Spica was then 16° 15′, and it was moving away from the meridian towards the west by 45° 36′ in equatorial degrees [Hora 5 35′ iuxta dictum horologium itidem per Radium capiebatur partis adhuc illuminatæ 3½′. Erat tunc altitudo ſpicæ 16° 15′ & eadem a meridiano verſus occaſum in gradus æquatorias remouebatur 45° 36′.].

The tail of ☋ was observed to be raised 26° 0′ above the horizon. At hour 5 42′, as nearly as possible, by the same clock, only 3′ of the illumination of the ☾^{2} remained by the Radius that could be made out in any way; and then, by estimate, the middle of the eclipse occurred, and the ☾ was plunged into the Earth's shadow as deeply as it could be on that occasion. The star ♄ was then raised 19° [Cauda ☋ obſeruata eſt ſupra Horizontem attolli 26° 0′. Hora 5 42′ quam proxime iuxta idem horologium reſtabant per Radium ſolummodo 3′ de illuminatione ☾^{2}, quæ vllo modo diſcerni poterant, & tunc quoad æſtimationem Medium Ecclipſis extitit, ☾que profundißime, quantum ea vice fieri poterat, vmbræ terræ immergebatur. ♄ ſtella eleuabatur tunc 19°.].

For a little later, near hour 5⅚, it was seen to increase somewhat in light, when the altitude of the tail of ☋ was 23° 0′ and that of Spica ♍ 14⅓°; Spica itself was then also removed 50½° from the meridian along the equator. If, therefore, we set the middle of the eclipse by this very clock at 5^{h} 45′, we shall err imperceptibly at most; this clock time, however, can be reduced [limitari] from the preceding and following observations of the altitude of the ☾ and of the stars, and of their equatorial distances from the meridian [Nam paulo poſt iuxta horam 5⅚ viſa eſt aliquantulum lumine augeri, quando altitudo Caudæ ☋ erat 23° 0′ & Spicæ ♍ 14⅓°, quæ etiam ipſa tunc remouebatur a meridiano 50½° ſecundum æquatorem. Si itaque ſecundum horologium hoc ipſum conſtituerimus medium deliquij fuiße 5^{h} 45′ ad ſummum inſenſibiliter aberrabimus, poterit tamen hoc horologij tempus ex antecedentibus & conſequentibus obſeruationibus in altitudine ☾ & ſtellarum atque earundem diſtantijs a meridiano æquatorijs limitari.].

[1] Tycho wrote this in the margin [In margine hæc adſcripſit Tycho.].

[2] Added in the margin of codex V in another hand: »N. B. 3′ of the ☾ not eclipsed. From this you can infer the size of the latitude; but it is likely that at least something appreciable of the ☾ remained. To measure how much it was with the Radius, however, is deceptive, as experiments have often made evident; see the eclipse of the year 92, on 14 June« [Addita ſunt in margine cod. V alia manu: »N. B. 3′ non eclipſata de ☾. Hinc poteris molem Latitudinis conijcere, ſed veroſimile eſt aliquod ſaltem notabile ſuperfuiße de ☾. Id vero quantum fuit per Radium metiri fallax eſt, ut ſæpius experimenta ſunt impromptu, vide Eclipſin anni 92 in Junio 14«.].

Afterwards, when the ☾ was approaching the horizon so closely that it could not conveniently be seen from the new observatory because of the trees in the way, we climbed the little tower at Wandsbek, and there we attended to the appearances of the ☾ right up to its setting. They were as follows, so far as they could be made out on account of the morning dawn and the Sun now on the very point of rising, and also of the thin vapours hovering over the horizon, as happens. At hour 6⅓ the altitude of the upper and bright limb of the ☾, by both the smaller quadrant and the astronomical Radius, was 3½°; and the ☾ had then very perceptibly recovered and increased its light, having 7′ in the bright part, by the Radius. At hour 6½ by the clock the bright portion of the ☾ was about 10′, also by the Radius. The altitude of the uppermost limb was then 1½°, by both the Radius and the quadrant [Poſtea cum ☾ ita Horizonti appropinquaret, vt ex nouo obſeruatorio propter arbores interpoſitas conſpici commode nequiret, aſcendimus Turriculum Wandesburgicum, ibique ☾ᵉ apparentijs attendimus vsque in eiusdem occaſum, quæ in hunc modum ſe habebant, quatenus ob diluculum matutinum & Solem iam iam exoriturum, tum quoque tenues vapores Horizonti vti fit obuerſantes eædem diſcerni poterant. Hora 6⅓ fuit altitudo ſuperioris & lucidi limbi ☾ tam per Quadrantem minorem quam per Radium aſtronomicum 3½° & ☾ tunc admodum ſenſibiliter lumen receperat atque adauxerat, habens in parte lucida 7′ per Radium. Hora 6½ in

horologio fuit lucida portio ☾ quaſi 10′ etiam per Radium. Erat autem tunc altitudo ſupremi limbi 1½° tam per Radium quam Quadrantem.].

At hour 6 40′ nothing more of the ☾ appeared. It was so close to the horizon that it was covered by rather thin vapours, and also because of the daylight, the ☉ having now risen — although it could not be seen because of rather dense clouds lying in the way towards the east, however much clearer it was in the west. The ☾ could have set, as to its centre, at 6^{H} 43′, or at most 45′, by the clock. From this it will be possible to correct the clock times, provided the apparent place of the ☾ is applied and account is taken of the refractions [Hora 6 40′ nihil amplius de ☾ apparuit, adeo propinqua erat Horizonti, ita vt vaporibus rariuſculis obtegeretur, tum quoque ob lumen diej, $\odot^{le}$ iam exorto, licet non cerneretur ob interpoſitas denſiuſculas nubes verſus ortum vtut in occaſu ſerenius fuerit. Poterat autem ☾ centraliter occidere 6^{H} 43′ vel ad ſummum 45′ ſecundum horologium. Atque hinc tempora horologij emendare licebit, modo locus ☾ viſus applicetur & refractionum adhibeatur ratio.].

Then we went to bed, for we had spent the whole night without sleep so that the instruments could be set up and whatever was needed for observing the eclipse could be got ready in the new observatory [Poſtea dormitum iuimus, nam totam noctem inſomnem traduxeramus, vt disponerentur inſtrumenta & ad obſeruandam Ecclipſin in nouo obſeruatorio ea quibus opus erat adornarentur.].

During the observing I had with me Oligerus Rosækrantz [Holger Rosenkrantz], my beloved kinsman by blood and by marriage, and he bore himself energetically, as befitted a lover and observer of the earth-dwelling Sophia and of the Celestial one as well [Aderat vero mihi inter obſeruandum Oligerus Roſækrantz conſanguineus & affinis meus dilectus, & ſe ſtrenuum gerebat prout in terricola Sophia ſic etiam Cœleſti amatorem & obſeruatorem decebat.].

DIE 16 FEBRUARIJ. [16 February]

H. 2 M. 4. I began to correct the medium-sized clock, which shows single minutes and which I first received from the maker, from Hamburg, on the day after the eclipse; I intend to use it principally from now on. For there was no opportunity before, since I had only first received my instruments and clocks here from Denmark around the beginning of this month; nor before this had the clear weather been favourable and settled enough [H. 2 M. 4 Horologium mediocre, quod ſingula minuta monſtrat, ſequente die poſt Ecclipſin primum Hamburgo receptum ab artifice emendare cœpi, quo poſtmodum præcipue vti animus eſt. Neque enim antea dabatur, ſiquidem inſtrumenta & horologia mea e Dania circa initium huius menſis huc primum receperam. Neque prius ſatis commoda & conſtans fuit ſerenitas.].

At the preceding noon of this day, however, when I had corrected this clock I spoke of as well, so as to examine its motion on the minute index over the two following hours, I also examined the other one, which we had used just before in observing the eclipse of the ☾; and it was found that at noon itself that clock did not err perceptibly. It had, however, been running continuously

uncorrected from the time of the eclipse for 5 full days and about 6 hours besides; or, if you prefer to count from the time of its examination against the ☉ on the 11th day, in the afternoon around hour 2, as in the preceding entries, about 5 full days have elapsed. Therefore the error the clock had, if it had any, it had around the day of the observation of the eclipse of the ☾, because it had then perhaps not been properly regulated to the ☉ or the stars. This can be tested and corrected in the observations of the altitude of the ☾ and of the stars made at that time, account being taken of the motion up to now; and in this way the times of the eclipse set down above can be verified much more exactly. The following pages will make this plain, once the place of the ☾ has first been computed and assigned from our restitution, so that the rest may be the clearer for it [In meridie vero antecedente huius diej, cum & hoc de quo dixi horologium correxißem, vt per duas ſequentes horas in minutorum indice motum eius explorarem, alterum quoque quo in obſeruanda Ecclipſi ☾ proxime vſi ſumus examinaui & deprehenſum eſt in ipſa Meridie horologium illud ſenſibiliter non aberrare. Mouebatur autem continue incorrectum a tempore Ecclipſeos per dies 5 completos, & inſuper horas circiter 6, aut ſi mauis numerare a tempore examinationis ad ☉ diej 11 pomeridiani circa horam 2 vt in antecedentibus, elapſi ſunt dies circiter completi 5. Quare vitium, ſi quod habuit horologium, circa diem obſeruationis ☾ Ecclipſeos, obtinuit, quod tunc forte non rite ad ☉ vel ſtellas ordinatum erat. Idque in obſeruationibus altitudinis ☾ & ſtellarum tunc factis experiri & corrigere licet, habita ratione motionis hucusque, atque ſic tempora Ecclipſeos præſcripta multo exactius verificari. Id quod ſequentes paginæ manifeſtabunt ſupputato & aßignato prius loco ☾ᵉ ex noſtra reſtitutione, vt cætera eo rectius pateant.].

Pro initio Ecclipſeos. [For the beginning of the eclipse]

Place of the ☾ in 2° 0′ ♍, latitude 0° 26′ north [Locus ☾ in 2° 0′ ♍, Latitudo 0° 26′ Borealis.].

Altitude of the centre of the ☾ at the beginning of the eclipse 23° 45′ [Altitudo centri ☾ in principio deliquij 23° 45′].

Parallax of the ☾ in the altitude circle 51′ [Parallaxis ☾ in circulo altitudinis 51′].

Refraction subtracted 6 [Subtracta refractione 6].

There remains parall. 45′ in the altitude circle [Remanent parall. 45′ in circulo altitudinis.].

From this the parallax of longitude is derived as 36′, and that of latitude as 34′ south. When the latitude of the ☾, 26′, is taken from the southern parallax of latitude, the apparent latitude of the ☾ remains 8′ south [Ex hac eruitur parallaxis Longitudinis 36′, Latitudinis 34′ auſtralis, demptaque Latitudine ☾ 26′ a parall. latit. Auſtr. remanet apparens Latitudo ☾ 8′ auſtralis.].

The distance of the ☾ from the meridian is 64° 23′. This is to be added to the right ascension, which is 153° 15′, and the right ascension of the midheaven comes out as 217° 38′. When the right ascension of the ☉, 334° 30′, is subtracted from it, there remains an arc of 243° 8′, which, converted into time, gives 16

hours & 14′ for the beginning of the eclipse [Diſtantia ☾ a meridiano 64° 23′, quæ addenda eſt ad aſcenſionem rectam quæ eſt 153° 15′, & prouenit A.R, M.C. 217° 38′, a qua ſubtracta A.R. ☉ 334° 30′ remanet arcus 243° 8′, qui conuerſus in tempus exhibet horas 16 & 14′ ad initium eclipſis.].

Pro digitis Eclipticis denuo inueſtigandis. [For investigating the ecliptic digits anew]

As the whole diameter of the ☾ is to 12, so the sum of the semidiameters of the Moon and of the shadow (the latitude of the ☾ having first been subtracted) is to the ecliptic digits [Sicuti ſe habet integer diameter ☾æ ad 12, ita ſe habet ſumma ſemidiametrorum Lunæ & vmbræ (detracta prius latitudine ☾æ) ad digitos eclipticos.].

Semidiameter of the ☾ [Semid. ☾]	15′	26″	
Semidiameter of the shadow [Semid. vmbræ]	40	15	
Sum of the semidiameters [Summa ſemid.]	55	41	
Latitude of the ☾ [Latit. ☾]	25	23	subtracted [ſubtr.]
Remainder [Reſiduum]	30	18	
Corresponding to 11 digits [Reſp. 11 digiti.]			

Calculation of the ☉ and the ☾ for the completed year 1597, January 9^{D}. 18^{H} P.M., from the Tables of Tycho Brahe [Calculus ☉ & ☾ ad Annum 1597 completum Januarij 9^{D}. 18^{H} P.M. ex Tabulis Tychonis Brahe.].

True longitude of the ☾ from the ☉ [Vera longitudo ☾ a ☉]	6^{S}	1°	43′	42″
True place of the ☾ [Verus locus ☾^{nae}]	5	2	32	37
True latitude of the ☾, north, descending [Vera latitudo ☾ ſeptent. deſc.]			25	24

The observation, drawn from the sky, showed that at least 2½ M. of the ☾ still remained illuminated when it was around the middle of the eclipse; therefore very nearly 11 digits ought to have entered the Earth's shadow. Hence in this calculation there is an excess of about ¾ of one digit [Obſeruatio cœlitus deducta oſtendebat 2½ M. ad minimum de ☾ reſtare adhuc illuminata, cum circa medium eßet deliquij: itaque debebant 11 quam proxime digiti vmbram terræ ingredi. Quare in hoc calculo abundant quaſi ¾ vnius digiti.].

M. Joachimus Radenicius sent me the following observations of the ☾ [Has ſequentes obſeruationes ☾ miſit ad me M. Joachimus Radenicius.].

With a quadrant of a foot and a half, when about a quarter of the ☾ had entered the shadow (for the beginning could not be seen because of mists), I found the altitude of Arcturus to be 55° 12′, to which the time by computation corresponds, 4^{H} 44′. When it was almost half obscured, the altitude of the same star was found to be 54° 32′, time H. 4 M. 51. With a third part standing outside the shadow, the altitude of Arcturus was 53° 14′, time 5^{H} 9′ 20″. With ¼

remaining over: altitude of Arcturus 52° 27′, corresponding to 5^{H} 18′ [Quadrante ſesquipedali, cum ☾☍ circiter quarta pars vmbram eßet ingreßa (initium enim ob nebulas videre non licuit) deprehendi Arcturi Altitudinem 55° 12′, cui reſpondet tempus ex ſupputatione 4^{H} 44′. Cum dimidia ferme parte obſcurata eßet, inuenta eiusdem ſtellæ altitudo 54° 32′, tempus H. 4 M. 51. Tertia parte extra vmbram exiſtente Altitudo Arcturi 53° 14′, tempus 5^{H} 9′ 20″. Superexiſtente ¼. Altitudo Arcturi 52° 27′, reſp. 5^{H} 18′.].

Around the middle of the darkening the ☾ was so wrapped in clouds that it could not be made out exactly whether this eclipse was total. When it emerged from the clouds, however, and about a quarter had been freed from the shadow, the stars ceased to appear because of the dawn; so I observed the upper limb of the ☾, whose altitude I found to be exactly 2°. To this altitude, then, 6^{H} 48¾′ corresponds. No more could be observed because of the nearness of the horizon [Circa medium obſcurationis ☾ nubibus ita inuoluebatur, vt an hæc Ecclipſis totalis fuerit, exacte diſcerni nequiuerit, cum autem ex nubibus emergeretur, cumque quarta quaſi pars ab vmbra eßet liberata, propter diluculum ſtellæ apparere deſierunt, quare ſuperiorem limbum ☾ obſeruaui, cuius altitudinem inueni 2° exacte. Reſpondet itaque dictæ altitudini 6^{H} 48¾′. Plura ob Horizontis vicinitatem obſeruari non potuerunt.].

About this eclipse of the ☾, Christiernus Longomontanus [Christen Sørensen Longomontanus], formerly a member of my household, wrote to me from Rostock as follows. The middle of the eclipse of the ☾ observed at Rostock: on the 11th day of February, H. 6 M. 4 A.M. [De hac Eclipſi ☾☍ ſic ſcripſit ad me Chriſtiernus Longomontanus olim meus domeſticus Roſtochio. Eclipſis ☾☍ Roſtochij obſeruatæ medium Die 11 Februarij H. 6 M. 4 A.M.].

Postscript: The eclipse of the Moon was not observed precisely enough here at Rostock, on the very night of my arrival; at least I worked out the middle from certain phases at the ingress into and egress from the shadow that matched one another. For the sky was clear of clouds neither towards the beginning nor at the middle, and the end did not occur before the setting of the ☾. The observations, however, that Doct. Wilhelmus Laurensbergius [Wilhelm Lauremberg] took of Arcturus with a medium-sized quadrant to search out this middle are moderate [Poſtſcripta: Lunæ deliquium hic Roſtochij ipſa nocte aduentus mei non ſatis præciſe obſeruatum eſt, ſaltem ex phaſibus quibusdam ad ingreßum & egreſſum ex vmbra conſimilibus medium enucleaui. Quod cœlum nec ſub initium nec medium a nubibus defecatum erat, & finis ante ſubmerſionem ☾☍ non contigit. Obſeruationes tamen mediocres ſunt quas Doct. Wilhelmus Laurensbergius ad Arcturum per mediocrem quadrantem pro hoc medio rimando habuit.].

OBSERVATION OF THE ECLIPSE OF THE ☾ IN THE YEAR 1598, IN THE MONTH OF FEBRUARY, MADE AT ALKMAAR IN HOLLAND. [OBSERVATIO ECLIPSIS ☾ A° 1598 MENSE FEB. ALCMARIÆ FACTA IN HOLLANDIA.]

Diagram. Fourteen circles in two columns of seven, separated by a vertical rule down the middle of the page. Each circle carries one curved line drawn across it, cutting off a segment; nothing is drawn or lettered inside any circle. Each circle has a printed label beside it, on the side towards the central rule. In the left column the cut-off segment lies on the left side of the circle: in the top circle it is a thin sliver at the lower left, and in each circle further down the line runs further in, until in the bottom two circles it runs from the top edge to the lower edge. In the right column: the first circle has a thin segment along the right edge; the second, a thin sliver at the upper right; the third and fourth, a thin sliver along the top; the fifth, a sliver at the upper left; the sixth, a line from the top edge down to the left edge; the seventh (Arcturus), a line from the left edge up to the upper right. Labels, left column top to bottom, then right column top to bottom:

- Left 1: Altitude of the tail of ♌ 42.15. Corresponding in time 15^{H} 50½, the elevation of the pole being taken as 53°. [Altitudo Caudæ ♌ 42.15 Reſp. in tempore 15^{H} 50½ poſita eleuat. poli 53°.]
- Left 2: Altitude of the tail of ♌ 41 deg. [Altit. Caudæ ♌ 41 gra.]
- Left 3: Altitude of the tail of ♌ 40.35 [Alt. Caud. ♌ 40.35]
- Left 4: Altitude of the tail of ♌ 39.20 [Altitud. Caud. ♌ 39.20]
- Left 5: Altitude of the tail of ♌ 38.20 [Altit. Caud. ♌ 38.20]
- Left 6: Altitude of the tail of ♌ 36.30 [Altitudo Cau. ♌ 36.30]
- Left 7: Altitude of the tail of ♌ 34.35 [Altitudo Caudæ ♌ 34.35]
- Right 1: Altitude of the tail of ♌ 32.15 [Altitud. Caud. ♌ 32.15]
- Right 2: Altitude of the tail of ♌ 30.10 [Altit. Caud. ♌ 30.10]
- Right 3: Altitude of the tail of ♌ 28.45 [Alt. Caudæ ♌ 28.45]
- Right 4: Altitude of the tail of ♌ 26.50 [Altitud. Caud. ♌ 26.50]
- Right 5: Altitude of the tail of ♌ 24.25 [Altitud. Caud. ♌ 24.25]
- Right 6: Altitude of the tail of ♌ 23.15 [Altitudo Caudæ ♌ 23.15]
- Right 7: Altitude of Arcturus 46.40 [Altitudo Arcturi 46.40]

[Dutch] After that I could not observe any more; but all this I perceived with great diligence [Daer na en hebbe ick niet meer connen obſerueren, dan dit alles heb ick met groten vlyt waergenomen.].

This eclipse of the ☾ was observed at Alkmaar in Holland by Wilhem Johannis[1] *[Willem Janszoon Blaeu], who made globes from my restoration. He is, moreover, quite diligent in other respects, for he saw the method of observing at my house* [*Hanc Eclipſin ☾ obſeruauit Alchmariæ in Hollandia Wilhem Johannis*[1] *qui globos ex mea reſtitutione parauit. Eſtque alias ſatis diligens, nam vidit apud me rationem obſeruandi.*].

From this you will be able to derive the difference of longitude between the places, that is, between our observation here at Wandsbek and the one made there [*Poteris hinc differentiam longitudinis locorum elicere, quæ eſt inter noſtram hic Wandeſburgi obſeruationem atque illam ibi factam.*].

When the calculation was examined, these results came out [*Explorato calculo hæc proueniunt*]	Beginning of this eclipse [Initium huius Eclipſis]	at Wandsbek [Wandesburgi]	4. 6
		at Alkmaar [Alcmarij]	3.48
		difference [differ.]	18
	Therefore the difference of the meridians, p. 4½² [Ergo differentia Merid. p. 4½².]		

OBSERVATION OF THE ECLIPSE OF THE MOON THAT OCCURRED IN THE YEAR 1598, ON THE 6TH DAY OF AUGUST, IN THE EVENING, AT WANDSBEK. [OBSERVATIO ECLIPSEOS LUNÆ QUÆ CONTIGIT ANNO 1598 DIE 6 AUGUSTI VESPERI WANDESBURGI.]

Since the day on which this eclipse occurred was moderately clear, the clocks were corrected by the Sun, both at noon and later around hour 6. They were found everywhere to be in moderately good order, so much so that at the last correction they were scarcely 2 M. ahead of the revolution in the heavens [Quoniam dies quo hæc Eclipſis euenit mediocriter ſerenus fuit, correcta ſunt horologia, tum in Meridie tum poſtea ſub horam 6 a Sole, quæ vbique deprehenſa ſunt mediocriter ſe habere, adeo vt vix 2 M. revolutionem in cœlo anteuerterent in vltima correctione.].

The instruments were also set up, and the equatorial armillae were aligned to the meridian line. Here it should be noted that the meridian line on the iron armillae that stood lower down had been 40 minutes later than the true one. This error is removed everywhere in the following observations by subtracting 40 M., or 2⅔ of time [Diſpoſita etiam ſunt inſtrumenta ac Armillæ æquatoriæ lineæ meridiej applicatæ, vbi notandum quod linea Meridiej in armillis ferreis quæ inferius fuerunt 40 minutis vera poſterior fuerat, qui error in ſequentibus obſeruationibus vbique tollitur ſubtrahendo 40 M. vel 2⅔ temporis.].

To take the altitude of the ☾ we used the larger portable brass quadrant, up in the little tower [Ad altitudinem ☾ᵉ capiendam vſi ſumus ſuperius in turricula quadrante portatili orichalcico maiori.].

As the eclipse approached, the sky was overlaid with thin and scattered clouds, and likewise in the east, where the ☾ was to appear. For although that part of the sky was freer of clouds, it was nevertheless less clear up to an altitude of 4 or 5 p. because of vapours. In the opposite quarter, however, where the Sun was setting, it was quite clear. And so, to check the clocks, we determined the visible setting of the ☉ as follows [Inſtante Eclipſi cœlum nubibus tenuioribus ac rarioribus ſubſtratum fuit, ſimiliter etiam in ortu, vbi ☾ apparuißet, nam quamquam eo in loco magis a nubibus liberatum erat, nihilominus ad altitudinem 4 aut 5 p. ob vapores minus defæcatum exſtitit. Sub

aduerſo vero cardine vbi Sol occidit ſatis ſerenum fuit. Ideoque pro horologijs examinandis occaſum ☉$^{l_{is}}$ viſum ita deprehendimus.].

		By the small clock that we had in the little tower [Per paruum horologium quod in turricula habuimus]
H. 7 M. 22⅙	The lower limb set, by the larger clock [Inferior limbus occid. per maius horologium]	H. 7 M. 19½
H. 7 M. 24¾	The middle of the ☉ set, by the middle clock [occidit medius ☉ per medium horologium]	H. 7 M. 21½
H. 7 M. 26⅝	The whole ☉ set, by the smaller clock [☉ totus occidit per minus horologium]	H. 7 M. 23½

From this, taking account of refraction and parallax, the clocks can be checked against the visible setting of the ☉ [Hinc habita refractionis & parallaxeos ratione ad viſum ☉ occaſum horologia examinari queunt.].

There follow the observations that could be obtained in the said eclipse [Sequuntur quæ in dicta Eclipſi haberi poterant obſeruationes.].

H. 7 M. 57⅝	on the middle clock of those below [in horologio medio inferiorum]
H. 7 M. 58⅛	on the larger, or largest, clock [in horologio maiori ſeu maximo]
H. 7 M. 52	on the small clock in the little tower [in paruo horologio in turricula]

The ☾ began to come out of the shadow, and appeared to have come out of the shadow by about 1 M. on the eastern side. The altitude of its lower limb, that is, of the lit part, was then P. 3 M. 26 by the portable [quadrant] in the tower, corresponding to 7^{H} 54′ [Incepit ☾ egredi ex vmbra & apparuit quaſi 1 M. vmbra egreßa ad partem orientalem, fuit autem tunc altitudo inferioris limbi eius ſeu lucentis, per portatilem in turri P. 3 M. 26, reſp. 7^{H} 54′.].

[1] Willem Janszoon Blaeu, who had observed at Uraniborg during the winter of 1595–1596 [Willem Janßoon Blaeu, qui per hiemem 1595—1596 Uraniburgi obſervaverat.].

[2] Compare Kepler, *Rudolphine Tables*, chapter XVI (*Opera*, ed. Frisch, vol. VI, p. 556), where Kepler found 5° 15′ [Cfr. Kepleri Tab. Rudolph. cap. XVI (Opera ed. Friſch T. VI p. 556) ubi 5° 15′ Keplerus invenit.].

If, therefore, you set the first emergence, according to the more correct clocks, at hor. 7 M. 56, and the altitude of the lower limb at exactly 3 p., you will be out by an imperceptible amount. Corresponding to 7^{H} 51⅙′ [Si itaque primum egreßum iuxta correctiora horologia poſueris hor. 7 M. 56 & Altitudinem inferioris limbi 3 p. exacte, inſenſibiliter aberrabis. Reſp. 7^{H} 51⅙′.].

Afterwards the stars became visible to some degree, and so these were observed in order to correct the clocks [Poſtea ſtella aliquo modo conſpicuæ factæ ſunt, quare pro horologijs corrigendis iſtæ obſeruatæ ſunt.].

H. 8 M. 11⅔	by the middle clock [per Medium horologium]
H. 8 M. 11¾	by the largest [per Maximum]
H. 8 M. 4½	by the smallest, which we had up above [per Minimum quod habuimus ſuperius]

The Vulture was observed in the iron equatorial armillae, east, at 25° 19′, but corr. 24 39 [Fuit Vultur in armillis ferreis æquatorijs orient. 25° 19′ obſeruatus, ſed corr. 24 39.]. The altitude of the lowest limb of the ☾, up above, by the portable one, 4° 55′ [Altitudo infimi limbi ☾ᵉ ſuperius per portatilem 4° 55′.]. About a fourth part of the ☾ had been restored, but this observation is doubtful; you may use it to reconcile the clocks [Fuit quaſi pars quarta reſtituta de ☾, ſed hæc obſeruatio dubia eſt, poteris vti ad horologia concilianda.].

8ᴴ 34½ᴹ	by the middle [per medium]
8 35½	by the largest [per maximum]
8 26½	by the smallest, up above [per minimum ſuperius]

The bright star of the Vulture observed in the armillae at 19° 17′, corrected 18° 37′, east [Vulturis lucida in armillis obſeruat. 19° 17′, correcte 18° 37′ or.]. The altitude of the lower limb of the ☾ on the portable one up above, 7° 32′ [Altitudo infer. limbi ☾ in portatili ſuperius 7° 32′.]. The bright limb, from the meridian, in the other armillae, north 52° 20′ [Lucidus limbus a Meridie in alteris armillis Sept. 52° 20′.]. The ☾ was about half out of the shadow, as far as one could make out by sight; it was then moderately clear where the ☾ was [Fuit ☾ quaſi media extra vmbram quantum viſu diſcernere licuit, fuit tum mediocriter ſerenum vbi ☾ erat.].

Afterwards, to examine the armillae, we observed towards the north-west, with the great revolving quadrant, one of the 7 in Ursa Major — the one at the root of the Tail, which has longitude 3⅓ ♋ — at an altitude of 43 p. 45 M. The Vulture was then observed east at 15° 22′, corr. 14° 42′, corresponding to 8ᴴ 49⅓′. The middle clock 8ᴴ 51⅓′, the largest 8ᴴ 51⅚′ (corresponding to 8ᴴ 48′). From this you will reconcile the times on the clocks [Poſtea pro examinatione armillarum obſeruabamus ad Borolybicum per magnum Quadrantem volubilem vnam 7 illarum in Vrſa maiore quæ in Caudæ radice eſt, habens Longit. 3⅓ ♋, in altitudine 43 p. 45 M. Fuit tunc Vultur obſeruatus orient. 15° 22′, corr. 14° 42′, reſp. 8ᴴ 49⅓′. Horologium medium 8ᴴ 51⅓′, maximum 8ᴴ 51⅚′ (reſp. 8ᴴ 48′). Hinc tempora in horologijs conciliabis.].

9ᴴ 9½′	on both clocks [in vtroque horologio]
9 0	on the smallest, up above [in minimo ſuperius]

The ☾ was seen wholly full, yet brighter on the eastern side than on the western [Viſa eſt ☾ tota plena, ſplendidior tamen ab orientali parte magis quam occident.].

Altitude of the star at the root of the Tail of Ursa Major 41° 53„[8], corresponding to H. 9 M. 5 [Altitudo ſtellæ in radice Caudæ Vrſæ maioris 41° 53„ reſp. H. 9 M. 5.].

The Vulture observed in the armillae, east, at 10° 51′, corr. 10° 11′, corresponding to H. 9 M. 7⅖ [Vultur obſeruatus in armillis orient. 10° 51′, corr. 10° 11′, reſp. H. 9 M. 7⅖.].

The left elbow of Antinous in the other armillae 14 31 east, corresponding to H. 9 M. 9 [Siniſter cubitus Antinoi in alteris armillis 14 31 or., reſp. H. 9 M. 9.]. Altitude of the lower limb of the ☾, up above, by the portable quadrant, 11° 21′ [Altitudo infer. limbi ☾ ſuperius per portatilem Quadr. 11° 21′.].

H. 9 M. 4½ on the small clock, when the altitude of the lowest limb of the ☾ was 11° 52′: the ☾ was seen entirely clear on every side. If, therefore, you set the final release from the whole shadow by this clock at H. 9 M. 3, when the altitude of the lower limb of the ☾ would have been 11⅔°, and on the other, larger clocks at H. 9 M. 13, an imperceptible error will be committed [H. 9 M. 4½ in paruo horologio, vbi altitudo infimi limbi ☾ 11° 52′, tota vndique clara viſa eſt ☾. Si itaque poſueris iuxta hoc horologium H. 9 M. 3, vbi altitudo infer. limbi ☾ eßet 11⅔°, in reliquis vero horologijs maioribus H. 9 M. 13 extremam liberationem a tota vmbra, inſenſibilis error committetur.].

Finally, to examine the time and the clocks [Poſtremo pro examinatione temporis & horologiorum.]

9ᴴ 27⅝ᴹ	by the middle [per medium]
9 28¾	by the largest [per maximum]
9 19½	by the small [per paruum]

Altitude of the root of the Tail of Ursa Major 39° 54′ [Altitudo radicis Caudæ Vrſæ maioris 39° 54′]. The mouth of Pegasus, east, was in the iron armillae at 35° 35′, by correction 34° 55′ [Os Pegaſi or. fuit in armillis ferreis 35° 35′, ob corr. 34° 55′].

Further, to examine the clocks, on the next day after noon, about the first hour, we observed the ☉ in the iron equatorial armillae, taking account of the 40 M. then to be added. The middle clock was moving faster than it should by M. 11 S. 40. The largest clock was going faster than it should by 12′ 25″.

[8] two comma-like marks stand after 53, where the other values set a minute mark

From this, correct the times in the eclipse of the ☾ proportionally, from the 6th hour of the evening of the previous day, when the clocks were likewise corrected [Vlterius pro examinandis horologijs altero die poſt Meridiem ſub horam primam obſeruabamus ☉lem in armillis æquatorijs ferreis habita ratione 40 M. tunc addend. Horologium medium celerius iuſto mouebatur M. 11 S. 40. Horologium maximum celerius iuſto ibat 12′ 25″. Hinc proportionaliter ab hora 6 veſpertina heſterni diej, quando horologia ſimiliter correcta ſunt, tempora in deliquio ☾næ emenda.].

Correction of the times for the principal observations in the eclipse [Emendatio temporum ad præcipuas animaduerſiones in Eclipſi.]

Parallax, refraction included, at an altitude of 3° 18′, such as it was at the first emergence: 45¼′, corresponding in longitude to 13½′, in latitude to 43⅓′ [Parallaxis incluſa refractione in altitudine 3° 18′, qualis fuit in primo egreßu 45¼′, reſp. Long. 13½′, Lat. 43⅓′.].

Therefore the apparent longitude of the ☾ [Ergo Longitudo ☾næ viſa]	23° 48′ ♒
Apparent latitude [Latitudo viſa]	1 6 M.
Right ascension of the ☾ [Aſcenſio recta ☾æ]	326 31
Declination of the ☾ [Declinatio ☾æ]	14 34 M.
Longitude of the ☉ [Longitudo ☉]	23 22 ♌
Right ascension of the ☉ [Aſcenſio recta ☉]	145 42

Corresponding time 7H 51⅙′. But if the altitude of the lower limb is taken as 3⅓°, the time will be H. 7 M. 54 [Reſp. tempus 7H 51⅙′. Sed ſi ponatur altitudo inferioris limbi 3⅓°, erit tempus H. 7 M. 54.].

Afterwards, at the total release of the ☾ from the shadow, the altitude of the centre of the ☾ was [Poſtea in totali liberatione ☾æ ab vmbra fuit altit. centri ☾]	12° 0′
Parallax with refraction [Parallaxis cum refractione]	51′ 0″
True ☾: longitude [Vera ☾ Longitudo]	24 20
latitude [Latitudo]	0 20 M.
Apparent longitude [Viſa Longitudo]	24 24
latitude [Latitudo]	1 11
Corresponding right ascension of the ☾ [Reſp. Aſc. recta ☾]	327 7
declination [Declinatio]	14 32

Corresponding time 9H 8M [Reſp. tempus 9H 8M.].

From a comparison of all these, set the first emergence of the ☾ from the shadow at H. 7 M. 55 [Ex collatione horum omnium pone primum egreßum ☾ ex vmbra H. 7 M. 55.].

And the total release at H. 9 M. 12 [Et totalem liberationem H. 9 M. 12.].

True latitude of the ☾ in the middle of the eclipse [Latitudo vera ☾ in media eclipſi]	0° 25′
Semidiameter of the shadow [Semidiameter Vmbræ]	46′ 40″
Semidiameter of the ☾ [Semidiameter ☾]	18 0
Daily motion of the ☾ from the ☉ [Motus diurnus ☾ a ☉^{le}]	14 18
Sum of the semidiameters [Aggregatio ſemidiam.]	64 40

The minutes of incidence and of half the duration together, 60′, corresponding to a time of H.1 41′, to be subtracted [Scrupula incidentiæ & moræ dimidiæ ſimul 60′, reſp. tempori H.1 41′ ſubtrah.].

Therefore the middle H. 7 31′ [Ergo medium H. 7 31′.].

From the beginning of the emergence of the ☾ from the shadow, by another method [Ex initio egreßus ☾ ab vmbra alio modo.]

Difference of the semidiameters [Differentia ſemidiamet.]	28′ 40″
From the daily motion of the ☾, in time [Ex motu diurno ☾ in tempore]	23^{M}
	7^{H} 55
Therefore the middle of the opposition [Ergo medium ☍$^{oni^s}$]	7^{H} 32^{M}

This is rather to be retained [Quod potius retinendum eſt.].

The middle for the meridian of Uraniborg, to which our Tables are adapted: Day 6, H. 7 M. 47 [Medium ad meridianum Vraniburgicum cui Tabulæ noſtræ ſunt accommodatæ Die 6 H. 7 M. 47.].

Equation of time for the ☾: M. 5, to be added [Æquatio temporis pro ☾ M. 5 add.].

Corresponding mean motions [Reſp. medij motus]	Simple ☉ [Simplex ☉]	4^{s} 24° 51′ 25″
	Simple ☾ from the ☉ [Simplex ☾ a ☉]	5 27 37 20
	Anomaly of the ☾ [Anomalia ☾^{æ}]	6 10 47 34
Hence the true place of the ☉ [Hinc verus locus ☉]		23° 20′ 55″ ♌
True place of the ☾ [Verus locus ☾^{æ}]		23 19 52 ♒

Magnitude of the eclipse from our restitution: Dig. 13⅓ [Quantitas Eclipſeos ex noſtra reſtitutione Dig. 13⅓.].

OBSERVATIONS OF SATURN [OBSERUATIONES SATURNI.]

DIE 16 FEBRUARIJ. [16 February]

At night ♄ was observed in this way from the heart of ♌ [Noctu obſeruabatur ♄ in hunc modum a Corde ♌.].

H. M.	Dist. [Diſt.]	Altit. of ♄ by the smaller iron Q. [Altit. ♄ per Q. ferreum minor.]	Heart of Hydra, west [Cor Hydræ occid.]
11 56⅔	38 4⅚	33 15	23 1
12 3¾	38 4⅚ — altogether the same as the previous [omnino eadem cum priore]	33 50	24 45
12 12⅓	the same still, dist. precisely [eadem adhuc diſt. præciſe]	The altit. could not be had because of the chimney [Altit. ob caminum haberi non potuit.]	26 55
	Conversely, from the heart of Hydra [Vice verſa a Corde Hydræ.]		
12 21⅓	46 50½		29 3
12 30	the same dist., most exactly [eadem diſt. exactiß.]	35 45	31 10
12 35	46 50⅓	36 3	32 34
	Afterwards from the tail of ♌ [Poſtea a Cauda ♌]	Altit. of ♄ by the revolving Q. [Altit. ♄ per Q. Volub.]	Arcturus, east [Arcturus orient.]
12 45⅓	18 46	35 55⅚	35 7
12 54½	18 44 doubtful [dub.]	36 24⅚	37 56
1 3	18 46	36 34¾	34 3

Then ♄ was observed from Vindemiatrix ♍, in order to examine its altitude more exactly [Deinde obſeruabatur ♄ a Vindemiatrice ♍ pro altitudine eius exactius rimanda.].

1 16⅔	13 47⅚	37 6½	30 10
1 27⅙	13 47¾	37 19	

1 32: the meridian altitude of ♄ by the revolving quadrant was 37 20⅙ [1 32 Fuit Altitudo Meridiana ♄ per Quadrantem Volub. 37 20⅙]. Spica ♍ was then east, 12 7 [Fuit Spica ♍ tunc or. 12 7]. 1 42⅙: afterwards the distance of ♄ from Vindem. ♍ was taken again and found to be 13 47¾ [1 42⅙ Poſtea repetita diſtantia ♄ a Vindem. ♍, inuenta fuit 13 47¾]. Spica ♍ was then east, 10 27 [Fuit tunc Spica ♍ orient. 10 27].

Afterwards clouds rose towards the south, so that ♄ could no longer be seen there [Poſtea nubes verſus Meridiem exortæ ſunt, vt ♄ ibi amplius videri non potuerit.].

Afterwards, since it remained clear the whole time towards the north, we began — the plumb-line having been set up beforehand, before the hour, when

Schedar in Cassiopeia was in the plumb-line with the pole star — with the largest revolving quadrant, the least altitude of the pole star [Poſtea cum verſus ſeptentrionem ſemper ſerenum remaneret, cœpimus erecto ante horam antea perpendiculo, cum Schedir Caßiopeæ in perpendiculo eßet cum ſtella polari, per Quadrantem maximum volubilem minimam ſtellæ Polaris Altitudinem]

to investigate; and, with only a short time between, we found it three times, G. 51 M. 7⅙, most exactly [rimari, eamque ter adinuenimus exiguo interiecto tempore G. 51 M. 7⅙ exactißime.].

Afterwards it was repeated, G. 51 M. 7⅓, and that twice, with the greatest precision as well. Then it seemed to decrease imperceptibly, but we could not test this more often because of the clouds, which by now had covered the whole sky. So it will have to be tested tomorrow whether the quadrant is properly set up in every respect. If it is, there will be no doubt about the elevation of the pole; rather, the plumb-line is not right in this observation. For the quadrant was not set up well enough either [Poſtea ea repetita fuit G. 51 M. 7⅓ idque bis etiam ſumma præciſione. Deinde inſenſibiliter decreſcere viſa eſt, cuius rei ſæpius periculum facere ob nubes, quæ totum iam cœlum occuparant, non licuit. Experiundum itaque erit die craſtino, vtrum Quadrans per omnia rite diſpoſitus ſit. Quod ſi ſit, de eleuatione Poli nihil ambigendum erit, ſed perpendiculum ſe non recte habet in hac obſeruatione. Neque enim Quadrans ſatis bene erat diſpoſitus.].

These preceding observations must be verified from the altitudes, since none of them has yet been corrected exactly [Hæc antecedentia debent ex altitudinibus verificari, nam nulla adhuc ad amußim correcta ſunt.].

DIE 21 FEBRUARIJ [21 February]

♄ was observed from the heart of ☋ [obſeruabatur ♄ a Corde ☋.].

H. M.	Dist. of ♄ from the heart of ☋ [Diſt. ♄ a Corde ☋]	Alt. of the heart of ☋ [Alt. Cordis ☋]
12 13	37 40½	46 58

These preceding observations must be verified from the altitudes; for none of them has yet been corrected exactly [Hæc antecedentia debent ex altitudinibus verificari, nulla enim adhuc ad amußim correcta ſunt.].

No clear sky came afterwards, although we have now waited right up to the third [Nulla poſtea ſerenitas affulſit, quamuis ad tertiam vſque præſtolati ſimus nunc.].

DIE 23 FEBRUARIJ. [23 February]

♄ was observed in this way as it approached the meridian [Obſeruabatur ♄ in hunc modum Meridiano appropinquans.].

H. M.	Dist. of ♄ from the heart of ☋ [Diſt. ♄ a Corde ☋]	Altitude [Altitudo]	1
12 3⅙	37 35	47 30	42 20
12 8⅚	37 35 — exactly the same [prorſus eadem]	47 3	41 0

H. M.	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Altitude [Altitudo]	1
12 13⅔	37 35 Conversely, ♄ from Spica ♍ [Vice verſa ♄ a Spica ♍.]	46 38 Altit. of Aldeb. [Altit. Aldeb.]	39 46
12 19½	17 8	45 50	37 53
12 50⅚[2]	17 7½	45 7	35 45
12 34⅙	17 7½	44 30	34 4

12 53⅙: ♄ crossed the meridian, with an altitude on the revolving quadrant of 38 6⅚ [12 53⅙ Tranſiuit ♄ per Meridianum habens Altitudinem in Quadrante Volubili 38 6⅚].

12 55: the altitude of the heart of ♌ was then 42 4 [12 55 Erat tunc Altit. Cordis ♌ 42 4]. Arcturus, east, 28 0 [Arcturus orient. 28 0].

Finally the pole star also crossed the meridian, having an altitude by the revolving quadrant of 50 44 [Demum & Polaris ſtella Meridianum tranſiuit, habens in altitudine per Quadr. Volub. 50 44].

This was repeated many times, both when the pole star was in the vertical with Schedar in Cassiopeia and also when it was in the vertical with the girdle [Eaque multoties repetita tum, cum ea Schedir Caßiopeæ eßet perpendicularis, tum quoque cingulo.].

Yet no change in the altitude in the meantime could be discerned by keenness of sight. In this way we also investigated the meridian line, both by Schedar and by the girdle [Altitudo tamen quod mutaretur interea, viſus acumine diſcerni non potuit. Lineam quoque meridianam hoc modo tum ad Schedir, tum quoque ad cingulum rimati ſumus.].

The revolving quadrant was set up properly enough [Quadrans Volubilis ſatis rite diſpoſitus fuit.].

We made no test with the armillae, for it could have been done only very approximately [In armillis periculum non fecimus. Nec enim niſi valde platice id fieri potuit.].

To establish the altitude of the pole properly [Pro Poli altitudine rite conſtituenda.]:

The pole star is distant from the pole at about this time [Stella Polaris diſtat a Polo circa hoc tempus]	2°51′45″
Meridian altitude of the pole star [Altitudo Merid. Polaris]	50 44
Altitude of the pole [Altitudo Poli]	53 35 45
But the heart of ♌ has a meridian altitude of [At Cor ♌ habet Alt. Merid.]	50 21 45
Declination this year [Hoc anno Declin.]	13 54
Altitude of the equator [Altit. æq.]	36 27 45

Altitude of the pole [Altit. Poli]	53 32
Put [Pone]	53 35
Canicula, meridian altitude [Canicula Alt. Merid.]	42 39
Declination [Declin.]	6 12½
Altitude of the equator [Altit. æq.]	36 26½
The pole [Polus]	53 33½
True altitude [Vera altit.]	53 35½

On this you can rely well enough as the principal value [Cui potes pro præcipuo te ſatis fundare.].

These preceding observations must be verified from the altitudes; for none of them has yet been corrected exactly [Hæc antecedentia debent ex Altitudinibus verificari, nulla enim adhuc ad amußim correcta ſunt.].

DIE 2 MARTIJ. [2 March]

12ᴴ 22½′: the tail of ♌ in the meridian, altitude by the revolving Q. 53 14½ [12ᴴ 22½′ Cauda ♌ in meridiano, Altit. per Q. Volub. 53 14½]. Arcturus, east, 39 10 [Arcturus orient. 39 10]. Decl. of the tail of ♌ 16 50, alt. of the pole 53 35½ [Decl. Caudæ ♌ 16 50, Alt. Poli 53 35½]

[1] The name and position of the star are missing in the codex. Perhaps it was Arcturus, towards the east [Nomen et ſitus ſtellæ deſunt in codice. Forſitan Arcturus verſus orientem fuerit.].

[2] So in the codex. It should be about 27⅚ [Sic in codice. Debet eße circiter 27⅚.].

Afterwards ♄ was observed in this way, I from the heart of ♌ [Poſtea obſeruabatur ♄ in hunc modum, I a Corde ♌.].

H. M.	Distance [Diſtantia]	Alt. of the heart of ♌ [Alt. Cordis ♌]	Arcturus, east [Arcturus orient.]
12 40⅔	37 0⅙	44 40	34 46
12 48⅙	37 0	43 50	33 4
12 51½	37 0	43 26	32 5
	Conversely, ♄ from Spica ♍ [Vice verſa ♄ a Spica ♍.]		
1 2½	17 37⅚	42 40	29 35
1 11⅙	17 38⅙	41 50	27 21
1 16⅙	17 37⅚	41 8	26 22

The least altitude of the pole star was found, when it was precisely in the vertical at the space midway between Schedar and the girdle of Cassiopeia, by the revolving quadrant: 50 43⅚. The meridian line was also found, as far as could be done in this way with the large ruler, which does not reach from one side of the floor to the other. Therefore the result found will still have

to be tested in another way, by a long cord rubbed with chalk, so that it can be relied on safely [Altitudo ſtellæ Polaris minima inuenta fuit, cum præciſe in perpendiculo eßet intermedio ſpatio inter Schedir & Cingulum Caßiopeæ per Quadr. Volubilem 50 43⅚. Linea quoque Meridiej, quantum hoc pacto per lineale magnum fieri potuit, quod non ſe extendit ab vna Tabulati parte ad aliud inuenta eſt. Quare inuenta eſt res adhuc alio modo, per funem longum creta infectum exploranda erit, vt tuto ej fidi poßit.].

But the least alt. of the pole star [At ſtellæ Polaris min. alt.]	50 43 50
Distance from the pole now [Diſtantia a Polo nunc]	2 51 45
	53 35 35
Merid. altit. of the heart of ♌ [Cordis ♌ Altit. Merid.]	50 21
Declination [Declinatio]	13 54
	36 27
	53 33
Elevation of the pole, by the mean of these [Per medium harum eleuatio Poli]	53 34¼

DIE 3 MARTIJ. [3 March]

11ᴴ 57ᴹ: there was observed by the revolving Q. the merid. altit. of the tail of ♌, 53 15 [11ᴴ 57ᴹ obſeruabatur per Quadr. Vol. Altit. Merid. Caudæ ♌ 53 15]. *Decl. 16 50. Alt. of the equator 36 25* [*Alt. æquat. 36 25*]. 12 38⅚: merid. altitude of ♄ by the revolving Q. 38 24⅓ [12 38⅚ Altitudo Merid. ♄ per Quadr. Volub. 38 24⅓]. Arcturus was east, among clouds, 27 55 [Erat Arcturus orient. inter nubes 27 55]. *Hence the declination of* ♄ *comes out 1 59 B.* [*Prouenit hinc Declin.* ♄ *1 59 B.*]

Afterwards ♄ in this way, I. from the heart of ♌ [Poſtea ♄ in hunc modum, I. a Corde ♌.].

H. M.	Distance [Diſtantia]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus orient.]
12 48½	36 52 — among clouds [inter nubes]	40 45	25 28
12 55⅙	36 54½	39 56	24 48
1 2	36 54½ Conversely, ♄ from Spica ♍ [Vice verſa ♄ a Spica ♍.]	39 14	23 21
1 15⅓	17 36 — among clouds [inter nubes]	37 45	19 1
1 24⅔	17 40	36 30	18 19
1 35⅓	17 40	35 22	

Because of the very frequent clouds around the north, the pole star could not be seen until a quarter of an hour after it had crossed the meridian [Stella Polaris ob crebras admodum nubes circa ſeptentrionem videri non potuit, niſi quadrante horæ poſtquam Meridianum tranſiuißet.].

Afterwards, at H. 1 M. 44, the meridian altitude of Spica ♍ by the revolving Q. was 27 25 [Poſtea H. 1 M. 44 Altit. Spicæ ♍ meridiana per Quadr. Vol. 27 25.].

It was somewhat clear towards the south [Erat nonnihil ſerenum verſus meridiem.].

DIE 4 MARTIJ. [4 March]

10ᴴ 32ᴹ: the clock was corrected, which since yesterday at H. 3½ in the afternoon had run faster than it should, by 28 minutes in time. From this the other intermediate times should be estimated proportionally [10ᴴ 32ᴹ Corrigebatur horologium quod motum fuit iuſto celerius ab heſterno die H. 3½ Pomeridiana in tempore 28 Minut. Hinc cœtera intermedia tempora proportionabiliter æſtimentur.].

At the end of the year 1585 Spica had a declination observed by me of 8° 56⅓′. And since in 100 years it changes by 32½′....., there correspond therefore 4′ for the 12 years up to now, so that its true declination is now 9 0¼, taking the elevation of the pole as 53 35 and [*Anno 1585 completo habuit ſpica declinationem obſeruatam a me 8° 56⅓′. Cumque per 100 annos 32½ mutetur Minutis....., reſp. igitur 4 Minuta pro annis 12 hucusque, vt ſit nunc vera eius declinatio 9 0¼, ponendo eleuationem Poli 53 35 &*]

altitude of the equator [*altitud. æquat.*]	*36 25¼*
	27 25
The same comes out [*Prouenit eadem*]	*9 0¼*

Therefore such an elevation of the equator had also been used before for ♄*, by which its declination is correctly established in this way* [*Igitur & talis æquatoris eleuatio in* ♄ *antea vſurpata erat, quo eius Declinatio recte conſtet in hunc modum.*]:

Altitude of ♄ [*Altitudo* ♄]	*38 24⅓*
	36 25¼
Northern declination [*Declin. borea*]	*1 59*

DIE 6 MARTIJ. [6 March]

♄ was observed in this way, I from the heart of ♌ [Obſeruabatur ♄ in hunc modum I a Corde ♌.].

H. M.	Dist. [Diſt.]	Altitude of the heart of ♌ [Altitudo Cordis ♌]	Arcturus, east [Arcturus orient.]
11 47⅙	36 42⅔	44 30	34 12
11 51½	36 42⅔	44 4	33 7
11 55⅔	36 42⅔	43 33	31 59

Afterwards ♄ crossed the meridian, with an altitude by the revolving quadrant of 38 29½ [Poſtea tranſiuit ♄ per Meridianum habens Altitud. per Quadrantem Volub. 38 29½].

The very small star preceding ♄ could not be taken at all because of the brightness of the Moon [Minutula ♄ præcedens ſtella omnino ob ☾æ ſplendorem capi non potuit.]. 12ᴴ 8⅝ Arcturus, east, 28 47 [12ᴴ 8⅝ Arcturus orient. 28 47].

Meanwhile, while we were obliged to attend to the pole star, the third of the wing passed. We preferred that to neglecting this one [Interim dum Polari cogimur intenti eße tertia alæ præterijt. Quod maluimus quam hanc negligere.].

We now seem to have found the meridian line exactly, and to have marked it on both sides, when the pole star was in the vertical between Schedar and the girdle of Cassiopeia [Lineam Meridiej exacte iam videmur adinueniße, & ab vtraque parte ſignaße, cum Polaris in perpendiculo eßet inter Schedir & cingulum Caßiopeæ.].

Least altitude of the pole star, most exactly [Stellæ Polaris altitudo minima exactißime]	50 44
	2 51 45
	53 35 45

From the heart of ♌, at almost the same altitude, the elevation comes out 53 35 15, a difference of 30″ [*Ex Corde ♌ in conſimili fere altitudine prouenit eleuatio 53 35 15, differentia 30″.*].

Afterwards the merid. altitude of Vindemiatrix ♍ by the revolving Q. was 49 34⅙, exactly, as far as the upper floor allowed [Poſtea altitudo vindemiatricis ♍ merid. per Q. Volub. 49 34⅙ exacte, quatenus per ſuperius tabulatum licuit.].

This gives the altitude of the pole 53 35 [*Dat altitudinem Poli 53 35*].

Conversely, ♄ from Spica ♍ [Vice verſa ♄ a ſpica ♍.].

H. M.	Distance [Diſtantia]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus orient.]
12 57⅓	17 53⅓	36 20	16 32
			The heart of Hydra, west [Cor Hydræ occ.]
1 3⅓	17 53½	35 37	57 7
1 7⅙	17 53⅓	35 3	58 19
			Arcturus, east [Arcturus or.]
1 15	17 53⅓	34 0	11 40

1 7⅙: Spica ♍ crossed the meridian, having an altit. of 27 24 [1 7⅙ Tranſiuit ſpica ♍ per Meridianum habens altit. 27 24].

To test the sextant: the dist. of the heart of ♌ and Spica ♍, 54 0, three times, exactly [Pro Sextante examinando diſt. Cordis ♌ & ſpicæ ♍ 54 0 ter exacte.].

It should be 54 2; therefore two minutes are lacking [*Debet eße 54 2, ergo duo minuta deficiunt.*].

Examination of the preceding observations for the altitude of the pole [*Examinatio antecedentium obſeruationum pro poli altitudine.*]

Meridian altitude of the heart of ♌ [*Cordis* ♌ *altitudo meridiana*]	*50 19*
Declin. at this time [*Declin. hoc tempore*]	*13 54¼*
Altitude of the equator [*Altitudo æquatoris*]	*36 24¾*
Therefore the altit. of the pole [*Ergo altit. Poli*]	*53 35 15*

Again, from the pole star towards the north [*Rurſus ex ſtella Polari verſus Boream*]:

The least altitude of the pole star was observed [*Altitudo ſtellæ Polaris minima eſt obſeruata*]	*50 44*
Altitude of the pole [*Altitudo Poli*]	*53 35 45*

The exact altitude of the pole, therefore [*Exacta itaque Poli Altitudo*]:

at Wandsbek [*Wandesburgi*]	*53 35½*
Hence at Hamburg it was [*Quare Hamburgi erat*]	*53 34½*
Altitude of Spica ♍ [*Spicæ* ♍ *altitudo*]	*27 24 0*
Altitude of the equator [*Altitudo æquatoris*]	*36 24 20*
Altitude of the pole [*Altitudo Poli*]	*53 35 40*

which agrees well enough [*quod ſatis concordat.*]

Put therefore [*Pone itaque*]	*53 35½*
Meridian altit. of ♄ [*Altit.* ♄ *meridiana*]	*38 29 30*
Altitude of the equator [*Altitudo æquatoris*]	*36 24 30*
Declination B. [*Declinatio B.*]	*2 5 0*

DIE 7 MARTIJ. [7 March]

♄ was observed as follows, I from the heart of ♌ [Obſeruabatur ♄ vt ſequitur, I a Corde ♌.].

H. M.	Distance [Diſtantia]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus orient.]
11 42	36 39	45 20	36 21

H. M.	Distance [Diſtantia]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus orient.]
11 47	36 39	44 53	35 6
11 51 1/12	36 39	44 30	34 3
	Conversely, ♄ from Spica ♍ [Vice verſa ♄ a ſpica ♍.]		
11 59 1/6	18 0	43 32	32 1
12 1 2/3	18 0¼	43 7	31 16
12 5 1/6	18 0	42 50	30 23

The very small star and the first in the wing of ♍ could not be had in the meridian at all because of the brightness of the Moon [Minutula & prima in ala ♍ omnino ob ☾æ ſplendorem in Meridiano haberi non potuit.].

12 12½: ♄ crossed the merid., having an altit. on the revolving quadr. of 38 30 [12 12½ Tranſijt ♄ per Merid. habens Altit. in Quadr. Volub. 38 30]. Arcturus, east, 27 35 [Arcturus orient. 27 35].

12 25 1/3: the merid. altit. of the third in the wing of ♍ was 37 11 1/3 [12 25 1/3 Fuit altit. Merid. tertiæ in ala ♍ 37 11 1/3]. Arcturus, east, 25 14 [Arcturus orient. 25 14].

At the same time we also attended to the pole star, when it was in the vertical between Schedar and the girdle of Cassiopeia, and the least altitude of the pole star was found to be precisely 50 44 [Attendimus etiam ſimul ad Polarem, cum in perpendiculo eßet inter Schedir & cingulum Caßiopeæ, & inuenta fuit præciſe Altitudo ſtellæ Polaris minima 50 44].

The meridian line was found to be plainly the same. At the same moment, when we directed the lesser brass azimuthal quadrant at the pole star, we found precisely 0′ [Linea Meridiej plane eadem inuenta eſt. Eodem momento, cum Quadrantem Minorem orichalcicum Azimuthalem ad Polarem dirigeremus præciſe 0′ adinuenimus.].

12ʰ 49 2/3′: Vindemiatrix ♍ crossed the merid., having an altit. of 49 33½ [12ʰ 49 2/3′ Tranſiuit Vindemiatrix ♍ per Merid. habens altit. 49 33½]. Arcturus, east, 19 23 [Arcturus orient. 19 23].

1 8½: Spica ♍ crossed the merid., having an altit. of 27 24 1/3 [1 8½ Tranſiuit ſpica ♍ per Merid. habens altit. 27 24 1/3]. Arcturus, east, 14 23 [Arcturus orient. 14 23].

Examination of the preceding observations as regards the altitudes and the pole [*Examinatio obſeruationum præcedentium quoad altitudines & Polum.*]

Towards the south, the heart of ♌ *behaves as before, and gives exactly the same altitude of the pole, namely 53 35¼, since the meridian altit. was the same* [*Verſus meridiem Cor* ♌ *habet ſe vt prius, datque eandem prorſus altitudinem Poli nempe 53 35¼, ſiquidem eadem fuit altit. meridiana.*].

The third of the wing of ♍ [*Tertia alæ* ♍]

Observed altitude [*Altitudo obſeruata*]	*37 11 20*
Declination now [*Declinatio nunc*]	*0 47 0*
Altitude of the equator [*Altitudo æquatoris*]	*36 24 20*
Elevation of the pole [*Eleuatio Poli*]	*53 35 40*

They exceed by at least ⅙ M. [*Abundant ſaltem ⅙ M.*]

Spica ♍, altit.	*27 24⅓*
Declination [*Declinatio*]	*9 0 10*
Altitude of the equator [*Altitudo æquatoris*]	*36 24 30*
Altitude of the pole, agreeing exactly [*Altitudo Poli, exacte congruens,*]	*53 35 30*
Vindemiator, observed alt. [*Vindemiator, alt. obſ.*]	*49 33½*
Declination [*Declinatio*]	*13 9*
Exact altit. of the equator [*Exacte altit. æquat.*]	*36 24½*

Towards the north [*Verſus ſeptentrionem*]

Least altitude of the pole star [*Altitudo Polaris minima*]	*50 44*
Distance from the pole [*Diſtantia a Polo*]	*2 51 45*
Altitude of the pole [*Altitudo Poli*]	*53 35 45*

You will therefore be able to use, as the altitude of the pole here at Wandsbek, quite precisely and without the loss of a sixth part of one minute, p. 53 35½ [*Poteris itaque vti altitudine Poli hic Wandesburgi ſatis præciſe & absque ſextæ partis vnius Minuti iactura p. 53 35½*]; *at Hamburg p. 53 35* [*Hamburgi p. 53 35*].

Altit. of ♄ observed the preceding night [*Altit. ♄ præcedente nocte obſeruata*]	*38 30 0*
Altitude of the equator [*Altitudo æquatoris*]	*36 24 30*
Declination of ♄ [*Declinatio ♄*]	*2 5 30*
R. asc. of the heart of ☋ [Aſc. R. Cordis ☋]	146 43
Angle of the ascensional diff. [Ang. diff. aſcenſ.]	35 10 40
R. asc. of ♄ [Aſc. R. ♄]	181 53 40
R. asc. of Spica ♍ [Aſc. R. Spicæ ♍]	196 2 0
Angle of the ascensional diff. [Ang. diff. aſcenſ.]	14 6 10
R. asc. of ♄ [Aſc. R. ♄]	181 55 50
R. asc. of ♄, limited [Aſc. R. ♄ limitata]	181 54 45

From this and the declination the true place of ♄ was computed: 0° 50′ 42″ ♌, 2° 40′ 0″ B. [Ex hac & declinatione ſupputatus eſt verus locus ♄ 0° 50′ 42″ ♌, 2° 40′ 0″ B.]

For the sixth day [Ad diem ſextum]	Longit. of ♄ [Longit. ♄]	Latit.
Copern. calc. [Calc. Copern.]	1 27½ ♎	2 19 Bor.
Alfonsine [Alphonſinus]	2 18½	2 47 Bor.
Observed place [Locus obſeruatus]	0 55⅗	2 40½ B.

For the seventh day [Ad diem ſeptimum]

According to Copernicus [Iuxta Copernicum]	1 22½	2 19 B.
the Alfonsines [Alphonſinos]	2 13½	2 47 B.
my observation [Obſeruat. meam]	0 50 42	2 40 B.

DIE 9 MARTIJ. [9 March]

♄ was observed in this way. I from the heart of ☌ [Obſeruabatur ♄ in hunc modum. I a Corde ☌.].

H. M.	Distance [Diſtantia]	Altit. of Procyon [Altit. Procyonis]	Arcturus, east [Arcturus orient.]
11 7	37 6[1]	22 13	39 19
11 10⅓	37 5[1]	21 35	38 14
11 13½	37 5 twice[1] [37 5 bis[1]]	21 13	37 34
	Conversely, ♄ from Spica ♍ [Vice verſa ♄ a ſpica ♍.]	Alt. of the lower head of ♊ [Alt. inf. Cap. ♊]	
11 18⅔	18 6	38 45	36 19
11 22⅙	18 5	38 12	35 24
11 24½	18 5	37 55	34 55

These distances could not be taken as exquisitely as they should have been, because of the excessive brightness of the Moon [Hæ diſtantiæ non ita exquiſite atque debuerant capi potuerunt ob nimium ☾æ ſplendorem.].

11 54⅓: ♄ crossed the meridian, having an altitude by the revolving quadr. of 38 33⅚ [11 54⅓ Tranſiuit ♄ per meridianum habens Altitudinem per Quadr. Volub. 38 33⅚]. Arcturus was then east, 27 15 [Erat tunc Arcturus orient. 27 15].

12 5⅓: the third of the wing of ♍ crossed the merid., having an altitude by the revolving quadr. of 37 12, exactly, as far as the excessive brightness of the Moon allowed [12 5⅓ Tranſiuit tertia alæ ♍ per merid. habens Altitud. per Quadr. Volub. 37 12 exacte quatenus ob nimium ☾æ ſplendorem licuit.].

Then the least altit. of the pole star was found to be 50 44, precisely as before [Deinde Polaris ſtellæ altit. minima inuenta fuit 50 44 præciſe vt antea.].

And the lesser brass quadrant confirmed precisely the meridian line we had found before, so that not the slightest difference could be perceived by any keenness of sight [Et Quadrans minor orichalcicus præciſe lineam meridiej a nobis antea adinuentam comprobauit, vt nulla differentiola vllo viſus acumine percipi potuerit.].

Least altitude of the pole star by the same, 50 45 [Altitudo ſtellæ Polaris minima per eundem 50 45].

Merid. altitude of Vindemiatrix ♍ by the revolving quadr., 49 34 [Altitudo Vindemiatricis ♍ merid. per Quadr. Volub. 49 34].

1ʰ 47ᵐ: merid. alt. of Spica ♍ by the revolving Q., 27 24½ [1ʰ 47ᵐ Alt. mer. ſpicæ ♍ per Q. Volub. 27 24½]. Arcturus was east, 14 4 [Erat Arcturus orientalis 14 4].

[1] Struck through with lines. Tycho added: *It should be 36 31* [Lineis inductæ. Adſcripſit Tycho: *Debet eße 36 31.*].

DIE 13 MARTIJ. [13 March]

In the evening, when the pole star stood p. 4 M. 30 from the meridian on the lesser brass azimuthal quadrant, the equatorial distance of the heart of ♌ from the meridian was 27 17 [*Veſperi cum ſtella Polaris diſtaret a meridiano in Quadrante minori orichalcico Azimuthali p. 4 M. 30, erat diſtantia Cordis ♌ æquatoria a meridiano 27 17*].

The clock showed [*Horologium monſtrabat*]	*7ʰ 44½ᵐ*
The altitude of the bright shoulder of Orion was, by the lesser quadr., [*Fuit Altitudo lucidi Humeri Orionis per Quadr. minorem*]	*36⅔*
The altitude of the tail of Cygnus was [*Altitudo Caudæ Cygni erat*]	*7 43*
Altitude of the pole star [*Altitudo ſtellæ Polaris*]	*52 20*

The pole star and the bright star of the tail of Cygnus, moreover, were in the same vertical circle by the plumb-line [*Erant autem ſtella Polaris & lucida Caudæ Cygni in eodem circulo verticali ad perpendiculum.*].

9ʰ 32ᵐ: merid. altitude of the heart of ♌, 50 19 [9ʰ 32ᵐ Altitudo mer. Cordis ♌ 50 19]. Arcturus, east, 63 3 [Arcturus orientalis 63 3].

Then ♄ was observed in this way [Deinde obſeruabatur ♄ in hunc modum.]. I from the heart of ♌ [I a Corde ♌.].

H. M.	Dist. [Diſt.]	Altit. of Canis Minor [Altit. Canis min.]	Arcturus, east [Arcturus orient.]
10 38⅙		25 48	46 15
10 45	36 13¼	24 56	44 30
10 51⅚	36 13	24 8	42 46
10 55⅓	36 13	23 29	41 51

H. M.	Dist. [Diſt.]	Altit. of Canis Minor [Altit. Canis min.]	Arcturus, east [Arcturus orient.]
11 1	36 13½	22 47	40 29
11 5⅚	36 13½	Altit. of the heart [Altit. Cordis]	39 15½
11 11	36 13½	45 51	38 2½

These observations were obtained with great difficulty because of the excessive brightness of the Moon, although we had carefully guarded against this [Valde difficulter hæ obſeruationes habitæ ſunt ob nimium ☾æ ſplendorem, quamuis ſtudioſe hoc præcauerimus.].

Conversely, ♄ from Spica ♍ [Vice verſa ♄ a ſpica ♍.].

H. M.	Distance [Diſtantia]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus orient.]
11 25⅙	18 27 doubtful [18 27 dubia]	44 32	34 38
11 30⅓	18 26	44 0	33 20
11 33⅙	18 26	43 44	32 35⅚
11 36⅓	18 26⅙	43 16	31 42

11 50: ♄ crossed the meridian; it was observed by the greater revolving quadr. at an altitude of 38 42⅙, most exactly [11 50 Tranſiuit ♄ per Meridianum, obſeruabatur per Quadr. Volub. maiorem in altitudine 38 42⅙ exactißime.]. Arcturus, east, 28 55 [Arcturus orient. 28 55].

Since these observations were taken from Spica ♍, and the Moon was very close to it, it seemed good to take ♄'s distance from Arcturus as well [Cum hæ obſeruationes a Spica ♍ acceptæ ſint & ☾ ei admodum propinqua fuerit, etiam ab Arcturo ♄^{ni} diſtantiam ſumere viſum eſt.].

12^{H} 7^{M}: merid. altit. of the third in the wing of ♍, by the greater quadr., 37 12½ [12^{H} 7^{M} Altit. merid. tertiæ in ala ♍ per Quadr. maiorem 37 12½]. Arcturus, east, 24 33 [Arcturus orient. 24 33].

It could be obtained only with great difficulty, and only with the pinnules widened [Difficulter admodum haberi potuit, nec niſi dila tatis pinnacidijs.].

N.B. That Spica and the 3rd of the wing were taken half a minute higher than before was the Moon's doing, through its light close to ♄; so [?] well does the matter stand because of its persisting appearance [*N.B. Quod ſpica & alæ 3*^{tia} *dimidio minuto altiores acceptæ ſint quam antea, fecit ☾ per ſuum lumen propinquum in ♄, tam res bene ſe habet ob manentem eius apparentiam.*].

Least altitude of the pole star by the greater revolving quadr., 50 44, exactly [Altitudo ſtellæ Polaris minima per Quadr. Volub. maior. 50 44 exacte].

At the same moment the lesser brass quadrant was found to be so set that on the front side, where the handle is, the azimuth was found to be M. 40 east, and on the other side M. 36 [Inuentus eſt eodem momento Quadrans minor

orichalcicus ita diſpoſitus, vt in priori parte, vbi manubrium eſt, inuentum fuerit Azimuth orientale M. 40, ab altera parte M. 36.].

Afterwards ♄ from Arcturus [Poſtea ♄ ab Arcturo.].

H. M.	Distance [Diſtantia]	Altitude of the heart of ☌ [Altitudo Cordis ☌]	Arcturus, east [Arcturus orient.]
12 32⅙	33 15	37 17	18 19⅔
12 36½	33 15	36 42	17 10½
12 38⅓	33 15	36 25	16 41
	Conversely, from the tail of ☌ [Vice verſa a Cauda ☌.]		
12 46⅓		35 19	14 37
12 55⅚	17 12 twice [17 12 bis]	34 7	12 14
1 11½	17 12	33 14	8 44

12 49⅔: meridian altitude of Spica ♍ by the revolving quadr., 27 25 [12 49⅔ Spicæ ♍ altitudo meridiana per Quadr. Volub. 27 25]. Arcturus, east, 13 43 [Arcturus orient. 13 43].

DIE 14 MARTIJ. [14 March]

♄ was observed in this way [Obſeruabatur ♄ in hunc modum.]. I. from the heart of ☌ [I. a Corde ☌.].

H. M.	Distance [Diſtantia]	Altit. of the heart of ☌ [Altit. Cordis ☌]	Arcturus, east [Arcturus orient.]
10 30½	36 9	49 6	49 41½
10 35⅚	36 10 twice [36 10 bis]	48 44	48 21½
10 40⅚	36 10 exactly [36 10 exacte]	48 19	47 8
	Conversely, ♄ from the tail of ☌ [Vice verſa ♄ a Cauda ☌.]		
10 51¼	17 12	47 43	44 27½
10 54¾	17 12	47 14	43 25
11 8⅓	17 12⅙	46 33	40 6
11 14½	17 12⅙	46 0	38 27
	Afterwards from Spica ♍ [Poſtea a Spica ♍.]		
11 24⅚		45 4	36 0
11 28⅚	18 32 twice [18 32 bis]	44 38	35 15

H. M.	Distance [Diſtantia]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus orient.]
11 32¼	18 32	44 18	34 17½
11 36⅔	18 32 exactly [18 32 exacte]	44 5	33 10

Conversely, from Arcturus [Vice verſa ab Arcturo.].

11 48¾	33 16½	42 53	30 6
11 53	33 14½[1] doubtful [33 14½[1] dub.]	42 10	27 47
12 5⅔	33 16½	40 47	25 44
12 10⅚	33 16½	40 19	24 30

11 53: ♄ crossed the meridian, having an altitude by the revolving quadr. of 38 44, precisely [11 53 Tranſiuit ♄ per Meridianum habens Altitudinem per Quadr. Volub. 38 44 præciſe]. Arcturus, east, 27 47 [Arcturus orient. 27 47].

12 16: the third of the wing of ♍ crossed the merid., having an altit. by the revolving quadr. of 37 12 [12 16 Tranſiuit tertia alæ ♍ per Merid. habens altit. per Quadr. Volub. 37 12].

At the same moment the merid. altitude of the pole star was found to be entirely the same as before, namely 50 44. And the lesser brass quadrant seemed to agree with this: for when it was turned round to the pole star, 0ᴹ was found in azimuth on both sides [Eodem momento ſtellæ Polaris Altitudo Merid. omnino eadem cum prioribus adinuenta fuit nimirum 50 44. Et Quadrans minor orichalcicus conuenire cum hoc viſus eſt. Nam cum ad Polarem circumageretur in Azimutho 0ᴹ vtrinque adinuentum fuit.].

♄ could not be had at all from the third of the wing of ♍, because of faintness and the brightness of the Moon [♄ a tertia alæ ♍ omnino haberi non potuit ob exilitatem & ☾æ ſplendorem.].

12ᴴ 56⅚ᴹ: transit of Spica ♍ across the meridian, at an altit. by the revolving quadr. of 27 24⅓ [12ᴴ 56⅚ᴹ Tranſitus ſpicæ ♍ per Meridianum in Altit. per Quadr. Volub. 27 24⅓]. Arcturus, east, 13 2 [Arcturus orient. 13 2].

DIE 15 MARTIJ. [15 March]

♄ was observed in this way, and I from the heart of ♌ [Obſeruabatur ♄ in hunc modum & I a Corde ♌.].

H. M.	Distance [Diſtantia]	Altit. of Procyon [Altit. Procyonis]	Arcturus, east [Arcturus orient.]
10 35¼	36 4	26 27	46 44
10 38½	36 4	25 55	45 52

H. M.	Distance [Diſtantia]	Altit. of Procyon [Altit. Procyonis]	Arcturus, east [Arcturus orient.]
10 41¼	36 4	25 35	45 9
	Conversely, ♄ from Spica ♍ [Vice verſa ♄ a ſpica ♍.]	Altit. of the heart of ♌ [Altit. Cordis ♌]	
10 57	18 35⅚	47 10	41 11
10 59⅔	18 35⅚	46 47	40 25
11 2⅓	18 36	46 30	39 43
	Afterwards ♄ from the tail of ♌ [Poſtea ♄ a Cauda ♌]		
11 11¼	17 5¼	45 55	37 34
11 13⅙	17 5	45 40	37 5
11 16⅚	17 5	45 20	36 14
11 18⅔	17 5	45 6	35 40
	Then ♄ from Arcturus [Deinde ♄ ab Arcturo.]		
12 31⅔	33 18½	37 20	17 33½
12 35¼	33 18½	36 43	16 30
12 38¾	33 18½	36 26	15 44

11 46⅔: ♄ crossed the meridian, having an altitud. by the greater revolving quadr. of 38 46, precisely [11 46⅔ Tranſiuit ♄ per Meridianum habens Altitud. per Quadr. Volub. maiorem 38 46 præciſe]. Arcturus, east, 28 44½ [Arcturus orientalis 28 44½].

Transit of the 3rd of the wing of ♍ across the meridian, at an altitude by the revolving instrument of 37 11⅓ [Tranſitus 3^{tiae} alæ ♍ per Meridianum in altitudine per Volub. 37 11⅓].

Least altitude of the pole star by the revolving quadr., 50 44 [Altitudo ſtellæ Polaris minima per Quadr. Volub. 50 44].

At the same moment the lesser brass quadrant, directed at the pole star, showed 0′ on both sides [Quadrans minor orichalcicus eodem momento 0′ vtrinque monſtrauit directus ad Polarem.].

12^{H} 48^{M}: Spica ♍ crossed the merid., having an altit. of 27 24⅓ [12^{H} 48^{M} Tranſiuit ſpica ♍ per Merid. habens altit. 27 24⅓]. Arcturus, east, 13 35½ [Arcturus orientalis 13 35½].

Note: the observations of this night are good enough, for the Moon did not hinder at all, as it did before [*Nota: obſeruationes huius noctis ſunt ſatis bonæ, nam ☾ nihil vt antea impediebat.*].

DIE 16 MARTIJ. [16 March]

♄ was observed in this way [Obſeruabatur ♄ in hunc modum.]. I from the heart of ♌ [I a Corde ♌.].

H. M.	Distance [Diſtantia]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus orient.]
10 51⅚	36 0⅓	46 36	
10 55	36 0⅓	46 20	
11 2⅓	36 0⅓	45 47	
	Conversely, from Spica ♍ [Vice verſa a ſpica ♍.]		
11 15⅓	18 40	44 30	33 40

No more could be taken because of very thick clouds that suddenly arose [Plura ob craßißimas nubes ſubito exorientes capi non potuerunt.].

11 35: merid. altit. of ♄ by the revolving quadr., 38 47, doubtful[2], among thick clouds [11 35 Altit. ♄ merid. per Quadr. Volub. 38 47 dubia[2], inter craßas nubes.]. None could be had in the equator [In æquatore nulla haberi potuit.].

DIE 18 MARTIJ. [18 March]

H. M.	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Altit. of Canicula [Altit. Caniculæ]	Arcturus, east [Arcturus orient.]
9 42	35 48⅔	31 14	56 37
9 50	35 48⅔	30 15	54 31
9 54⅙	35 48⅔	29 45	53 28

No more could be taken because of very thick clouds [Plura ob craßißimas nubes capi non potuerunt.].

DIE 20 MARTIJ. [20 March]

H. M.	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus orient.]
10 56	35 42⅙	47 20	42 24
11 0	35 42 twice [35 42 bis]	47 6	41 34
11 5	35 42	46 38	40 19

[1] Struck through with lines [Lineis inducta.]. [2] Tycho adds in the margin: »*It could be 48*« [Addit Tycho in margine: »*Poterat eße 48*«.].

Conversely, ♄ from Spica ♍ [Vice verſa ♄ a ſpica ♍.].

11 13	19 0	46 5	38 14
11 17	18 59	45 46	37 25

11 20	19 0	45 24	36 39⅙
11 23	19 0	45 6	35 52

11 49¼: ♄ crossed the meridian, having an altitude by the greater revolving quadr. of 38 52 [11 49¼ Tranſiuit ♄ per Meridianum habens altitudinem per Quadr. Volub. maiorem 38 52]. Arcturus, east, 29 31 [Arcturus orient. 29 31].

Afterwards ♄ from the 2nd of the wing of ♍ [Poſtea ♄ a 2 alæ ♍.].

12 6½	1 20⅓	40 39	25 16
12 20	1 20⅓	39 11	21 59
12 23⅓	1 19¾	38 50	21 15
12 29½	1 19¾	38 0	19 46
12 34	1 19¾		18 24

12 41: Spica ♍ crossed the merid., having an alt. by the revolving instrument of 27 23⅓ [12 41 Tranſiuit ſpica ♍ per Merid., habens alt. per Volub. 27 23⅓]. Arcturus, east, 14 43 [Arcturus orient. 14 43].

Afterwards ♄ from the 3rd of the wing of ♍ [Poſtea ♄ a 3 alæ ♍.].

12 47⅔	4 42⅚	34 36	13 2
12 51½	4 42¾	34 7	12 10
12 54⅚	4 41⅙ doubtful [4 41⅙ dub.]	33 47	11 16
1 5¼	4 42¾	32 26	

DIE 21 MARTIJ. [21 March]

♄ was observed in this way [Obſeruabatur ♄ in hunc modum.]. I from the heart of ♌ [I a Corde ♌.].

H. M.	Distance [Diſtantia]	Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus or.]
10 39⅓	35 38⅔	46 36	39 59
10 48	35 38⅔	46 4	37 49
10 53¼	35 37⅔	45 24	36 30
10 58	35 38⅔	45 0	35 17
	Conversely, ♄ from Spica ♍ [Vice verſa ♄ a ſpica ♍.]		
11 6⅔	19 5⅙	44 8	33 8
11 14	19 4⅚	43 19	31 17
11 37⅓	19 4⅚	40 41	25 29

11 21½: ♄ crossed the meridian, having in altitud. by the greater revolving quad. 38 53½ [11 21½ Tranſiuit ♄ per Meridianum habens in altitud. per Quad. Volub. maiorem 38 53½]. Arcturus, east, 29 25 [Arcturus orient. 29 25].

DIE 24 MARTIJ. [24 March]

♄ was observed from the heart of ♌ [Obſeruabatur ♄ a Corde ♌.].

H. M.	Distance [Diſtantia]	Altit. of Canicula [Altit. Caniculæ]	Arcturus, east [Arcturus orient.]
8 59⅔	35 23	33 30	61 45
9 4⅓	35 23	33 3	60 44
9 7½	35 23	32 45	59 50

Conversely, ♄ from the first of the wing of ♍ [Vice verſa ♄ a prima alæ ♍.].

9 25⅙	8 20	30 38	55 27
9 28½	8 20	30 10	54 35
9 32½	8 20	29 48	53 43

Afterwards from the third of the wing of ♍ [Poſtea a tertia alæ ♍.].

10 15⅓	4 58	24 27	43 38
10 16⅓	4 57⅚	24 0	42 48
10 20⅙	4 57⅚	23 39	42 0

Transits through the merid. by the greater revolving q. [Tranſitus per Merid. per Q. Vol. maior.]

H. M.		Altit. merid.	Arcturus, east [Arcturus or.]
10 41½	The first of the wing of ♍ [Prima alæ ♍]	40 21	36 59
11 10⅚	♄	39 0	29 47
11 30⅓	The third of the wing of ♍ [Tertia alæ ♍]	37 10½	25 5
12 14⅙	Spica ♍	27 24⅙	14 35

DIE 30 MARTIJ. [30 March]

10^{H} 59⅔^{M}: ♄ crossed the meridian, having in altit. by the greater revolving quadr. 39 11 [10^{H} 59⅔^{M} Tranſiuit ♄ per Meridianum habens in altit. per Quadr. Volub. maiorem 39 11]. Arcturus, east, could not be taken because of clouds that suddenly came on [Arcturus orient. ob nubes ſubito ingruentes non potuit capi.]. Spica ♍, east, 17 0 [Spica ♍ orientalis 17 0].

Then ♄ from the 1st of the wing of ♍ [Deinde ♄ a 1 alæ ♍.].

H. M.		Altit. of the heart of ♌ [Altit. Cordis ♌]	Arcturus, east [Arcturus or.]
11 24	7 49¾	39 40	24 23½
11 29⅓	7 53 These two were middling [?] [7 53 Hæ duæ mediæ fuerunt]	39 30	23 1
11 37⅚	7 51½ among clouds [7 51½ inter nubes]	38 40	21 3
11 50⅓	7 49¾	37 7	17 53
	Conversely, ♄ from the 3rd of the wing of ♍ [Vice verſa ♄ a 3 alæ ♍.]		
11 58⅚	5 18½ among clouds [5 18½ inter nubes]		15 56

No more could be had because of clouds that arose [Plura ob nubes exorientes haberi non potuerunt.].

DIE 26 MAIJ. [26 May]

♄ was observed around the second station in the manner that follows [Obſeruabatur ♄ circa ſtationem ſecundam in modum qui ſequitur.].

H. M.	Dist. of ♄ from the bright star of the neck of ♌ [Diſt. ♄ a luc. Ceruice ♌]	Altit. of ♄ [Altit. ♄]	Spica, west [Spica ♍ occid.]
10 10⅚	33 35	25 30	31 34
10 15¼	33 36 twice, *better* [33 36 bis, *melior*]	25 0	32 47
	Distance of ♄ from the tail of ♌ [Diſtantia ♄ a Cauda ♌]		
10 23¾	14 45¾[1] *doubtful* [14 45¾[1] *dubia*]	23 50	34 56
10 28¾	14 43¾	23 0	36 9
10 31⅓	14 43¾	22 50	36 48

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

Distance of ♄ from Spica ♍ [Diſtantia ♄ a Spica ♍.].

10 35⅓	21 31⅔	22 20	37 47
10 39⅙	21 31¾	21 40	38 46
10 42½	21 31⅔	21 30	39 37
	Distance of ♄ from Arcturus [Diſtantia ♄ ab Arcturo.]		
10 56⅔	34 56½	19 40	43 6
11 1⅓	34 57	19 0	44 10

This evening it was exceptionally clear and calm [Fuit hac veſpera apprime ſerenum & tranquillum.].

Recapitulation and limitation of all the observations of ♄ with respect to the distances from Spica and Regulus and the meridian altitudes, so that they may agree with one another more exactly [*Recapitulatio & limitatio omnium obſeruationum ♄ quoad diſtantias a Spica & Regulo atque altitudines meridianas quo ſibi inuicem exquiſitius conſentiant.*].

March [*Martij*]	*H.*	*Dist. from Regulus* [*Diſt. a Regulo*]	*Dist. from Spica* [*Diſt. a Spica*]	*Altit. merid.*
6	*12*	*36 43*	*17 54*	*38 29*
7	*12*	*36 39*	*18 0*	*38 30*
9	*11*	*36 31*	*18 5½*	*38 34*
13	*11*	*36 14*	*18 26*	*38 42*
14	*11*	*36 9½*	*18 31*	*38 44*
Around the opposition to the mean ☉ [*Circa ☍ ☉ med.*]				
15	*11*	*36 5*	*18 36*	*38 46*
16	*11*	*36 1*	*18 41*	*38 48*
20	11	35 42	19 0	38 52
21	11	35 38⅔	19 5	38 53½
24	9	35 23		39 0

The places of ♄ derived from these observations [Loca ♄ ex his obſeruationibus deducta.].

R. asc. [Aſc. R.]	Decl. N. [Decl. B.]	Long.	Lat. N. [Lat. Bor.]
181 55	2 4½	0 56 ♎	2 40 2
181 51½	2 5½	0 52	2 39 36
181 44	2 9½	0 43	2 40 0
181 26	2 17½	0 24	2 40 24
181 21½	2 19½	0 18 50	2 40½
181 16	2 21½	0 13 35	2 40½
181 11	2 23	0 8⅓	2 40
180 53½	2 27½	29 50 ♍	2 36 36
180 49½	2 29	29 45½	2 36 27
180 38	2 35½	29 32	2 37 44

DIE 27 MAIJ. [27 May]
♄ was observed as follows [Obſeruabatur ♄ vt ſequitur.].

H. M.	Dist. of ♄ from the bright star in the neck of ♌ [Diſt. ♄ a lucida in Ceruice ♌]	Spica, west [Spica ♍ occ.]
9 37⅓	33 36⅙ among clouds [33 36⅙ inter nubes]	30 44

Because of clouds it was not possible to observe more distances of this star (from the tail of ♌ and from Spica ♍) [Plures huius ſtellæ diſtantias (a Cauda ♌ & a Spica ♍) ob nubes obſeruare non licuit.].

OBSERVATIONS OF JUPITER [OBSERUATIONES IOUIS.]

DIE 21 FEBRUARIJ. [21 February]

♃ was observed from the star in the right shoulder of Orion. These first ones for the sake of the triangle [Obſeruabatur ♃ ab ea quæ in dextro humero Orionis. Propter triangulum hæc priora.].

H. M.	♃ from the lesser and right shoulder of Orion [♃ a minori & dextro humero Orionis]	Altitude of Aldebaran [Altitudo Aldeboræ]
8 38	18 2	35 57
8 44	18 4	35 8
8 48	18 3	34 45

This distance is to be limited, and part. 18 2′ is to be adopted [Limitanda hæc diſtantia & ponendum part. 18 2′.].

	Conversely, ♃ from the bright star of ♈ [Vice verſa ♃ a Lucida ♈.]	
6 59	37 26⅝	40 36

7 7: Canicula crossed the merid., having an altit. by the revolving q. of 42 39 [7 7 Tranſiuit Canicula per Merid. habens altit. per Q. Volub. 42 39].

Afterwards ♃ from Aldebaran [Poſtea ♃ ab Aldeb.].

8 10	32 32	25 24	
…	32 30⅔	24 19	26 6[1]
…	32 30½	23 5	27 6[1]

DIE 23 FEBRUARIJ. [23 February]

♃ was observed in this way [Obſeruabatur ♃ in hunc modum.].

By the largest clock, H. M. [Per horol. max. H. M.]	Dist. of ♃ from the bright star in the foot of ♊ [Diſt. ♃ a luc. pede ♊]	Altit. of Aldebaran [Altit. Aldeb.]	The bright star of Orion's foot, west [Luc. pes Orion. occid.]
6 45	26 5⅙	42 34	29 2
6 48	26 5	41 50	
6 51	26 5	41 36	

DIE 25 FEBRUARIJ. [25 February]

♃ was observed from the lower head of ♊ [Obſeruabatur ♃ ab inf. cap. ♊.].

H. M.	Dist. [Diſt.]	Altit. of Aldebaran [Altit. Aldeb.]	The bright star of Orion's foot, west [Luc. pes Orion. occ.]
7 34	25 50	41 19	24 22
7 40	25 50⅙	40 40	25 47
7 44	25 50	40 9	26 46

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

Conversely, ♃ from the bright star of the side of Perseus [Vice verſa ♃ a lucida lateris Perſei.].

7 50	32 29	39 27	
7 53	32 29	39 0	
7 56	32 28½	38 25	34 3

This last one was the best; the others entirely doubtful [Hæc vltima optima fuit, reliquæ plane dubiæ.].

In the morning we saw it moved away from the meridian [Mane vidimus eum a Meridiano remotum.].

7 56: Canicula crossed the meridian, having an altitud. in the greater revolving quadr. of 42 39 [7 56 Tranſiuit Canicula per Meridianum habens Altitud. in Quadr. maiore Volubili 42 39.].

Merid. altit. of the heart of Hydra by the revolving quadr. 29 37⅔ [Altit. Merid. Cordis Hydræ per Quadr. Volub. 29 37⅔].

9 43½: Canis Minor, west, 24 53 [9 43½ Canis Minor occid. 24 53].

These preceding observations must be verified from the altitudes, for none of them has yet been corrected precisely [Hæc antecedentia debent ex altitudinibus verificari, nulla enim adhuc ad amußim correcta ſunt.].

DIE 2 MARTIJ, VESPERI. [2 March, in the evening]

H. M.	Merid. altit. by the revolving q. [Altit. Merid. per Q. Volub.]	Decl.	Elevation of the pole [Eleuatio Poli]
8 1	Canis Minor [Can. min.] 42 41	6 12	53 31
	the heart of Hydra [Cord. Hydræ] 29 32	6 56	53 32

Afterwards ♃ was observed in this way [Poſtea obſeruabatur ♃ in hunc modum]

I. from the bright star in the foot of ♊ [I. a lucido pede ♊.].

H. M.	Dist. [Diſt.]	Altit. of Canicula [Altit. Caniculæ]	The tail of ♌, east [Cauda ♌ orient.]
10 6	25 16¼	37 20	34 4
10 12	25 16¼	36 58	32 31
10 14⅚	25 16¼		

Conversely, ♃ from the bright star in the side of Perseus [Vice verſa ♃ a lucido latere Perſei.].

10 20		36 13	30 40
10 25	32 40½	35 45	29 36
10 29	32 41	35 22	28 31

10 35: merid. alt. of the heart of ♌ by the revolving q. 50 21; decl. 13 54, elev. of the pole 53 33. The tail of ♌, east, was 27 10 [10 35 Alt. Merid. Cordis ♌ per Q. Volub. 50 21 Decl. 13 54, Eleu. Poli 53 33 Erat Cauda ♌ orient. 27 10].

DIE 4 MARTIJ. [4 March]

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

I. from the bright star in the foot of ♊ [I. a lucido pede ♊.].

H. M.	Dist. [Diſt.]	Altit. of Aldebaran [Altit. Aldeb.]	Altit. of ♃ [Altit. ♃]	The heart of ♌, east [Cor ♌ orient.]
7 55	25 2	36 44	44 0	35 26
7 57	25 2	36 28	43 50	34 54
8 0⅓	25 2	36 6	43 10	34 6

Conversely, ♃ from the bright star of the side of Perseus [Vice verſa ♃ a lucida lateris Perſei.].

8 8	32 43 doubtful [32 43 dubia]	35 7	42 10	32 17
8 12⅓	32 41	34 20	41½	31 6
8 17	32 41⅙	33 50	40 50	30 2

DIE 7 MARTIJ. [7 March]

♃ was observed as follows [Obſeruabatur ♃ vt ſequitur]

I. from the bright star in the foot of ♊ [I. a lucido pede ♊.].

H. M.	Dist. [Diſt.]	Altit. of Procyon [Altit. Procyonis]	The tail of ♌, east [Cauda ♌ orient.]
9 39⅓	24 53¾	35 49	29 46
9 43⅙	24 53¾	35 24	28 45
9 45⅚	24 53¾	35 8	28 8

Conversely, ♃ from the bright star of the side of Perseus [Vice verſa ♃ a lucida lateris Perſei.].

9 49⅓	32 53½	34 47	27 13
9 54½	32 53½	34 13	25 56
9 57⅓	32 53½		25 13

The heart of ♌ crossed the meridian, having an altitud. by the revolving quadr. of 50 19 [Tranſiuit Cor ♌ per Meridianum habens altitud. per Quadr. Volub. 50 19].

DIE 30 MARTIJ. [30 March]

☿ was observed as follows [Obſeruabatur ☿ vt ſequitur]

I. from Capella [I. a Capella.].

H. M.	Dist. [Diſt.]	Altitude of Canicula [Altitudo Caniculæ]	Arcturus, east [Arcturus orient.]
9 25	23 20⅓	29 30	53 19
9 37¼	23 20⅔ twice, exactly [23 20⅔ bis exacte]	28 3	50 19
9 46	23 20⅔	26 56	48 8

Conversely, ☿ from the bright star in the foot of ♊ [Vice verſa ☿ a lucido pede ♊.].

9 53¼	21 13⅔	26 0	46 20
10 7⅔	21 12½ doubtful [21 12½ dubia]	24 8	43 10
10 14	21 13⅔ twice, exactly [21 13⅔ bis exacte]	23 18	41 27

DIE 1 APRILIS. [1 April]

☿ was observed as follows from Canis Minor [Obſeruabatur ☿ vt ſequitur a Cane minore.].

H. M.	Distance [Diſtantia]	Arcturus, east [Arcturus orientalis]
8 44¼	39 26	61 15

DIE 25 APRILIS. [25 April]

☿ was observed with the smaller sextant as follows [Obſeruabatur ☿ per Sextantem minorem vt ſequitur.].

H. M.	Dist. of ☿ from Canis Minor [Diſt. ☿ a Cane minori]	Altit. of ☿ [Altit. ☿]	Altit. of Canis Minor [Altit. Can. min.]	Arcturus, east [Arcturus orient.]
8 46½	35 11	13 50	19 30	34 46
8 50	35 11	13 37	18 50	33 52

H. M.	Dist. of ♃ from Canis Minor [Diſt. ♃ a Cane minori]	Altit. of ♃ [Altit. ♃]	Altit. of Canis Minor [Altit. Can. min.]	Arcturus, east [Arcturus orient.]
8 52½	35 10⅙	13 8	18 30	33 12

Conversely, ♃ was observed from the bright and lower head of ♊ [Vice verſa ♃ obſeruabatur a lucido & inferiori Capite ♊.].

			Alt. of the lower head of ♊ [Alt. Cap. ♊ inf.]	
8 58	30 2⅚	12 11	36 0	31 47
9 2	30 0	11 43	35 40	30 43
9 5½	30 0⅙	11 15	*	29 49

* Could not be taken because of clouds [* propter nubes non potuit capi.].

These are to be examined by triangles, especially so that the latitude of ♃ may be established when it is near the Sun. For it is now around the perigee, so that those very small differences concerning the latitude — near the apogee of the epicycle, as the ancients put it — can be examined further than before; this will also be evident in the following observations, when the sky is clear. Account must, however, be taken everywhere of refraction, so that the latitude may be established all the more precisely. In the parallax there will be no perceptible difference. In the following observations, moreover, care must be taken that some star below it, toward the south, close by, be observed with respect to the ecliptic or the equator, so that its latitude may appear all the more precisely [Hæc examinanda ſunt per triangula, præſertim vt conſtet Latitudo ♃ cum Soli vicinus eſt: verſatur enim nunc circa Perigæum, vt differentiæ illæ minutulæ, quæ circa Apogæum Epicycli vti loquuntur veteres circa Latitudinem examinari queant, vlterius quam antea, quod & in ſequentibus obſeruationibus, vbi ſudum fuerit, patebit. Habenda autem vbique eſt refractionis ratio vt Latitudo eo præciſius conſtet. In Parallaxi nullum erit ſenſibile diſcrimen. Danda autem opera in ſequentibus obſeruationibus, vt aliqua ſtella infra illum verſus meridiem in propinquo obſeruetur reſpectu Eclipticæ vel æquatoris, quo eius latitudo eo præciſius pateat.].

DIE 23 DECEMBRIS. [23 December]

15ʰ30ᵐ P. M.: ♃ was observed in a straight line, first [15ʰ30ᵐ P. M. Obſeruabatur ♃ in linea recta, primum:]:

- the upper head of ♊ [Super. cap. ♊]
- ♃
- the neck of Procyon [Collum Procyonis]

Second [Secundo]:

- ♃
- the bright star of the neck of ♌ [Lucida colli ♌]
- the tail of ♌ [Cauda ♌]

From this the true place of Jupiter was derived [Hinc verus Iouis locus eſt deductus.]. True place of Jupiter 15° 31′ 6″ ♋ [Verus locus Iouis 15° 31′ 6″ ♋].

These are of no weight. Do not rely on them as regards precision [*Hæc nullius ſunt momenti. Non fidas his quoad præciſionem.*].

DIE 24 DECEMBRIS. [24 December]

After midnight, among rather dense clouds, ☿ was observed in this way [P. M. N. inter nubes denſiuſculas obſeruabatur ☿ in hunc modum.].

H. M.	Dist. of ☿ [Diſt. ☿]		By [Per]
4 0	from the upper head of ♊ [a ſup. cap. ♊]	9 50	the smaller sextant [Sext. min.]
		9 51	the Radius [Rad.]
4 13	from the lower head of ♊ [ab inf. cap. ♊]	6 45⅓	the sextant [Sext.]
		6 42	the Radius [Rad.]
4 23	from Procyon [a Procyone]	16 40	the sextant [Sext.]
		16 38	the Radius [Rad.]
4 50	from Capella [a Capella]	36 39½	the sextant [Sext.]

But these observations are not to be trusted enough, for the stars, flashing out at intervals, could scarcely be made out through the rather dense clouds [Verum non ſatis fidendum hiſce obſeruationibus, vix enim per nubes denſiuſculas ſtellæ per vices emicantes cernebantur.].

DIE 30 DECEMBRIS, VESPERI. [30 December, in the evening]

Merid. alt. by the greater sextant [Alt. merid. per Sextantem maiorem.].

	Aldebaran [Aldeboræ]	53 45
10 0	the last star of Orion's belt [Vltima balthei Orion.]	35 55
10 12½	the bright star of Orion's shoulder [Luc. hum. Orion.]	45 21⅙

When Canis Major was about two degrees off the meridian, a line was drawn for the greatest digression of the pole star from the meridian [Cum Canis maior quaſi duobus gradibus eßet extra meridianum, tracta eſt linea pro maxima digreßione a meridiano Stellæ polaris.].

11 47⅓ / 11 40 corr.: the merid. alt. of ☿, observed at the outermost corner of the cylinder, was 61 8½ [11 47⅓ / 11 40 corr. Alt. ☿ merid. in extremo cylindri angulo obſeruata, fuit 61 8½].

In the declin. of ☿, 1′ subtracted, because the sextant deviates by that much in the fixed stars here [In declin. ☿ 1′ ſubtractum, quia tantum ſextans in fixis hic deuiat.].

11 57½	the upper head of ♊ at the outermost corner of the cylinder [Sup. cap. ♊ in extremo angulo cylindri]	70 50⅓
12 0	the lower head of ♊ at the same corner [Infer. cap. ♊ in eodem angulo]	67 4½

12 2	of Procyon — — [Procyonis — —]	44 18⅓
1 33 / *1 23 corr.*	Dist. between ♃ and Regulus by the greater sext. [Diſt. inter ♃ & Regulum per Sext. maior.]	39 54½
1 40 / *1 30 corr.*	Repeated [Repetita]	39 54½
1 49	Repeated [Repetita]	39 54½

Since[1] the place of ♃ was to be derived from this distance of ♃ from Regulus, 2′ were subtracted, because at nearly the same distance — namely, that of the bright star of the neck of ♌ and the lower head of ♊ — the sextant gave 2′ more [Cum[1] ex hac ♃ a Regulo diſtantia locus illius eßet eruendus, 2′ ſunt ſubtracta, quia Sextans ferme in eadem diſtantia, nempe Lucidæ ceruicis ♌ & inf. cap. ♊ 2′ plus præbuit.].

♃ could not be observed on the western side, but to test the instrument the dist. was taken... 36 2⅓ [Non poterat ♃ obſeruari a parte occidentali, ſed pro examinando inſtrumento capiebatur diſt.... 36 2⅓]:

of the bright star of the neck of ♌ [lucidæ ceruicis ♌]	2ʰ 6′	36 2
and the lower head of ♊ [& inf. cap. ♊]	2 8	36 2⅓

At 2ʰ20′ the heart of ♌ was almost on the meridian [2ʰ20′ fuit cor ♌ quaſi in meridiano.].

The clockkeeper reckoned that, since the preceding noon, the clock had run faster than it should by a quarter of an hour, as became more or less evident from the following noon [Horologiarius putauit a Merid. præcedente per quartam horæ partem motum eße horologium iuſto celerius, prout ex Meridie ſequente vtcunque patuit.].

For 30 December [Ad diem 30 Decembris.].

Declin. of ♃ 23° 0′ [Declin. ♃ 23° 0′]	Ang. diff. 41° 4′ 29″
Dist. from Regulus 39 52 30″ [Diſt. a Regulo 39 52 30″]	Therefore R. asc. 105 38 59 [Ergo Aſc.R. 105 38 59]

Therefore long. of ♃ 14° 22′ 35″ ♋ [Ergo Longit. ♃ 14° 22′ 35″ ♋]. Latit. 0 14 20 N. [Latit. 0 14 20 B.]

[1] Added later [Poſtea addita.].

OBSERUATIONES MARTIS. [Observations of Mars]

DIE 7 FEBRUARIJ [7 February]

Old style, as almost all [observations] taken at Wandsbek are [ſtylo veteri vt omnibus quaſi Wandesburgi acceptis.].

When the bright star of Orion's foot was near the meridian, the star ♂ was observed with the triangular sextant [Sextantem △cum], which I usually call the new one, at a distance from Aldebaran of 23° 2′. At that time Bellatrix, the right shoulder of Orion, was also on the meridian [Quando lucidus pes Orionis circa Meridianum erat, obſeruabatur ♂ ſtella per Sextantem △cum quem nouum appellare ſoleo in diſt. ab Aldebora p. 23 2 Minutis. Erat tunc quoque bellatrix, dexter humerus Orionis in meridiano.].

And at about the same time the same ♂ was removed from the lower head of ♊ by p. 12 35⅚′, each [distance] taken carefully twice with the sextant [Et circa idem fere tempus idem ♂ remouebatur ab inferiori capite ♊ p. 12 35⅚′, vtrumque bis per Sextantem diligenter acceptum.].

As for the time, however: the bright star of Orion's shoulder was then nearly on the meridian, but the foot was not — or at any rate it stood only midway — for the position of the meridian had not yet been determined, except roughly, by compass. These [observations] can, however, be restored from the following ones as far as the fractions of the times are concerned, so far as there is need; for the utmost precision of time is not required here [Sed quoad tempus erat tunc lucidus humerus Orionis quaſi in meridiano, non autem pes vel ſane medio modo ſe habebat, nam ſitus Meridiej nondum erat exploratus, niſi lato modo per compaßum. Poterunt autem hæc quoad temporum particulas e ſequentibus reſtitui quoad opus fuerit, neque enim ſumma hic requiritur temporis præciſio.].

Afterwards, when the bright star above the head of ♈ stood almost 33 deg. high, falling short by at least ⅙, ♂ was observed at a dist. from Procyon of p. 31 0′ [Poſtea cum lucida ſuper caput ♈ eleuaretur 33 pene grad. deficiente ſaltem ⅙, obſeruabatur ♂ diſt. a Procyone p. 31 0′.].

And soon after, when the same bright star of ♈ stood 28½ high, the same dist. was found to be 31 58¼, and this twice in the same way. This observation is more exact and more reliable than the earlier one [Et mox cum eadem lucida ♈ eleuaretur 28½ inuenta eſt eadem diſt. 31 58¼, idque bis eodem modo. Eſtque hæc animaduerſio priore exactior & tutior.].

The foot of Canis Major, near the meridian, 71 55¹ [Pes Canis Maioris iuxta Meridianum 71 55¹.].

These observations were in one way or another not yet exact enough, because the instruments had not at that time been properly set up [Hæ obſeruationes erant vtcunque necdum ſatis exactæ, quia inſtrumenta tunc temporis non rite fuerunt compoſita.].

DIE 21 FEBRUARIJ. [21 February]

H. M.	Dist. of ♂ from the lower head of ♊ [Diſt. ♂ ab infer. cap. ♊]	Altitude of Capella [Altitudo Capellæ]
10 23⅚	18 59 among clouds [18 59 inter nubes]	46 24
10 29⅙	18 56	45 46
10 35	18 56	45 0

10 42: the meridian altitude of the heart of ♌ was found to be [10 42 Altitudo meridiana Cordis ♌ inuenta fuit]	50 22⅔
Declination [Declinatio]	13 54
(The equator corresponded [(Æquator correſpondebat]	36 29
on the revolving quadrant) [quadranti Volubili)]	53 31

H. M.	Dist. of ♂ from the bright star in the foot of ♊ [Diſt. ♂ a lucido pede ♊]	Altitude of Capella [Altitudo Capellæ]
10 53	10 32¼ among clouds, doubtful [10 32¼ inter nubes, dubia]	42 32
10 59	10 35⅓	
11 1	10 35⅓	41 22
11 7	10 35½	40 36

DIE 23 FEBRUARIJ. [23 February]
♂ was observed in this way [Obſeruabatur ♂ in hunc modum.]
I from the lower head of ♊ [I ab inferiori Capite ♊.].

H. M.	Distance [Diſtantia]	Altit. of Aldebaran [Altit. Aldeb.]	The tail of ♌, east [Cauda ♌ orient.]
...	18 17	19 50 Alt. of Canicula [Alt. Caniculæ]	30 6
11 4 πλατ.	18 17¼	33 7	24 6
11 9⅙	18 17¼	32 27	20 58

Conversely, ♂ from the bright star in the foot of ♊ [Vice verſa ♂ a Lucido pede ♊.].

11 15	10 15⅚	31 28	19 43
11 20⅙	10 16	30 56	18 26
11 23⅚	10 16	30 23	

Merid. altit. of the heart of ♌ by the revolving quadr. 50 21½ [Cordis ♌ Altit. merid. per Quadr. Volub. 50 21½].

No other bright stars in ♌ could be taken because of the boarding [ob tabulatum], and those in Crater and Corvus were too low and subject to refractions [Nullæ aliæ illuſtres ſtellæ capi potuere in ♌ ob tabulatum, & eæ quæ in Cratera & Coruo nimium decliues erant & refractionibus obnoxiæ.].

DIE 2 MARTIJ. [2 March]
In the evening ♂ was observed from Aldebaran [Veſperi obſeruabatur ♂ ab Aldeboran.].

H. M.	Distance [Diſtantia]	Altit. of Canicula [Altit. Caniculæ]	The tail of ♌, east [Cauda ♌ orient.]
10 52⅓	29 0½	33 0	23 0
10 57½	29 0½	32 26	21 56
11 1⅓	29 0	31 58	20 54

Conversely, ♂ was observed from Canicula [Vice verſa ♂ obſeruabatur a Canicula.].

11 6½	25 44½	31 18	19 50
11 13	25 46		18 10
11 17⅔	25 45	30 17	17 16

[1] Distance from the zenith. It should be 71° 25′ [Diſtantia a Zenith. Debet eße 71° 25′.].

DIE 4 MARTIJ. [4 March]

♂ was observed in this way [Obſeruabatur ♂ in hunc modum.]

I from Capella [I a Capella.].

H. M.	Distance [Diſtantia]	Altit. of Aldebaran [Altit. Aldeb.]	The heart of ♌, east [Cor ♌ orient.]
8 28½	25 53	32 17	27 14
8 31½	25 53	31 47	26 18
8 35	25 53	31 17	25 41

Conversely, ♂ from the head of Medusa [Vice verſa ♂ a capite Meduſæ.].

8 39⅙	45 28	30 49	24 41
8 42⅔	45 24⅙ doubtful [45 24⅙ dub.]	30 11	23 45
8 46	45 28	29 49	23 2

Afterwards ♂ from the northern horn of ♉ [Poſtea ♂ a Boreali cornu ♉.].

8 56⅓	16 2	28 23	20 39
8 58⅙	16 2	28 0	20 20
8 59⅚	16 2	27 50	19 48

Afterwards ♂ from Canis Minor [Poſtea ♂ a Cane minore.].

		Alt. of Canis Minor [Alt. Can. min.]	The heart of ♃, east [Cor ♃ or.]
9 3⅓	25 16	40 28	18 53
9 5⅚	25 15⅚	40 19	18 20
9 7	25 16	40 10	18 3

DIE 6 MARTIJ. [6 March]
♂ was observed as follows [♂ obſeruabatur vt ſequitur.].

H. M.	Dist. of ♂ from Capella [Diſt. ♂ a Capella]	Altit. of Aldebaran [Altit. Aldeb.]	The heart of ♃, east [Cor ♃ orient.]
8 48⅚	26 23⅙	26 13	16 49
8 51½	26 22⅓	25 50	16 9
8 54	26 22⅓	25 15	15 25

At about the same time Mars was distant from the very small star in the knee of ♊ *close to it by p. 0 M. 39, with the Radius, and this along the line that falls below the heart of Hydra by about one degree* [*Circa idem tempus diſtabat Mars a paruula in Genu* ♊ *ſibi vicina p. 0 M. 39 per radium, idque in ea linea, quæ cadit infra cor Hydræ quaſi vno gradu.*].

H. M.	♂ from Capella, as before [♂ a Capella vt prius]	Altit. of Aldebaran [Altit. Aldeb.]	The heart of ♃, east [Cor ♃ or.]
8 56½	26 22⅙		
	From the northern horn of ♃ [A Boreali Cornu ♃]		
9 3⅙	16 50	24 0	13 5
9 6½	16 50	23 18	12 3
9 9½	16 50	23 0	11 29

Then ♂ was observed from the bright star in the side of Perseus [*Deinde ♂ obſeruabatur a lucido latere Perſei.*].

		Altitude of Canicula [Caniculæ altitudo]	
9 14	44 38½	37 54	10 0
9 19	44 37¼		8 48

9 23: the heart of Hydra crossed the merid., having an altit. of 29 26 [9 23 Tranſiuit Cor Hydræ per Merid. habens Altit. 29 26].

9 25: ♂ was distant from the above-mentioned small star in ♊*, which it was near, by p. 0 M. 40; and this along the line that is drawn to the heart of Hydra, a little below that same star, and at a distance as great as that of the two outermost [stars] in the girdle of Orion* [*9 25 Diſtabat ♂ a ſupradicta parua ſtella in* ♊ *cui vicinus erat p. 0 M. 40. Idque in ea linea, quæ ducitur in Cor Hydræ parum infra eandem ſtellam idque in ea diſtantia quanta eſt ambarum extremarum in cingulo Orionis.*].

H. M.	♂ from the bright star of the side of Perseus [♂ a Lucida Lateris Perſei]	Altit. of the bright star of Orion's shoulder [Luc. hum. Orion. altit.]	The tail of ♌, east [Cauda ♌ orient.]
9 33	44 37⅙	24 32	30 49½

Then ♂ was observed from the last part, from Canis Minor, in this way [*Deinde obſeruabatur ♂ ab vltima parte a Cane minore in hunc modum.*].

H. M.	♂ from Procyon [♂ a Procyone]	Altit. of the bright star of Orion's shoulder [Luc. hum. Orion. altit.]	The tail of ♌, east [Cauda ♌ orient.]
9 41	24 44	23 27	28 52
9 45	24 41⅙[1]	22 44	27 24

9 45: ♂ from the said very small star of ♊, *p. 0 40′. Capella, ♂ and the small [star] in Canis Minor appeared to be exactly in one straight line* [*9 45 ♂ a dicta minutula ſtella* ♊ *p. 0 40′. Videbatur capella ♂ & parua in Cane minore in vna exacte linea recta.*].

9 52½: the heart of ♌ was on the merid., having an altitud. by the revolving quadr. of 50 19. The tail of ♌, east, was then 26 0 [*9 52½ Fuit Cor ♌ in merid. habens altitud. per Volub. Quadr. 50 19 Fuit tunc Cauda ♌ orient. 26 0*].

		50 19
Decl.		*13 54*
		36 25
		53 35

H. M.	♂ from Procyon [♂ a Procyone]	Altit. of the bright star of Orion's shoulder [Altit. luc. hum. Orion.]	The tail of ♌, east [Cauda ♌ orient.]
9 55	24 44⅓	21 18	25 0
10 3½	24 44⅓	20 10	23 9
10 7	24 44⅓	19 22	21 52

11 32⅔: the tail of ♌ crossed the merid., having an altit. by the revolving quadrant of 53 14, with the lower pinnule; for because of the boarding it could not be taken with the upper one. Arcturus, east, was then 38 2 [11 32⅔ Tranſiuit Cauda ♌ per Merid. habens altit. per Quadr. Volubilem 53 14 per inferius pinnacidium. Nec enim ob tabulatum per ſuperius capi potuit. Erat tunc Arcturus orient. 38 2].

For the year 1598, the month of March [*Ad annum 1598 menſem Martium*]:

The heart of ♌ [Cor ♌]	*13 54¼*	*R. asc. [Aſc.R.]*	*146 43*

The girdle of ♍ [Cingulum ♍]	*5 38 N. [5 38 B.]*	
The tail of ♌ [Cauda ♌]	*16 50 N. [16 50 B.]*	
The third of the wing of ♍ [Tertia alæ ♍]	*0 47⅙ N. [0 47⅙ B.]*	*185 18*
Vindemiatrix [Vindemiat.]	*13 9 N. [13 9 B.]*	
Spica	*9 0⅙*	*196 2*
	0⅓	
Of the pole star [Stellæ Polaris]		
Dist. from the pole [Diſt. Poli]	*2 51¾*	

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

DIE 7 MARTIJ. [7 March]

N.B. At about hour 7 M. 50, ♂ was again considered beside that very small star in, or near, the knee of the northern ♊, and it was distant from that same star, which is of the third magnitude, by p. 0 M. 28, twice with the radius; and this on the straight line drawn from the said star to Capella, so far as could be made out with a ruler. That line, moreover, falls almost below the elbow of Erichthonius and about ¼ degree below Procyon [N.B. Circa horam 7 M. 50 ♂ denuo conſiderabatur iuxta minutulam illam ſtellam in genu vel prope borealis ♊, & diſtabat ab eadem ſtella, quæ tertiæ eſt magnitudinis, p. 0 M. 28 bis per radium, idque in ea linea recta, quæ ducitur a dicta ſtella in Capellam quantum per lineale diſcernere licuit, linea autem illa incidit pene infra cubitum Erichtonij & quaſi ¼ gradus infra Procyonem.].

Diagram. A hand-drawn sketch across the left column below the 7 March note: a single slightly rising line with five star marks (✳) set on or beside it, each lettered in a hand-drawn script. From the left: a star lettered *c*, above a short separate stroke at the line's left end; a close pair lettered *a* and *b*; a star whose letter is not securely legible on the scan (it resembles *e*) [?]; and, at the right end, a star lettered *d*. Below the sketch, a printed key in italic:

- a: *genu* ♊ — the knee of ♊
- b: ♂ *ab 0° 28′* — ♂, distant 0° 28′
- c: *Procyon*
- d: *Capella*
- e: *cubitus Ericht.* — the elbow of Ericht[honius]

From this the place of ♂ can also be investigated, for its distance from the star in the knee of ♊, taken three times, was 0° 28′ [Hinc etiam poterit inquiri locus ♂, nam ter eius diſtantia a ſtella in genu ♊ ſumta erat 0° 28′.].

Afterwards ♂ was observed in this way. I from Capella [Poſtea obſeruabatur ♂ in hunc modum. I a Capella.].

H. M.	Distance [Diſtantia]	Altitude of Canicula [Altitudo Caniculæ]	Arcturus, east [Arcturus orient.]
10 10¼	26 35	32 25	59 6
10 13⅔	26 35	31 54	58 7

H. M.	Distance [Diſtantia]	Altitude of Canicula [Altitudo Caniculæ]	Arcturus, east [Arcturus orient.]
10 18⅚	26 35	31 25	56 58

Conversely, ♂ from Procyon [Vice verſa ♂ a Procyone.].

10 24½	24 28⅓	30 45	55 30
10 28½	24 28⅓	30 15	54 35
10 31⅓	24 28⅓	29 51	53 50

Afterwards ♂ from the bright star of the side of Perseus [Poſtea ♂ a lucida lateris Perſei.].

10 47⅔	44 53⅙	27 50	49 48
10 51⅓	44 54	27 21	48 49
11 0	44 54		46 40

Afterwards ♂ from the heart of ♌ [Poſtea ♂ a Corde ♌.].

		Alt. of the heart [Alt. Cordis]	
11 8⅙	50 15	47 56	44 36
11 13⅔	50 14½		43 42
11 18⅓	50 14½	47 10	42 2

11 34¼ Afterwards the merid. altit. of the tail of ♌ was observed with the revolving quadr.: 53 14 with the lower pinnule, for it could not be had with the upper one because of the boarding [11 34¼ Poſtea obſeruabatur Altit. merid. Caudæ ♌ per Quadr. Volub. 53 14 per inferius pinnacidium, nec enim per ſuperius ob tabulatum haberi potuit.].

DIE 9 MARTIJ. [9 March]

In the evening the distance between Aldeb. and the bright star of ♈ was observed in order to examine the brass sextant, and it was found to be 0 32¼, 0 32⅙ *with the new brass sextant. It is in good order, and it is duly consistent thus* [Veſperi obſeruabatur diſtantia inter Aldeb. & Lucidam ♈ pro Sextante orichalcico examinando, eaque inuenta fuit 0 32¼ / 0 32⅙ *per nouum Sextantem orichalcicum. Bene ſe habet, & rite conſtat ſic.*].

The distance with the same [sextant] between Aldebaran and Canis Minor [Diſtantia per eundem inter Aldeboran & Canem minorem] 46 22¼

				46 22½

The sextant wobbled a great deal this way and that, so that the distances could be had only with difficulty [Nutabat valde hinc inde Sextans, vt difficulter diſtantiæ haberi potuerint.].

7^{H} 38^{M} The same evening ♂ was seen in a straight line with the star in the knee of the northern ♊ and with the right shoulder of Orion, and it was placed thus [7^{H} 38^{M} Eadem veſpera videbatur ♂ in linea recta cum ea quæ in genu Borealis ♊ & dextro humero Orionis, eratque poſitus talis.].

Diagram. A hand-drawn sketch in the right column: a single straight line running from upper left to lower right, with three star marks (✳) on it, each with a hand-lettered label.

- Top end: *Genu bor.* ♊ — the northern knee of ♊
- Just below the top star, to its left: ♂
- Bottom end: *Dexter hum. Orionis* — the right shoulder of Orion

And the little star inclined toward the zenith, above ♂. Canis Major was then west 19° 0′. The dist. of ♂ from the little star, by the Radius, was 0° 28′ *once and again* [Vergebatque ſtellula verſus Zenith ſupra ♂. Canis maior erat tunc occid. 19° 0′. Diſt. vero ♂ a ſtellula per Radium 0° 28′ *ſemel atque iterum*.].

7 51 The bright star of the tail of Cygnus was in the same vertical as the pole star, in azimuth *4° 34′ west, by the brass horizontal quadrant* [7 51 Fuit lucida Caudæ Cygni in perpendiculo ad Polarem in Azimutho *4° 34′ occ. per Quadr. Horizontalem orichalcicum.*].

7 54¼ Canis Major west 11 8. From this the meridian line is to be checked [*7 54¼ Canis maior occid. 11 8. Hinc linea meridiana examinanda venit.*].

DIE 15 MARTIJ. [15 March]

♂ was observed in this way. I from Canis Minor [Obſeruabatur ♂ in hunc modum. I a Cane minore.].

H. M.	Distance [Diſtantia]	Altit. of Procyon [Altit. Procyonis]	Canicula, west [Canicula occid.]
8 4½	22 28½	41 14	14 49
8 8	22 28½	40 58	15 44
8 11	22 28 doubtful [dub.]	40 40	16 31

Conversely, ♂ from Aldebaran [Vice verſa ♂ ab Aldebora.].

		Altit. of Procyon [Altit. Procyonis]	Altit. of Aldeb. [Altit. Aldeb.]	
8 18½	33 54⅔	40 20	27 30	18 22
8 23½	33 54⅔		26 40	19 39

		Altit. of Procyon [Altit. Procyonis]	Altit. of Aldeb. [Altit. Aldeb.]	
8 29	33 54¾	39 50	25 50	20 58
8 35¼	33 54¾	39 20	24 50	22 36

Afterwards ♂ from Capella [Poſtea ♂ a Capella.].

8 46⅔	28 54	38 26	25 31
8 51⅙	28 53⅚	38 8	26 40
8 57⅙	28 54	37 35	

8 53⅙ The heart of Hydra crossed the meridian, having an altit. by the revolving quadr. of [8 53⅙ Tranſiuit Cor Hydræ per Meridianum habens Altit. per Quadr. Volub.] 29 30

Canicula, west [Canicula occid.] 27 17

DIE 30 MARTIJ. [30 March]

♂ was observed in this way. I from the bright shoulder of Ericht[honius] [Obſeruabatur ♂ in hunc modum. I a lucido humero Ericht.].

H. M.	Distance [Diſtantia]	Altitude of the heart of ♌ [Altitudo Cordis ♌]	Arcturus, east [Arcturus orient.]
10 27	27 8⅚	45 55	38 14
10 32½	27 8⅚	45 28	36 54
10 35	27 8⅚	45 10	36 14

Conversely, ♂ from the heart of Hydra [Vice verſa ♂ a Corde Hydræ.].

10 40⅔	44 21	44 42	34 50
10 45	44 21	44 18	33 50
10 48½	44 21	43 55	32 52

DIE 10 MAIJ. [10 May]

♂ was observed from Capella [Obſeruabatur ♂ a Capella.].

H. M.	Distance [Diſtantia]	The heart of Serpens [Cor Serpentis]
9 32½	51 45	
9 38½	51 45	43 15
9 41⅔	51 44½	42 22

DIE 18 SEPTEMBRIS. [18 September]

In the evening, in examining the acronychal place of Mars from the observations of Gualtherus [Bernhard Walther] formerly made at Nuremberg, we observed the 1st and 2nd [stars] of ♐, namely those at the tip of the arrow, as follows [Veſperi pro ♂tis loco acronychio ex animaduerſionibus Gualtheri olim Norimbergæ habitis ſcrutando obſeruabamus 1 & 2 ♐ videlicet in extremitate ſagittæ vt ſequitur.].

Between the 2nd, that is the eastern one at the point of the arrow, and the eastern one in the head of ♐ [Inter 2dam ſeu orientalem in cuſpide ſagittæ & orientalem in Capite ♐]	15° 30M
Between the preceding, that is the first, at the point and the eastern one in the head of ♐ [Inter præcedentem ſeu primam in cuſpide & orientalem in capite ♐]	16° 28M
or [vel]	30M

A straight line drawn from the bright shoulder of ♐ through the bright star in the middle of the bow falls on the first of these, that is the preceding one; the other deviates from it toward the south by about 2′ [Recta linea ducta a lucido humero ♐ per lucidam in medio arcus in primam harum ſeu præcedentem cadit, a qua altera ad meridiem deflectit quaſi 2 minutis.].

OBSERUATIONES VENERIS. [Observations of Venus]

DIE 7 FEBRUARIJ. [7 February]

The middle star of Orion's belt [Media Balthei Orionis]	55 8
The last of the belt, distance from the zenith [Vltima Balthei diſtantia a Zenith]	55 6

When the third star of Orion's belt was thought to be on the meridian, the altitude of ♀ was 14° by the lesser gilt quadrant [Quando tertia balthei Orionis putabatur in Meridiano fuit Altitudo ♀ 14° per quadr. minorem inauratum.].

The bright shoulder of Orion from the zenith [Lucidus humerus Orionis a Zenith]	46 51

DIE 16 FEBRUARIJ. [16 February]

♀ was observed in the evening in this way, by the u..ratum clock with a moderate weight [Obſeruabatur ♀ veſperi in hunc modum. Per horologium u..ratum cum pondere mediocri.].

N.B. ♀ near its greatest elongation from ☉ [N. B. ♀ iuxta maximam digreßionem a ☉.].

H. M.	Dist. of ♀ from the eye of ♉ [Diſt. ♀ ab oculo ♉]	Decl. ♀	Altit. ♀	Bright shoulder of Orion [Luc. hum. Orion.]
7 6½	53 50		28 39	

H. M.	Dist. of ♀ from the eye of ♉ [Diſt. ♀ ab oculo ♉]	Decl. ♀	Altit. ♀	Bright shoulder of Orion [Luc. hum. Orion.]
7 14⅝	53 50		26 50	

Before these observations were taken, the meridian altitude of the bright star of the foot of Erichthonius was observed, in order to take [the time by] the clock: H. 7 M. 1⅔, p. 64 12 [Priuſquam hæ obſeruationes caperentur obſeruata fuit pro horologio capiendo altitudo merid. lucidi pedis Erichtonij H. 7 M. 1⅔ p. 64 12.].

H. 7 M. 25 dist. of ♀ from the bright star of Orion's foot [H. 7 M. 25 Diſt. ♀ a lucido pede Orionis]	36 13
The altitude of ♀ was then [Fuit tunc altitudo ♀]	25 55

The right shoulder of Orion was then p. 6 m. 6 west [Fuit tunc dexter humerus Orionis p. 6 m. 6 occ.].

At about hour 7 Min. 40, ♀ was distant from the bright star of ♈ 12 5. Altitude of ♀ 23⅔ [Circa horam 7 Min. 40 diſtabat ♀ a Lucida ♈ 12 5. Altitudo ♀ 23⅔.].

The latitude of ♀ rests rather on this observation [Huic obſeruationi latitudo ♀ innititur potius.].

H. M.	♀ from the bright star of ♈ [♀ a lucida ♈]	Altit. ♀	Right shoulder of Orion, west [Dext. hum. Orion. occ.]
7 49	12 5	19 10	15 18

N.B. When the clock from which these times were taken showed exactly hour 8, the other one, which I used at the eclipse, verified roughly against the Sun in the meridian, showed H. 7½ [N.B. Cum horologium, ex quo hæc tempora ſumpta ſunt, monſtraret exacte horam 8, fuerunt in altero, quo in Eclipſi vſus ſum, quaſi ad Solem in meridiano verificando H. 7½.].

For everything was still new, though tested. Therefore the times marked by the clock are to be set earlier by about half an hour, which the observed altitudes will show [Omnia enim adhuc erant recentia tamen explorata. Ideoque quaſi dimidia hora tempora horologij deſignata anterius ponenda quæ obſeruatæ altitudines indicabunt.].

By the same clock [Per idem Horologium]

H. 8 M. 7 Canis Major was in the meridian, by the meridian of the equator; its altitude 20 39 [H. 8 M. 7 Fuit Canis Maior in Meridiano per meridianum æquatoris, Altitudo eius 20 39.].

Here both the clock and the star's declination, and consequently the altitude of the pole, are evidently verified [Hic patet verificata tam horologium quam ſtellæ declinatio & per conſequens Poli Altitudo.].

8^{H} $11½^{M}$ The altitude of the same Canis Major was 20 27 [8^{H} $11½^{M}$ Fuit eiuſdem Canis Maioris Altitudo 20 27].

8 50 Canis Minor crossed the merid., having an altit., by the lesser iron quadr., of 47 12 [8 50 Tranſiuit Canis minor per Merid. habens Altit. per Quadr. minorem ferreum 47 12].

9 0⅙ Canis Major was west, in the equator, 17° 40′. From this the clock can be corrected [9 0⅙ Erat Canis maior occid. in æquatore 17° 40′. Hinc horologium corrigi poteſt.].

9 40⅔ The merid. altit. of the upper of the preceding [stars] in the head of Hydra was observed by the greater revolving quadr.: 42 5 [9 40⅔ Obſeruabatur Altit. merid. ſuperioris e præcedentibus in Capite Hydræ per Quadr. maior. Volub. 42 5].

It was moderately clear [Erat mediocriter ſerenum.].

Afterwards Alphard was observed in the merid. by the greater revolving quadr.: 28 55⅓ [Poſtea obſeruabatur Alphard in Merid. per Quadr. maior Volub. 28 55⅓].

It was fairly clear [Erat ſatis ſerenum.].

When the heart of ♌ crossed the merid., it had an altit. in the revolving quad. of 49 43½; its declin. 13 54½. On the clock it was then hour 11 M. 9¾ [Cum Cor ♌ tranſiret per Merid. habuit altit. in Quad. Volubili 49 43½ / Declin. eius 13 54½ / Erat tunc in horol. hora 11 M. 9¾.].

This observation is to be trusted above the others, for it was exceptionally clear [Huic obſeruationi præ cæteris fidendum, erat enim apprime ſerenum.].

In the meantime there were no conspicuous stars whose meridian altitude could be taken, since it was both cloudy and the very small ones could not be had [Interea nullæ fuerunt inſignes ſtellæ, quarum Altitudo meridiana capi poßet, cum & nebuloſum eßet & minutulæ haberi non poßent.].

DIE 20 FEBRUARIJ. [20 February]

♀ near its greatest distance from ☉ [♀ iuxta maximam diſtantiam a ☉.].

On the clock, H. M. [In horol. H. M.]	Between ♀ and Aldeb. [Inter ♀ & Aldeb.]	Altit. of Aldeb. [Altit. Aldeb.]	Altit. ♀
7 8^{1}	36 42¾	46 3	
7 4	36 41½	45 50	
7 9	36 41½	46 18	21 0

Afterwards, with the latitude of $♀^{1}$, its distance from the bright side of Perseus was taken [Poſtea Latitudine $♀^{1}$ accipiebatur eius diſtantia a Lucido latere Perſei.].

7 25	38 30	43 38	19 45
7 36	38 30	42 40	

Merid. altitude of the bright star of Hydra [Altitudo merid. lucidæ Hydræ]	29 26½
Declin.	6 56
	36 23
add [adde]	5
	36 28
	53 32

Heart of ♌ in the merid., by the corrected quadrant [Cor ♌ in merid. corr. Quadrante]	50 24
Declin. this year [Declin. hoc anno]	13 54
	36 30
	53 30
Set the altit. of the pole approximately [Pone Alt. Poli … proxime]	53 30

The clock showed about hour 11½ [Horologium monſtrabat quaſi horam 11½.].

These preceding [observations] must be verified from the altitudes, for none of them has yet been corrected precisely [Hæc antecedentia debent ex altitudinibus verificari, nulla enim adhuc ad amußim correcta ſunt.].

DIE 23 FEBRUARIJ. [23 February]

♀ was observed in this way [Obſeruabatur ♀ in hunc modum.].

H. M.	Dist. of ♀ from Aldeb. [Diſt. ♀ ab Aldeb.]	Altit. ♀	Altit. of Aldeb. [Altit. Aldeb.]	Bright star of Orion's foot, west [Luc. pes Orion. occ.]
5 44			49 45	
5 49	33 57		49 27	
5 55	33 57		48 59	
6 2	33 57		48 26	

Conversely, ♀ from the bright star of ♈ [Vice verſa ♀ a lucida ♈.].

6 6	7 19½	28 45	47 6	18 0
6 13	7 19½	27 50	46 30	19 4
6 16½	7 19½	26 30	46 15	

6 23 The bright shoulder of Orion, west, 12 34 [6 23 Luc. humerus Orionis occ. 12 34].

6 25 Canis Major crossed the meridian: 20 19 [6 25 Tranſiuit Canis maior per Meridianum 20 19].

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

DIE 24 FEBRUARIJ. [24 February]

In the evening ♀ was observed in this way [Veſperi obſeruabatur ♀ in hunc modum.].

H. M.	Dist. from Aldeb. [Diſt. ab Aldeb.]	Altit. ♀	Altit. of Aldeb. [Altit. Aldeb.]	Bright star of Orion's foot, west [Luc. pes Orion. occ.]
6 32	33 0½	31⅔	48 27	11 3
6 38	33 0½	31 0	47 47	13½
6 41	33 0	30½	47 40	14 5

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

Conversely, ♀ from the bright star of ♈ [Vice verſa ♀ a lucida ♈.].

6 48	7 14⅚	29 0	46 47	15 28
6 52		29 0	46 25	16 30
7 0	7 14⅚	27 20	46 5	17 40

Canis Major crossed the merid., having an altit., by the revolving quadr., of 20 10⅚; the bright star of Orion's foot, west, 19 41 [Tranſiuit Canis maior per Merid. habens Altit. per Quadr. Volub. 20 10⅚ / Lucidus pes Orionis occid. 19 41].

These preceding [observations] must be verified from the altitudes, for none of them has yet been corrected precisely [Hæc antecedentia debent ex Altitudinibus verificari, nulla enim adhuc ad amußim correcta ſunt.].

DIE 25 FEBRUARIJ. [25 February]

♀ was observed in this way. I. From Aldebaran [Obſeruabatur ♀ in hunc modum. I. ab Aldebaran.].

H. M.	Distance [Diſtantia]	Altit. ♀	Altit. of Aldeb. [Altit. Aldeb.]	Canis Minor, east [Can. min. orient.]
6 29	32 6¼	32 10		23 6
6 35	32 6¼	31 10		22 4
6 37		31 0	47 39	21 21

Conversely, ♀ from the bright star of ♈ [Vice verſa ♀ a lucida ♈.].

6 52	7 6⅙	28 30	46 2	17 47
6 55	7 6¼	28 20	45 37	17 0
6 57	7 6⅙	27 40	45 20	16 20

Canis Major crossed the merid., having an altit., by the revolving quadr., of 20 15; Canis Minor, east, 14 46 [Tranſiuit Canis maior per Merid. habens Altit. per Quadr. Volub. 20 15 / Canis minor orient. 14 46].

The quadrant was duly set up [Quadrans rite diſpoſitus fuit.].

DIE 3 MARTIJ. [3 March]

In the evening ♀ was observed in this way. I. From Aldebaran [Veſperi obſeruabatur ♀ in hunc modum. I. ab Aldeboran.].

H. M.	Distance [Diſtantia]	Altit. of Aldeb. [Altit. Aldeb.]	Alt. ♀	Canis Minor, east [Can. min. orient.]
6 34½	26 56½	46 0	33⅔	17 31
6 38½	26 56½	45 25	33 10	16 23
6 42⅓	26 56	45 9	32 50	15 36

6 51½ Canis Major crossed the merid., having an altit., by the greater revolving quadr. [6 51½ Tranſiuit Canis maior per Merid. habens Altit. per Quadr. Volub. Maior.]

	Canicula, east [Canicula orient.]	
	20 19	13 17
Declin.	*16 11*	
	36 30	
	53 30	

Conversely, ♀ from the sole of Andromeda's foot [Vice verſa ♀ a Planta Andromedæ.].

7 5⅚	24 17⅚	42 36	28 30	9 40
7 13⅔	24 19[1]	41 30	28 0	7 55
7 17½	24 17½	41 5	27 20	

DIE 4 MARTIJ. [4 March]

In the evening ♀ was observed in this way. I. From Aldebaran [Veſperi obſeruabatur ♀ in hunc modum. I. ab Aldeboran.].

H. M.	Dist. [Diſt.]	Altit. of Aldeb. [Altit. Aldeb.]	Altit. ♀	Canis Minor, east [Can. min. orient.]
6 49¾	26 8	44 37	32 40	14 10
6 55½	26 9	44 0	31 40	12 50
7 7	26 5⅓ doubtful [dubia]	42 48	30 0	None could be taken in the equator because of clouds [Nulla ob nubes in æquatore capi potuit]
7 9⅓	26 8 better [melior]	42 23	29 30	

The meridian altitude of Canis Major, by the revolving quadr., among rather thick clouds: 20 16½ [Altitudo Canis maioris meridiana per Quadr. Volub. inter craßiuſculas nubes 20 16½].

Afterwards the distance of Aldeb. and the bright star of ♈ was observed in order to examine the sextant, and it was found twice, most exactly: 35 29⅚ and 35 30 [Poſtea obſeruabatur Diſtantia Aldeb. & lucidæ ♈ pro examinando Sextante eaque bis adinuenta fuit exactißime / 35 29⅚ / 35 30].

Then the distance between Aldeb. and the bright shoulder of Orion: 21 21, twice, most exactly [Deinde diſtantia inter Aldeb. & lucid. humerum Orionis 21 21 bis exactißime.].

Conversely, ♀ from the bright star of ♈ [Vice verſa ♀ a lucida ♈.].

H. M.	Distance [Diſtantia]	Altit. of Aldeb. [Altit. Aldeb.]	Altit. ♀	Heart of ♌, east [Cor ♌ orient.]
7 40⅙	9 53⅙	38 43	25 10	39 4
7 43⅔	9 53⅙	38 19	24 40	38 10
7 46⅙	9 53⅙	38 0	24 20	37 36

7 43 πλατ. Canis Minor crossed the merid., having an altit., by the revolving quadr., of 42 41 [7 43 πλατ. Tranſiuit Canis minor per Merid. habens Altit. per Quadr. Volub. 42 41].

DIE 6 MARTIJ. [6 March]

♀ was observed in this way. I. From Aldebaran [Obſeruabatur ♀ in hunc modum. I. ab Aldeboran.].

H. M.	Distance [Diſtantia]	Altit. of Aldeb. [Altit. Aldeb.]	Altit. ♀	Heart of ♌, east [Cor ♌ orient.]
8 4⅚	24 34⅙	32 46	20 10	27 56
8 7⅔	24 34	32 13	19 40	27 20
8 9⅔	24 34	31 55	19 20	26 50

Conversely, ♀ from the sole of Andromeda's foot [Vice verſa ♀ a Planta Andromedæ].

8 22	24 12¾	30 18	17 40	23 34
8 25⅙	24 12⅓	29 45	17 0	22 50
8 27⅔	24 12⅓	29 26	16 50	22 14

Afterwards, to examine the sextant, the dist. of the bright shoulder of Orion from Aldeb. was observed, and it was found to be 21 23, *which agrees better, because it had been corrected before* [Poſtea pro examinando ſextante obſeruabatur

diſt. lucidi humeri Orionis ab Aldeb. eaque inuenta fuit 21 23 *quod rectius conuenit quia antea corrigebatur.*].

[1] Struck through with lines. "dubia" [doubtful] is written beside it [Lineis inducta. Adſcriptum eſt »dubia«.].

DIE 7 MARTIJ. [7 March]

In the evening the altitude of the Greater Dog in the meridian was observed at H. 6 36½, having an alt., by the revolving quadr., of 20 15 [Veſperi obſeruabatur altitudo Canis maioris in Meridiano H. 6 36½, habens alt. per Quadr. Volub. 20 15.].

The same evening ♀ was observed as follows. I. From Aldebaran [Eadem veſpera obſeruabatur ♀ vt ſequitur. I. ab Aldebaran.].

H. M.	Distance [Diſtantia]	Altit. of Aldeb. [Altit. Aldeb.]	Alt. ♀	Heart of ♌, east [Cor ♌ orient.]
7 33½	23 49	37 8	25 30	35 44
7 37⅚	23 48⅚	36 29	25 10	34 30
7 42	23 48⅚	35 50	24 10	33 26

To examine the sextant, the dist. between Aldeb. and the Lesser Dog was observed: 46 20¼, 46 20, 46 19, 46 19 [Pro examinando Sextante obſeruabatur diſt. inter Aldeb. & Canem minorem / 46 20¼ / 46 20 / 46 19 / 46 19].

Afterwards between Aldebar. and the bright star of ♈, and it was found to be 35 31, 35 31½, 35 31½ [Poſtea inter Aldebar. & lucidam ♈, eaque inuenta fuit / 35 31 / 35 31½ / 35 31½].

1½ M. are lacking [*deficiunt 1½ M.*].

N.B. Shortly after the Greater Dog crossed the meridian — namely from approximately hour 6 M. 40 on the clock up to the completed 7th hour — we observed, by the brass azimuthal quadr., the pole star standing in azimuth 40° 50′, according to how the horizon was set up. It is to be seen whether the time agrees with the greatest remoteness [*N.B. Paulo poſtquam Canis maior tranſiret meridianum, nempe ab Hora in horologio 6 M. 40 proxime vſque in horam 7^timam completam obſeruauimus per Quadr. Azimuthalem Orichalcicum ſtellam Polarem conſiſtentem in Azimutho 40° 50′ pro vt Horizon erat diſpoſitus, videndum an tempus conueniat maximæ remotioni.*].

7^{H} 28½′ Canicula crossed the merid., having an altitude in the revolving quadr. of 42 39 [7^{H} 28½′ Tranſiuit Canicula per Merid. habens Altitud. in Quadr. Volub. 42 39].

Afterwards ♀ was observed *from the bright foot of* ♊ [Poſtea obſeruabatur ♀ *a lucido pede* ♊.].

H. C.	*Dist.* [*Diſt.*]	*Altit.* ♀	*Altit. of Aldeb.* [*Altit. Aldeb.*]	*Heart of* ♌, *east* [*Cor* ♌ *or.*]
7 48½	*24 12*	*23 20*	*34 48*	*31 51*
7 52	*24 12*	*23 0*	*34 14*	*30 51*

H. C.	*Dist.* [*Diſt.*]	*Altit.* ♀	*Altit. of Aldeb.* [*Altit. Aldeb.*]	*Heart of* ☋, *east* [*Cor* ☋ *or.*]
7 55	*24 12*	*22 20*	*33 55*	*30 6*

DIE 8 MARTIJ. [8 March]

In the evening ♀ was observed in this way. I. From Aldebaran [Veſperi obſeruabatur ♀ in hunc modum. I. ab Aldebaran.].

H. M.	Dist. [Diſt.]	Altit. of Aldeb. [Altit. Aldeb.]	Altit. ♀	The Greater Dog, west [Can. mai. occid.]
7 6⅓	23 5¼	40 0	29 30	8 14
7 8⅔	23 5¼	39 38	29 10	9 0
7 11⅚	23 4⅙	39 15	28 40	9 40

Conversely, ♀ from the bright star of the sole of Andromeda's foot [Vice verſa ♀ a lucida Plantæ Andromedæ.].

7 36⅙	24 13	35 56	25 10	15 52
7 38⅓	24 13		24 30	16 27
7 40⅓	24 13	35 19	24 10	16 54

The Lesser Dog could not be had in the meridian because of clouds [Canis minor in Meridiano haberi non potuit propter nubes.].

DIE 15 MARTIJ. [15 March]

♀ was observed in this way. I. From Aldebaran [Obſeruabatur ♀ in hunc modum. I. ab Aldebaran.].

H. M.	Distance [Diſtantia]	Altit. ♀	Altit. of Aldeb. [Altit. Aldeb.]	Canis Minor, west [Can. min. occid.]
7 20	18 30⅚	31 20	36 17	16 54
7 27¼	18 30⅚	29 10	35 20	17 43
7 31	18 30⅚	28 40	34 45	18 40

Conversely, ♀ from the bright star of Perseus' side [Vice verſa ♀ a lucida lateris Perſei.].

7 40½	26 37⅓	27 0	33 11	21 7
7 43⅔	26 37⅓	26 40	32 37	22 6
7 46⅓	26 37⅓	26 10	32 6	22 42

7 48⅚ Altitude of the pole star: 52 25 exactly [7 48⅚ Altitudo ſtellæ Polaris 52 25 præciſe.].

When the tail of Cygnus was in the same azimuth, by the lesser brass azimuthal quadr., the Lesser Dog, west: 10 51 [Cum Cauda Cygni eßet in eodem Azimutho per Quadr. minor. orichalcicum Azimuthalem, Canis minor. occid. 10 51].

DIE 16 MARTIJ. [16 March]

♀ was observed in this way. I. From the bright star of ♈ [Obſeruabatur ♀ in hunc modum I. a Lucida ♈.].

H. M.	Distance [Diſtantia]	Altit. ♀	Altit. of Aldeb. [Altit. Aldeb.]	Canis Minor, west [Can. min. occid.]
7 29⅓	17 59⅚	28 10	33 38	8 3
7 32	17 59⅚	27 30	33 7	9 2
7 38½	17 58	26 40		10 20

Altit. of the bright star of ♈ 14 40 [Altit. Luc. ♈ 14 40].

Conversely, ♀ from Aldebaran [Vice verſa ♀ ab Aldeboran.].

7 45	17 57¼	25 30	30 55	12 25½
7 53⅙	17 57¼	24 10	29 45	14 16
7 55⅔	17 57¼	24 0	29 25	15 5½

7 40½ The Lesser Dog, west: 11 0 [*7 40½ Canis minor occid. 11 0*].

The pole star was in one vertical circle with the tail of Cygnus, and had an altitude of the pole star of 52 19½. The altitude of the tail of Cygnus was 70 42⅔ [*Fuit ſtella Polaris in vno circulo verticali cum Cauda Cygni, habuitque altitudinem Polaris 52 19½ / Caudæ Cygni Altitudo fuit 70 42⅔*].

The pole star was placed in azimuth 5 35 west [*Ponebatur Polaris in Azimutho 5 35 occid.*].

♀ from the bright star of Perseus' side [♀ a lucida lateris Perſei.].

8 7⅚	26 22	22 0	27 37	17 59
8 11½	26 21¾	21 40	26 58	18 59
8 15⅙	26 21¾	21 10	26 20	20 2

DIE 18 MARTIJ. [18 March]

7^{H} 32^{M} The pole star was in one vertical circle with the tail of Cygnus, and the tail of Cygnus had an altit. of 7° 42¾′. The quadrant was set in azim. west 4° 2½′, for this is how it was afterwards found by triangular computation. The Greater Dog, west: 23 23½ [7^{H} 32^{M} Fuit ſtella Polaris in vno circulo verticali cum Cauda Cygni, habuitque Cauda Cygni altit. 7° 42¾′. Ponebatur Quadrans in Azim. occ. 4° 2½′. Nam poſtea ſic inuentum eſt per ſupputationem triangularem. / Can. mai. occ. 23 23½].

Toward evening ♀ was observed from Aldebaran [Circa veſperam obſeruabatur ♀ ab Aldebaran.].

H. M.	Distance [Diſtantia]	Altit. ♀	Alt. of the bright star of Orion's shoulder [Alt. luc. hum. Orion.]	The Lesser Dog [Canis minor]
7 52⅙	17 54	24 30	32 38	15 43
7 55⅓	17 54	24 10	32 13	16 33
7 59⅙	17 54	23 40	31 47	17 28

Conversely, ♀ from the bright star of Perseus' side [Vice verſa ♀ a lucida lateris Perſei.].

8 5⅚	25 53⅓	22 40	30 48	19 8
8 8½	25 53½	22 10	30 28	19 55
8 10⅚	25 53⅓	21 40	30 14	20 29

DIE 20 MARTIJ. [20 March]

Toward evening ♀ was observed from Aldebaran [Circa veſperam obſeruabatur ♀ ab Aldeboran.].

H. M.	Dist. [Diſt.]	Altit. ♀	Alt. of the bright star of Orion's shoulder [Alt. lucid. hum. Orion.]	Canicula, west [Canicula occid.]
8 29	15 58½	22 50	30 6	20 55⅙
8 35	15 58½	22 0	29 34	22 12
8 38	15 58½	21 40	29 4	23 1

Conversely, ♀ from the bright star of Perseus' side [Vice verſa ♀ a lucida lateris Perſei.].

8 47	25 31 doubtful [dubia]	20 10	27 51	25 23
8 52	25 30	19 10	27 15	26 34
9 0	25 30	18 20	26 10	Canicula could not be taken any further [Canicula vlterius capi non potuit.]
9 3	25 30	17 50	25 27	Arcturus, east [Arcturus or.] 70 14

Straight after the winter solstice[1], by three or four days, there was an earthquake, moderately severe, from north to south, which was noticed at different places at different times: at Wittenberg 6¼[H], at Dresden 6¾, at Magdeburg 5¾, approximately, before midnight — approximately, if I remember rightly, from the letters of Master Rollenhagen [Statim[1] poſt ſolſtitium hybernum tribus vel

quatuor diebus fuit terræ motus, mediocriter grauis, a Septentrione ad Meridiem, qui diuerſis locis diuerſis temporibus fuit animaduerſus / Witebergæ 6¼^{H} / Dresdæ 6¾ / Magdeburgi 5¾ / circiter, a. m. n. / circiter, ſi recte memini ex literis Domini Rollenhagij.].

[1] From codex K, folio 346 verso, at the end of the year 1598 [E codice K. folio 346 verſo, ad finem anni 1598.].

APPENDIX TO THE OBSERVATIONS OF THE YEAR 1598. [APPENDIX AD OBSERUATIONES ANNI 1598.]

SOME OBSERVATIONS CONCERNING THE WANDERING STARS, CHIEFLY THE THREE SUPERIOR ONES, MADE IN THE YEARS 97 AND 98 BY DAVID FABRICIUS[1]. [OBSERUATIONES QUÆDAM CIRCA STELLAS ERRATICAS PRÆCIPUE TRES SUPERIORES HABITÆ A° 97 & 98 A DAVIDE FABRICIO[1].]

First, on the acronychal ♃ [Primo de ♃ Acronychio.].

In the year 1597, on 20 November (Sunday), at about hour 12 P. M., I observed the greatest altitude of ♃ in the meridian: Gr. 57 Min. 55, nearly [Anno 1597, 20 Nouembris (Die ☉) hora 12 circiter P. M. obſeruaui Altitudinem ♃ maximam in Meridiano Gr. 57 Min. 55 fere.].

Distance of ♃ and Aldeb., exact [Diſtantia ♃ & Aldeb. exacta]	Gr. 8 52′
♃ and the following shoulder of Orion [♃ & hum. ſeq. Orionis]	19 8
♃ and ♂ were distant [♃ & ♂ diſtabant]	28 55

The meridian altitude of Aldeb. (with the same quadrant remaining fixed) was Gr. 52° 0′. And since the altitude of the equator here is 36° 22′, the declination of Aldeb. will be 15° 38′, which is what it in fact is according to Tycho's table. It is therefore certain that the quadrant was correctly set [Altitudo Aldeb. (eodem quadrante fixo manente) meridiana erat Gr. 52° 0′. Et quia altitudo æquatoris apud nos eſt 36° 22′, erit declinatio Aldeb. 15° 38′, vt iuxta tabulam Tychonis revera eſt. Certum igitur eſt quadrantem recte poſitum fuiße.].

From this the following were derived by the doctrine of spherical triangles [Hinc per △$^{gul.}$ Sphæricorum doctrinam ſequentia eruta ſunt.]:

Right ascension of ♃ Gr. 70 M. 13′, from the stars placed on either side [Aſc. R. ♃ Gr. 70 M. 13′ ex ſtellis vtrinque poſitis.].

Northern declination Gr. 21 M. 33 [Declinatio Borea Gr. 21 M. 33.].

Longitude G. 11 M. 37½ ♊. Latitude G. 0 M. 42½ south [Longitudo G. 11 M. 37½ ♊. Latitudo G. 0 M. 42½ Merid.].

The mean place of the Sun at the same time, from the Tychonic tables, is Gr. 9 M. 47 ♐. So the ☉, by its mean motion, was distant from the apparent opposite place of ♃ by G. 1 M. 50½ [Solis locus Medius ad idem tempus ex tabulis Tychonicis eſt Gr. 9 M. 47 ♐, abfuit igitur ☉ iuxta medium motum ſuum ab apparente ♂^{oſito} loco ♃ G.1 M.50½.].

The diurnal motion of ♃ is 8′ Minut. For on a following day, 29 Nov. (Tuesday), at 5 in the morning, ♃ was 19 Gr. 10 M. from the heel of ♊. Therefore in the space of 8 days 5 hours ♃ advanced 67′ [Motus diurnus ♃ eſt 8′ Minut. Nam ſeq. die 29 Nou. (Die ♂) hora 5 matutina ♃ aberat a Calce ♊ 19 Gr. 10 M. Ergo ſpatio dierum 8 hor. 5 67′ promotus ♃.]. Taking account, then, of the distance and of the proportion of the motions, ♃ is found to have been in opposition to the mean place of the ☉ on 22 November at hour 3 Mi. 36 after noon, in Gr. 11 Mi. 24½ of ♊, nearly, with southern lat. 0 42½, approximately [Quare habita ratione diſtantiæ & motuum proportione ♃ in ☍ medij loci ☉ deprænditur fuiße die 22 Nouembris hora 3 Mi. 36 poſt Merid. in Gr. 11 Mi. 24½ fere ♊, lat. Merid. 0 42½ circiter.].

For this time the Prutenic tables give the place of ♃ as 10 40½ ♊, southern lat. 1 Gr. 31, south. Diff. in longit. 0 44, in lat. 0 49 [Ad tempus hoc ex tabulis Prutenicis locus ♃ datur 10 40½ ♊, lat. Merid. 1Gr. 31 Mer. Diff[a] longit. 0 44, lat. 0 49.].

I could not get the distance of ♃ from the bright star of ♈ with my semi-sextant, nor indeed on two or more consecutive nights, because of the cloudy state of the air [Diſtantiam ♃ a Lucida ♈ habere non potui meo Semiſextante, vt nec duabus aut pluribus continuis noctibus propter nubiloſum aëris ſtatum.].

On the trine of ♃ and ☉ in the year 98 [De △ ♃ & ☉ anno 98.].

7 January, evening, hour 8. Merid. altit. of ♃ 57° 19′; dist. of ♃ and the following shoulder of Orion 22° 30′. Dist. of ♃ and ♂ 18 38. Merid. alt. of ♂ then, about hour 9, 63° 24′, and its dist. from the southern head of ♊ 23° 1½′ [7 Januarij veſp. hora 8. Altit. Merid. ♃ 57° 19′, diſt. ♃ & hum. ſeq. Orionis 22° 30′. Diſt. ♃ & ♂ 18 38. ♂ alt. Merid. tunc circa 9 horam 63° 24′ & diſt. eius a Merid. Cap. ♊ 23° 1½′.].

14 January (Saturday), evening, hour 7½. Merid. alt. of ♃ 57° 18′; dist. of ♃ and the southern horn of ♉ 12° 24½′; dist. of ♃ and ♂ 17° 58′ [14 Januarij (die ♄) veſp. hora 7½ alt. Merid. ♃ 57° 18′, diſt. ♃ & cornu auſtrale ♉ 12° 24½′, diſt. ♃ & ♂ 17° 58′.].

16 January, evening, hour 7. Dist. of ♃ and the northern horn of ♉ 12° 6′; ♃ and the following shoulder of Orion 22 43. From these the trine of ♃ and ☉ can be obtained [16 Januarij veſp. ho: 7, diſt. ♃ & bor. cornu ♉ 12° 6′, ♃ & hum. ſeq. Orion. 22 43. Ex his △ ♃ & ☉ haberi poteſt.].

On the acronychal ♂ in the year 97 [De ♂ Acronychio anno 97.].

In the year 97, on 6 December (Tuesday), at about hour 12 of the following night, the merid. altit. of ♂ was 63° 2′; dist. of ♂ and the southern head of ♊ 12° 51′; ♂ and the northern horn of ♉ Gr. 18 M. 20 [Anno 97, 6 Decembris (die ♂) hora 12 noctis ſequentis circiter, altit. Merid. ♂ erat 63° 2′, diſt. ♂ & auſtr. cap. ♊ 12° 51′. ♂ & cornu bor. ♉ Gr. 18 M. 20.].

10 December (Saturday), hour 12 p. m. Merid. alt. of ♂ 63° 12½′; dist. of ♂ and the southern head of ♊ 14° 19′. Dist. of ♂ and the northern horn of ♉ 16° 46′ (merid. altit. of Sirius, with the quadrant standing the same, 20° 11′ [10 Decembris (die ♄) hora 12 p. m. Alt. Merid. ♂ 63° 12½′, diſt. ♂ & cap. auſtr.

♊ 14° 19′. Diſt. ♂ & cornu bor. ♉ 16° 46′ (altit. Merid. Sirij ſtante Quadrante eodem 20° 11′.].

[1] Written in Fabricius's hand and inserted in codex G [Manu Fabricii conſcriptæ et codici G. inſertæ.].

18 December (Sunday), hour 12 p. m. Merid. alt. of ♂ 63° 28′; dist. of ♂ and the northern horn of ♉ 13° 38′; ♂ and the southern head of ♊ 17° 20′ [18 Decembris (die ☉) hora 12 p. m. alt. Merid. ♂ 63° 28′, diſt. ♂ & cornu bor. ♉ 13° 38′, ♂ & auſtr. cap. ♊ 17° 20′.].

From the observation of the 10th day (as being nearest the opposition) and of hour 12 of the following night, I derived the following by careful calculation [Ex obſeruatione diej 10 (vt ☍ proximæ) & hor. 12 noctis ſequentis, ſequentia diligenti calculo a me eruta ſunt.]:

Right ascension of ♂ 94° 6′, from two stars placed on either side [Aſc. R. ♂ 94° 6′ ex duabus ſtellis vtrinque poſitis.].

Northern decl. 26 50½. Longitude 3 40 ♋, northern latit. 3° 22′ [Decl. bor. 26 50½ / Longitudo 3 40 ♋, Latit. Bor. 3° 22′.].

The mean place of the ☉ at the same time 29° 27′ 32″ ♐. So the ☉ is distant from the opposition of ♂ by Gr. 4 Mi. 12 [Locus ☉ medius ad idem tempus 29° 27′ 32″ ♐. Ergo ☉ ab ☍ ♂ abeſt Gr. 4 Mi. 12.].

From the observations of the 18th day the following are found: right ascension of ♂ 90° 35½′, and this too from stars placed on either side (which proves that the distances are true) [Ex obſeruationibus 18 diej talia inueniuntur: Aſc. R. ♂ 90° 35½′ idque ex ſtellis vtrinque poſitis (quod probat diſtantias eße veras)].

Declin. 27° 6′ north. Longitude 0° 31½′ ♋, northern latit. 3° 35′ [Declin. 27° 6′ Bor. / Longitudo 0° 31½′ ♋, Latit. Bor. 3° 35′.].

From these it appears that ♂ advanced against the order of the signs, in the space of 8 days, by Gr. 3 Mi. 8½, and the diurnal motion comes out at 23½ Minut. So, by the proportion of the motions and of the days, ♂ is found to have been acronychal, or in opposition to the mean place of the ☉, on 13 December at 13 hours Mi. 26 p. M., in 2 Gr. 28 Mi. ♋, northern latit. Gr. 3 M. 27. The Prutenic tables give the place of ♂ as 3 51 ♋, lat. 2° 33′; diff. in long. 1° 22′, in latit. 0° 54½′ [Ex his apparet ♂[tem] 8 dierum ſpatio in præcedentia promotum fuiße Gr. 3 Mi. 8½ & motus diurnus datur 23½ Minut. Ergo iuxta proportionem motuum & dierum ♂ invenitur Acronychius vel in ☍ medij loci ☉ fuiße die 13 Decembris horis 13 Mi. 26 p. M. in 2 Gr. 28 Mi. ♋, latit. bor. Gr. 3 M. 27. Locus ♂ ex tabulis Prutenicis datur in 3 51 ♋, lat. 2° 33′, diff[a] long. 1° 22′, latit. 0° 54½′.].

Our[1] reckoning gives its longitude with respect to the ecliptic as 2° 32½ ♋, and its latitude as 3 p. 26⅙; from which it is clear that this observation exceeds by scarcely 2[M] in longitude, while in latitude at least a single M. is lacking [Noſtra[1] ratiocinatio dat { Longitudinem eius ratione eclipticæ 2°32½ ♋, / Latitudinem vero 3 p. 26⅙, vnde liquet quod hæc obſeruatio vix 2[M] abundet in longitudine, in latitudine autem deſideratur ſaltem vnicum M.].

On the trine of ♂ and ☉ in the year 98 [De △ ♂ & ☉ anno 98.].

2 February (Thursday), evening. Merid. alt. of ♂ 62° 58′; dist. of ♂ from the northern horn of ♉ Gr. 8 0′, from the southern head of ♊ 23° 12′ [2 Februarij (die ♃) veſp., alt. Merid. ♂ 62° 58′, diſt. ♂ a boreali cornu ♉ Gr. 8 0′, a Merid. cap. ♊ 23° 12′.].

On the quadrature of ♂ and ☉ [De □ ♂ & ☉.].

9 March, my birthday, evening, 1 hour after sunset: dist. of ♂ from the southern head of ♊ 13° 35′, from the northern head of ♊ 12 27 [9 Martij die meo natali, veſp. hora 1 poſt occaſum, diſt. ♂ ab auſtrali capite ♊ 13° 35′, a Sept. cap. ♊ 12 27.].

15 March (Wednesday), 1 hour after sunset: ♂ from the southern head of ♊ 11° 19′, from the northern head of ♊ 10° 42′ [15 Martij die ☿ hora 1 poſt occaſum, ♂ ab auſtrali capite ♊ 11° 19′, a Sept. cap. ♊ 10° 42′.].

20 March (Monday), in the evening: ♂ was distant from the southern head of ♊ 9° 24′, and from the northern head of ♊ the same amount [20 Martij die ☾, veſperi, ♂ diſtabat ab auſtr. cap. ♊ 9° 24′, a Sept. cap. ♊ tantundem.].

On the acronychal ♄ [De ♄ Acronychio.].

9 March, hour 12 p. M. Merid. alt. of ♄ 38 33½ (merid. alt. of the following star (*) of the four in the wing of ♍ 37 11½). ♄ and Vindemiatrix 14° 2½′. ♄ and the tail of ♌ 17 25 [9 Martij hora 12 p. M. alt. Merid. ♄ 38 33½ (alt. Merid. * ſeq: quatuor in ala ♍ 37 11½). ♄ & Vindemiatrix 14° 2½′. ♄ & cauda ♌ 17 25.].

On 12 March (Sunday), hour 12 p. M. Merid. alt. of ♄ 38° 39′ (merid. alt. of the tail of ♌, with the quadrant fixed, 53° 12′); dist. of ♄ and the following one of the four in the wing of ♍ 4° 8′; ♄ and Spica 18° 22′; ♄ and the tail 17 14 [Die 12 Martij (die ☉) hora 12 p. M. Alt. Merid. ♄ 38° 39′ (alt. Merid. Caudæ ♌ fixo quadrante 53° 12′), diſt. ♄ & ſeq. quatuor in ala ♍ 4° 8′, ♄ & Spica 18° 22′, ♄ & cauda 17 14.].

On 13 March, h. 12 p. M., merid. alt. of ♄ 38° 41′, nearly. I could not get the distances from the stars (*) because of intervening clouds [Die 13 Martij h. 12 p. M. alt. Merid. ♄ 38° 41′ fere. Diſtantias a * propter interuenientes nubes habere non potui.].

From the observation of 12 March the following result by calculation [Ex obſeruatione 12 diej Martij ſequentia proueniunt per calculum:]:

Right ascension of ♄ 181° 29′, from stars placed on either side [Aſc. R. ♄ 181° 29′ ex ſtellis vtrinque poſitis]. Northern decl. 2 17 [Decl. bor. 2 17]. Longit. 0 26½ ♎, latit. 2 41 north [Longit. 0 26½ ♎, Latit. 2 41 Bor.].

This longitude seems², on comparison with my observations, to fall short by 2½ M.; in lat. it exceeds by at least ½ Min. [*Videtur² hæc longitudo collatione mearum obſeruationum deficere 2½ M., in lat. abundat ſaltem ½ Min.*]

The mean place of the ☉ at the same time, from Tycho's tables, is given as 0° 9′ 32″ ♈. So the ☉, by its mean motion, is distant from the opposition of ♄ by 17′. And since the diurnal motion of ♄ is found from the observations to be 5′, nearly, I add these to the mean diurnal motion, 59′, and they make 64′; and I say: 64′ give [Locus medius ☉ ad idem tempus ex tabulis Tychonis datur 0° 9′ 32″ ♈. Ergo ☉ medio motu ab ☍ ♄ abeſt 17′. Et quia motus diurnus ♄ ex

obſeruationibus inuenitur 5′ fere, addo illa motui medio diurno 59′ & fiunt 64′, & dico 64′ dant]

[1] This annotation is written in another hand. Tycho added: *See below* [Hæc annotatio alia manu conſcripta eſt. Adſcripſit Tycho *Vide infra.*].

[2] Added by Tycho in the margin [A Tychone in margine adſcriptum.].

24 hours; what do 17′ give? And 6 hours Mi. 24 result, or 16 minutes of the day. From this, therefore, ♄ is found to have been in opposition to the mean place of the ☉ on 13 March, ho. 6 M. 24 A. M., in 0 25 ♎. — *Or rather in 0 27½ ♎.* [24 Hor: q. d. 17′; & dantur horæ 6 Mi. 24 vel 16 ſcrupula diej. Hinc itaque deprehenditur ♄ in ☍ medij loci ☉ fuiße 13 Martij ho. 6 M. 24 A. M., in 0 25 ♎. — *Vel potius in 0 27½ ♎.*]

The place of ♄ from the Prutenic tables is 0° 59′ 4″ ♎, northern lat. 2° 21′ 45″ 28‴. Difference in longit. 0° 34′, in lat. 0° 19′ 15″. (In my first calculation I had erred; these, however, are most certain[1].) [Locus ♄ ex tabulis Prutenicis eſt in 0° 59′ 4″ ♎, lat. Bor. 2° 21′ 45″28‴. Differentia longit. 0° 34′, lat. 0° 19′ 15″. (In primo calculo erraueram, hæc vero certißima ſunt[1]).]

How far these acronychal observations of ♃, ♂ and ♄ disagree with the calculation recently sent to me by Your Excellency will be readily apparent. The difference of longitude is greater in ♄ than in the others [Quantum hæ obſeruationes acronychiæ ♃ ♂ & ♄ a T. Exc. nuper ad me transmißo calculo diſcrepent, facile apparebit. Longitudinis differentia in ♄ maior quam in reliquis.].

If, therefore, Your Excellency has observed the same, or has had them observed, either at Wandsbek or in Denmark, I should like to be told at the first opportunity what the discrepancy between the observations is. I fully believe that these acronychal observations of mine differ by scarcely a single minute from yours, which are most exact and infallible — provided you made observations. And when one day I have built new instruments on the pattern of Your Excellency's instruments, using also that fine division of the degrees by transversal dots, I hope for the fullest agreement of all. May divine mercy grant this, and further favour my wishes and your discoveries [Si igitur T. E. eosdem vel Wandesburgi vel in Dania obſeruauerit vel obſeruari curauerit, velim mihi primo tempore indicari, quæ ſit obſeruationum diſcrepantia. Ego omnino exiſtimo haſce meas Acronychias obſeruationes vix vnico minuto a veſtris exactißimis & infallibilibus, ſi modo obſeruationes inſtituiſtis, diſtare. Vbi vero aliquando noua inſtrumenta iuxta formam inſtrumentorum T. Exc. conſtruxero, adhibita quoque ſubtili illa graduum per transuerſalia puncta diſtributione, ſpero plenißimam omnium conſonantiam. Quod faxit diuina clementia & meis votis veſtrisque inuentis vlterius aſpiret.].

Some other observations of ♄ [Aliæ quædam obſeruationes de ♄.].

In the year 97, 9 October (Sunday), in the morning hour, I observed ♄ east of the ☉; distance of ♄ and the tail of ♌ 15° 48′, ♄ and the heart of ♌ 33° 59′ [Anno 97 9 Octobris die ☉ hora mat. obſeruaui ♄ orientalem a ☉; diſtantia ♄ & Caudæ ♌ 15° 48′, ♄ & cordis ♌ 33° 59′.].

30 October (Sunday), morning: dist. of ♄ and Arcturus 33° 33′; ♄ and the tail of ♌ 17° 35′ [30 Octobris die ☉ mane, diſt. ♄ & arcturi 33° 33′, ♄ & caudæ ♌ 17° 35′.].

6 November (Sunday), morning: dist. of ♄ and Arct. 33° 14′; ♄ and the tail of ♌ 18° 3′ [6 Nouembris die ☉ mane, diſt. ♄ & arct. 33° 14′, ♄ & caudæ ♌ 18° 3′.].

29 November, 1 hour before the rising of the ☉: exact distance of ♄ from the following star of the 4 in the wing of ♍ 1° 47′. Merid. altit. of ♄ 37° 19′ [29 Nouembris hora 1 ante ☉ ortum diſtantia exacta ♄ a ſtella ſeq. 4 in ala ♍ 1° 47′. Altit. merid. ♄ 37° 19′.].

10 December[2], at 7 in the morning: distance of ♄ and Spica ♍ 15° 25′; merid. alt. of ♄ 37° 11′, of nearly the same altitude as the following star (*) of the four in the wing of ♍, from which it was 1 gr. 15½′ distant [10 Decembris[2] hora 7 matutina diſtantia ♄ & Spicæ ♍ 15° 25′, alt. Merid. ♄ 37° 11′, eiusdem altitud. fere cum * ſeq. quatuor in ala ♍, a qua aberat 1 gr. 15½′.].

In the year 98, 7 January[3], hour 4½ in the morning: merid. alt. of ♄ 37° 8′; dist. of ♄ and Spica 14° 59′; ♄ and the tail 20 17 [Anno 98 7 Januarij[3] hora 4½ mane, alt. Merid. ♄ 37° 8′, diſt. ♄ & Spicæ 14° 59′, ♄ & caudæ 20 17.].

5 March (Sunday), at about hour 12½ p. M.: meridian altitude of ♄ 38° 25′; dist. of ♄ and the following one of the four in the wing of ♍ 3° 35′ [5 Martij die ☉ hora 12½ fere p. M., altitudo Meridiana ♄ 38° 25′, Diſt. ♄ & ſequentis quatuor in ala ♍ 3° 35′.].

Observations made of ♀ in the year 98 [Obſeruationes in ♀ habitæ anno 98.].

10 February: dist. of ♀ (in the evening, one hour after sunset) and the northern horn of ♈ 16° 25′; ♀ and the head of Andromeda 25° 50′ [10 Februarij diſt. ♀ (veſperi hora vna poſt occaſum) & bor. cornu ♈ 16° 25′, ♀ & cap. Andromedæ 25° 50′.].

21 February[4], evening (with the preceding foot of Orion in the M.C.): dist. of ♀ and Aldeb. 35° 47½′; ♀ and the bright star of ♈ 8° 8′ [21 Februarij[4] veſperi (pede præcedente Orionis in M.C.) diſt. ♀ & Aldeb. 35° 47½′. ♀ & lucida ♈ 8° 8′.].

23 February, evening: ♀ and Ald. 33° 57′; ♀ and the bright star of ♈ 7 20 [23 Februarij veſperi, ♀ & Ald. 33° 57′, ♀ & lucida ♈ 7 20.].

1 March, about 3 p. M.: merid. alt. of ♀ 53 15½. At hour 7 p. M.: dist. of ♀ and Ald. 28 33; ♀ and the bright star of ♈ 8 18 [1 Martij circa 3 p. M. alt. Merid. ♀ 53 15½; hora 7 p. M. diſt. ♀ & Ald. 28 33, ♀ & lucida ♈ 8 18.].

I wish I could have had more observations around the limits of greatest elongation, but I was prevented by the murkiness of the air. I think, however, that the observations of 21 February come as close as possible [Vtinam circa limites maximæ digreßionis plures obſeruationes habere licuißet, ſed aëris obſcuritate impeditus fui, puto tamen obſeruationes 21 Februarij quam proxime accedere.].

[1] Tycho added at the foot of the page: *Those differences, whatever they are, came about partly because I gave the values loosely and in a quasi-conjectural way, since my books were not at hand, and partly because this observation is not exact to the very minutes* [Adſcripſit Tycho ad imam paginam: *Differentiæ illæ qualescunque euenerunt partim quod lato modo & quaſi coniecturali modo ea indicarim, cum libri mei ad manus non eßent, partim quod obſeruatio hæc in ipſis minutis non ſit exacta.*].

[2] Tycho added in the margin: ♄ *in quadrature with the* ☉ [Adſcripſit Tycho in margine: ♄ *in* □ ☉.].

[3] Tycho added in the margin: ♄ *stationary* [Adſcripſit Tycho in margine: ♄ *ſtationarius.*].

[4] Tycho added in the margin: *Around the limits of greatest elongation of* ☿ from the ☉ [Adſcripſit Tycho in margine: *Circa limites max. digreßionis* ☿ a ☉.].

Observations made of ☿ [Obſeruationes in ☿ habitæ.].

In the year 97, 29 November, morning (0° ♎ in the M.C.): dist. of ☿ from the northern scale-pan 13° 50′ (☿ was then raised about 8°); ☿ from the southern scale-pan 16 58 (alt. of ☿ then 6 grad.) [Anno 97 29 Nouembris mane (0° ♎ in M. C.) diſt. ☿ a lance boreali 13° 50′ (erat ☿ tunc eleuatus 8 gradibus circiter), ☿ a lance auſtrali 16 58 (alt. ☿ tunc 6 grad.).].

10 December, morning (12 ♎ in the M.C.): dist. of ☿ and the northern scale-pan 25 15 (at an altit. of ☿ of 5 Gr.); dist. of ☿ and the southern scale-pan 28 32 (at an alt. of ☿ of 2½ grad.) [10 Decembris mane (12 ♎ in M. C.) diſt. ☿ & lancis borealis 25 15 (in altit. ☿ 5 Gr.), diſt. ☿ & lancis auſtralis 28 32 (in alt. ☿ 2½ grad.).].

And around these first days of December I saw all the planets, and they could be observed most conveniently, as I also did around 10 February in the year 98 on several consecutive days [Et circa hos primos dies Decembris omnes planetas vidi & potuerunt commodißime obſeruari, vt & circa 10 Februarij anno 98 feci aliquot continuis diebus.].

In the year 98, 10 September (0° ♊ in the M.C.): ☿ and ☿ were 28 30 apart (alt. of ☿ then about 8 gr.); ☿ and the leg of Pegasus 30 37 (alt. of ☿ 6 grad.); ☿ and the head of Andromeda 31 7½ (alt. of ☿ 4 grad.) [Anno 98 10 Septembris (0° ♊ in M. C.) ☿ & ☿ diſtabant 28 30 (alt. ☿ tunc 8 gr. circiter), ☿ & crus pegaſi 30 37 (alt. ☿ 6 grad.), ☿ & cap. Andro: 31 7½ (alt. ☿ 4 grad.).].

On the lunar eclipse of the year 98, 11 February [De Eclipſi Lunari anno 98 11 Februarij.].

After midnight, or rather from hour 11 of the night, the sky was clear until morning. So the eclipse of the ☾ could be observed very well here [Poſt mediam noctem vel potius ab hora 11 noctis clarum erat cœlum vsque mane. Ergo Eclipſis ☾ optime obſeruari hic potuit.].

When it began to be darkened, I observed the altitude of Regulus, which was 24° 30′. From this altitude, then, and the declination of Regulus, I sought the time by spherical triangles, and it was the fourth hour, one minute, A. M., most exactly, with Gr. 28 26′ ♐ ascending in our horoscope and 6 26 ♏ in the M.C.;

the ☉ was then in 2° 28′ ♓¹ [Cum inciperet obſcurari, obſeruaui altitudinem reguli quæ erat 24° 30′, per altitudinem igitur hanc & declinationem reguli inquiſiui tempus per △gul. Sph. & fuit hora quarta minuto vno A. M. exactißime, aſcendente in noſtro Horoſcopo Gr. 28 26′ ♐, in M. C. 6 26 ♏; ☉ tunc erat in 2° 28′ ♓¹.].

At the very beginning of the obscuration, or one minute after, I observed with my semisextant the distance of the following star of the four in the wing of ♍ and the western limb of the ☾, 33° 39′; and the distance of the same star and the eastern limb of the ☾, 33° 4′; the diameter of the ☾ about 35′ — this same diameter I also observed separately. The distance of the neck of ☋ and the western limb of the ☾ was 11° 8′. From this the apparent place is given as 1° 19′ ♍, and the apparent southern latitude 0 17½. The parallax of longit., from Reinhold's tables, I take to be 12′, to be added (add.), so that the true longitude is 1° 32′ ♍; the parallax of latit. 50′, so the true northern latitude is 0′ 32½′ [Sub ipſum initium obſcurationis vel vno minuto poſt obſeruaui Semiſextante meo diſtantiam ſtellæ ſequentis quatuor in ala ♍ & occidentalis limbi ☾ 33° 39′, eiusdem ſtellæ & orientalis limbi ☾ diſtantiam 33° 4′, diametrum ☾ 35′ circiter, eandem diametrum etiam ſeorſim obſeruaui. Diſtantia Ceruicis ☋ & occidentalis limbi ☾ 11° 8′, hinc locus viſus datur 1° 19′ ♍, latitudo viſa auſtralis 0 17½, parallaxis longit. ex tabulis Reinholdi puto eße 12′ add., vt vera longitudo ſit 1° 32′ ♍, parallaxis latit. 50′, ergo latitudo borea vera 0′ 32½′.].

The same night, at hour 1 mi: 53½ (Capella having an altitude of 25° 5′), I took the exact distance of the preceding star and the western limb of the ☾, 34 32. It was observed near the 90th degree of the zodiac, but had passed it a little [Eadem nocte hora 1 mi: 53½ (Capella altitudinem habente 25° 5′) accepi exactam diſtantiam ſtellæ præcedentis & limbi ☾ occidentalis 34 32; obſeruata erat circa 90ſimum gradum Zodiaci, præterierat tamen parumper.].

The estimated time of the middle, or greatest, darkness was hour 5 Mi. 58½, with the tail of ☋ at an altitude of 24° 30′. The place of the ☉ was then 2° 33′ [Tempus æſtimatum mediæ vel ſummæ obſcuritatis fuit hora 5 Mi. 58½, Cauda ☋ altitudinem habente 24° 30′. ☉lis locus tunc 2° 33′.].

So, according to my observations made of the ☾, once the parallax is applied, all these seem to agree well. And thus the eclipse was about one hour later than the forecasts of many have it [Ergo iuxta obſeruationes meas in ☾ habitas adhibita parallaxi videntur hæc omnia bene conuenire. Et ſic eclipſis vna hora circiter tardior fuit quam prognoſtica multorum habent.].

N.B. If only your Urania would soon supply us with canons of the lunar motion (which we earnestly desire)! Then we could judge more correctly about these and other matters [N. B. Vtinam motus Lunaris Canones nobis propediem (quod vehementer optamus) Vrania tua ſuppeditaret, tunc de his & alijs rectius iudicare poßemus.].

When the ☾ was in its greatest obscuration, it seemed to have this shape, and the bright part was very nearly equal to 5′. But since the light was dimmer because of the vapours present around the horizon, I could not measure it with

the instrument. When I saw it for the last time, it was of this shape. I did not see it sinking below the horizon, because it was immersed in vapours [Cum in maxima obſcuratione ☾ erat, videbatur hanc formam habere & lucida pars 5 minuta æquabat proxime. Quod vero lumen obſcurius erat propter vapores circa Horizontem exiſtentes, inſtrumento dimetiri non potui. Cum vltimo illam viderem, huius erat formæ. Sub Horizontem labentem non vidi, quia vaporibus immerſa erat.].

Diagram. A small circle set at the right of the text, beside the paragraphs from "N. B. Vtinam" to "hanc formam / habere". A straight chord cuts off a narrow segment at the top of the circle; that segment is left plain, and the rest of the disc is filled with close wavy strokes. Hand-lettered labels:

- Above the circle: "ſup. pars" — upper part
- Inside the plain top segment: "ſerena" — clear

Diagram. A second, larger circle set at the right of the text, beside the lines from "men obſcurius" to "vidi, quia vaporibus immerſa erat". A curved line divides the disc: the part on the left is a plain crescent; the part on the right is filled with a grid of crossing lines. Hand-lettered labels:

- Left of the circle: "ort." — ortus, rising
- Right of the circle: "occas." — occasus, setting

A reliable observation made of the ☾ in the year 98, 5 Feb., Sunday, in the evening [Certa obſeruatio ad ☾ facta anno 98 5 Feb. die ☉ veſperi.].

Merid. alt. of the lower limb of the ☾ 64 Gr. 8 Mi:; distance of the southern head of ♊ from the western limb of the ☾ Gr. 20 0′ exactly [Alt. Merid. inferioris limbi ☾ 64 Gr. 8 Mi:, diſtantia auſtralis Capitis ♊ ab occidentali limbo ☾ Gr. 20 0′ exacte.].

[1] Added in another hand (not Tycho's): N.B. Having repeated the calculation once more, we find the beginning, from this same altitude of Regulus, H. 3 M. 58¾ [Adſcriptum eſt alia manu (non Tychonis): N. B. Repetito denuo calculo inuenimus principium ex eadem hac altitudine Reguli H. 3 M. 58¾.].

It could not be observed by others at the same moment without error, because some time necessarily passes between two observations, during which the ☾ changes its place. But this observation is certain, and I do not doubt that it will agree with the eclipse in the investigation of the longitude.

If Your Excellency [Exc. T.] observed the eclipse already mentioned at Wandsbek [Wandesburgi] (as Ridd. reported)[1], or also had it observed in Denmark, I earnestly ask that you deign to search out from these observations something certain about the true interval between the meridians, and communicate it to me.

On the Solar Eclipse of 25 February [De Eclipſi ☉^{lari} 25 Februarij.]

Because of the cloudy sky I was not able to observe the beginning of the ☉ eclipse here. The end, however, was with us at hour 12 Mi. 5, and at the greatest obscuration there seemed to remain of the solar body [de ☉^{lari} corpore] up to 9 or 10′ Min: in the lower part[2].

Repetition of the calculation of the motion of ♂ around the opposition to the simple ☉, from Fabricius's observations [Repetitio calculi in motu ♂ circa ☍ ſimplicis ☉lis ex obſeruationibus Fabricianis.]

The northern horn of ♉ [Borealis cornu ♉]	Right ascension [Aſcenſio recta] 75° 14′	Declination [Declinatio] 28° 11′ B.
The lower head of ♊ [Inferioris Cap. ♊]	110 10 10	28 55½ B.

On 10 December [1597], from the distances and meridian altitudes noted down by D. Fabricius, the right ascension of ♂ comes out:

♂ from the horn of ♉ [cornu ♉]	94° 6′
♂ from the lower head of ♊ [♂ a … inf. cap. ♊]	94 6 40
Hence the right ascension, limited [Vnde Aſcenſio recta limitata]	94 6 20
H. 12⅙ — Declination	26 50 30 Bor.
Corresponding longitude [Reſp. Longitudo]	3 40 15 ♋
Latitude [Latitudo]	3 22 B.

On 18 December, from Fabricius's observations noted down in the same way:

H. 11⅝ Right ascension of ♂ from the horn of ♉ [Cornu ♉]	90 35 0
♂ from the head of ♊ [Capite ♊]	90 38 0
Therefore the right ascension, limited [Ergo Aſcenſio recta limitata]	90 36½
Declination of ♂, B. [Declinatio ♂ B.]	27 6
Corresponding longitude	0 32 40 ♋
Latitude	3 34½ B.

From the motions of ♂ thus found, over an interval of 8 days the daily motion comes out at 23′ 27″; it will be used for the following reduction to the opposition with the ☉ [in ☍ ☉lis].

Reduction of ♂ to the opposition with the simple ☉, from the foregoing [Reductio ♂ in ☍ ſimplicis ☉lis ex antecedentibus.]

On 10 December, H. 12⅗, according to the time equated and reduced to the meridian of Uraniborg [ad Merid. Vraniburgicum]:

Mean motion ☉ [Medius motus ☉]	29 29 0 ♐
True place ♂ [Verus locus ♂]	3 40 15 ♋
Difference from the opposition [Differentia ab ☍]	4 11 15

According to the combined motion of ♂ and the ☉, these correspond to D. 3 H. 1 M. 0.

Therefore the opposition of ♂ to the simple ☉ took place on 13 December, H. 13 M. 35 p.m.; and at that same time the place of ♂, derived in proportion to the daily motion found, is found to be going to stand at 2° 29′ ♋.

The northern latitude, however, observed [Latitudo autem Borea … obſeruata]	3 27
Parallax adds [Parallaxis addit]	2
Hence the true latitude [Vnde vera latitudo]	3 29 B.

[1] Ludolphus Riddershusius, of Bremen [Ludolphus Riddershuſius, Bremenſis.].

[2] Tycho added: *At Uraniborg the end could have been* $0^H\ 24^M$. There follow more than two pages dealing with astrological matters; among other things a nativity figure of Fabricius is included. He was born in the year 1564 on 9 March, at hour 4 M. 59 a.m., under a pole elevation of 53° 38′. What follows after this was written by some pupil of Tycho [Adſcripſit Tycho: *Vraniburgi poterat finis eße* $0^H\ 24^M$. Sequuntur plus quam duæ paginæ de rebus aſtrologicis tractantes, inter alia figura nativitatis Fabricii ineſt. Natus erat ille anno 1564 die 9 Martii, hora 4 M. 59 a. m. ſub elevatione poli 53° 38′. Quæ poſt hæc ſequuntur ab aliquo diſcipulo Tychonis conſcripta ſunt.].

To correct the longitude for the latitude and for the proper path of ♂, add 6′. Therefore the true longitude is 2° 35′ ♋.

But if one should rather keep to the observations made on the 10th, because they agree better, you can, without perceptible error, put the equated observed longitude at the opposition at 2° 34′ ♋.

Comparison with our restitution [Collatio cum reſtitutione noſtra]:

Simple longitude of ♂ [Simplex longitudo ♂^{tis}]	1^s 24° 55′ 47″
Apogee of ♂ [Apogæum ♂]	3 25 29 5
Eccentric anomaly [Anomalia eccent.]	9 29 26 42
The corresponding prosthaphaeresis [Reſpondet προσθαφαιρεσις]	9 23 15 add.
Precession of the equinox [Præceßio æquinoctij]	28 13 20
Therefore the true place of ♂ [Ergo verus locus ♂^{is}]	2 32⅓
Difference, plus [Differentia plus]	1⅔.

Investigation of the place of ♃ [on 20 November in the year 1597] from the observations of Master David around the opposition with the ☉, from distances from the fixed stars alone [Inquiſitio loci ♃ [die 20 Nouembris a. 1597] ex obſeruationibus Domini Davidis circa ☍ ☉ ex ſolis diſtantijs a fixis.]

Diagram. A small line figure standing at the left of the measure, beside the legend. Two curved lines run down from the ends of a short curved top line

and meet at a point at the bottom, labelled A. A further line runs from C, on the top line, down to A. Below the top line a nearly straight line joins D (left) and B (right), and two short lines join C to D and C to B.

- A (bottom point): A
- B (right, below the top line): B
- C (on the top line): C
- D (left, below the top line): D

Legend set beside the figure:

- A — the antarctic pole of the ecliptic [polus antarcticus eclipticæ]
- B — the shoulder of Orion [Humerus Orionis]
- C — ♃
- D — Aldebaran [Aldeboran]

I. In the triangle BAD there are given:

BA	73 54	complement of the latitudes [complementum latitudinum] (brace over BA and DA)
DA	84 29	
DAB	18 59½	difference of longitude [differentia longitudinis]
Therefore DB [Ergo DB]	21 25 7	

II. In the triangle DBA all the sides are given; therefore, by IX of the Spherics [per IX Sphæricorum], the angle at B is 117° 30′ 13″.

III. In the triangle CBD all the sides are likewise given, for CB is 19° 8′, DB 21° 25′ and DC 8 52; therefore the angle CBD is 24° 55′ 58″, which, added to the angle DBA found before, makes up the angle CBA, 142° 26′ 11″.

IV. In the triangle CBA, since two sides about the given angle B are given, the side CA becomes known: 89° 17½, the complement of the latitude of ♃, which is 0 42½.

V. Finally, in the triangle CAB, from all the sides given, the angle CAB will be established: the difference of longitude of ♃ and the Shoulder of Orion, 11° 31′ 33″, to be subtracted.

Longitude of the Shoulder of Orion [Longitudo Humeri Orionis]	23 9 30 ♊
Therefore the longitude of ♃ [Ergo longitudo ♃]	11 38 0 ♊
Longitude of Aldebaran [Longitudo Aldeboræ]	4 10 0
Angle DAC [Angulus DAC]	7 28 20
	11 38 20

These results agree nearly with those that D. Fabricius found earlier using the declination; his longitude of ♃ falls short by only ½ M.

By our reckoning, for the meridian of Uraniborg [ad Meridianum Vraniburgicum] and taking Fabricius's observations as the basis, the opposition with the

simple ☉ [☍ cum ſimplici ☉[lis]] took place in the year 1597 on 22 November, H. 4 p. M.; at that same time ♃ was found to be at 11° 24½′ ♊.

Mean motions of ♃ from the Prutenic Tables [♃ motus medij ex Tabulis Prutenicis]:

Simple long. of ♃ [Simplex long. ♃]	0ˢ 38° 4′ 24″
Apogee of ♃ [Apogæum ♃]	2 38 44 10

Corrections [Correctionum]		Hence by our correction there corresponds [Hinc per correctionem noſtram reſpondet]	11 18⅛′
from the long. [a long.]	15″	Difference [Differentia]	6 10
from the apog. [ab apog.]	3° 25′	For the inclination, latitudes [Pro inclinatione latitudinibus]	
to the prosth. [ad προσ.]	18	subtract from the observed [ſubtr. obſeruatis]	34′.

OBSERVATIONS OF MASTER FABRICIUS ON THE PLANETS, ESPECIALLY THE SUPERIOR ONES, MADE IN THE YEAR 1598[1]

[OBSERUATIONES D. FABRICIJ CIRCA PLANETAS PRÆSERTIM SUPERIORES ANNO 1598 HABITÆ[1].]

(I received these observations from David Fabricius in the year 1599, in the month of March.) [*(Has obſeruationes accepi a Davide Fabrici Anno 1599 Menſe Martio).*]

♄: for the conjunction of ♄ and ♀ [♄ pro ☌ ♄ & ♀.].

In the year 98, 21 October, before the rising of the ☉: ♄ was 29° 42′ from Arcturus; ♄ and the tail of ☋ 26° 21′. ♀ and Arcturus were 30° 55′ apart; ♀ and ♄ 2° 32′ (the altitude of ♄ in the vertical circle had therefore been observed as 14 and 15 Gr.) [Anno 98 21 Octobris ante ortum ☉ diſtabat ♄ ab Arcturo 29° 42′, ♄ & cauda ☋ 26° 21′. ♀ & Arcturus diſtabant 30° 55′, ♀ & ♄ 2° 32′ (altitudo ♄ in circulo verticali 14 & 15 Gr. igitur obſeruata erat).].

For the quadrature of ♄ and ☉, in the year 98, in December [Pro □ ♄ & ☉ anno 98 in Decembri.].

28 December (Thursday), morning: ♄ and Arcturus were 28° 33′ apart; ♄ and the tail 31° 15′ [28 Decembris, die ♃ mane, ♄ & Arcturus diſtabant 28° 33′, ♄ & cauda 31° 15′.].

30 December (Saturday), morning. Merid. altit. of ♄ 32° 20′; ♄ and the southern scale-pan 23 27½; ♄ and the alt. seq. in the wing of ♍ 11 33. To the eye, ♄ culminated about 5 minutes earlier than Spica. ♄ and Spica were exactly 4° 59′ apart [30 Decembris, die ♄ mane. Altit. Merid. ♄ 32° 20′, ♄ & lanx auſtralis 23 27½, ♄ & alt. ſeq. in ala ♍ 11 33. ♄ 5 circiter minutis ad viſum citius culminabat quam Spica. ♄ & Spica diſtabant exacte 4° 59′.].

I do not doubt that this observation of ♄ will correspond as closely as possible to the truth [Hanc obſeruationem de ♄ non dubito veritati quam proxime reſponſuram.].

99, 4 January (Thursday), morning: ♄ was gr. 11° 39′ f. from the alt. seq. in the wing [99 4 Januarij, die ♃ mane, ♄ diſtabat ab alt. ſeq. in ala gr. 11° 39′ f.].

On ♃ in the year 98, for the conjunction of ♃ and ♀ [De ♃ anno 98 pro ☌ ♃ ♀.].

In the year 98, 9 August, in the morning at about hour 4: ♃ and ♀ were 2° 2′ apart; ♃ and the following shoulder of Orion 24 1. Dist. of ♀ and Capella gr. 35 M. 16; ♀ and the following shoulder of Orion 23° 25′. ♀ lay toward the east from ♃ [Anno 98 9 Auguſti mane circa horam 4. ♃ & ♀ diſtabant 2° 2′, ♃ & humerus ſequens Orionis 24 1. Diſt. ♀ & Capellæ gr. 35 M. 16, ♀ & hum. ſeq. Orion. 23° 25′. ♀ erat verſus ortum a ♃.].

For the quadrature of ♃ and ☉ [Pro □ ♃ & ☉.].

2 October (Monday), before rising: ♃ was 16° 2′ from Procyon, and 16° 52′ from the bright star of the foot of ♊ (which is in 3 28½ ♋). Meridian altitude of ♃ 58° 34′ [2 Octobris die ☾ ante ortum ♃ diſtabat a Procyone 16° 2′, a lucida pedis ♊ (quæ eſt in 3 28½ ♋) 16° 52′. Altitudo meridiana ♃ 58° 34′.].

6 October (Friday), morning: ♃ and Regulus 34° 58′; ♃ and the southern head of ♊ 6° 47′ [6 Octobris, die ♀ mane, ♃ & regulus 34° 58′, ♃ & merid. caput ♊ 6° 47′.].

For the trine of ♃ and ☉ [Pro △ ♃ & ☉.].

30 October (Monday), morning: ♃ and Regulus 34° 12′; ♃ and Procyon 16° 2′ [30 Octobris die ☾ mane, ♃ & regulus 34° 12′, ♃ & Procyon 16° 2′.].

4 November, morning: ♃ and Regulus were 34° 17′ apart [4 Nouembris mane, ♃ & Regulus diſtabant 34° 17′.].

Exact observations for the acronychal position of ♃ [Obſeruationes exactæ pro Acronychio ♃.].

20 December (Tuesday), at about hours 11 and 12 of the following night, from the day of ♂ into that of ☿ [20 Decembris, die ♂ hora 11 & 12 fere noctis ſequentis a ♂ die in ☿.]:

Dist. of ♃ and Procyon [Diſt. ♃ & Procyon]	16 52′2
♃ and the northern horn of ♉ [♃ & cornu boreale ♉]	29 17
♃ and the southern of the two in the head of ♌ [♃ & auſtr. duarum in cap. ♌]	30 36 (long. of this * 15° 3½ ♌) [(long. huius * 15°3½ ♌)]
♃ and the bright star behind ♊ [♃ & lucida poſt ♊]	14 12

A fuller observation [Plenior obſeruatio].

28 December (Thursday), at hour 12 of the following night [28 Decembris die ♃ hora 12 noctis ſequentis.]:

Meridian altitude of Procyon [Altitudo Procyonis merid.]	42° 34′	☌ and the southern of the 2 in the head of ♌ [☌ & auſtr. 2 in cap. ♌]	31 42
Merid. alt. of ☌ [Alt. merid. ☌]	59 18½	☌ and Procyon [☌ & procyon]	17 5
☌ and the northern horn of ♉ were apart [☌ & cornu Bor. ♉ diſtabant]	28 8	☌ and the bright star of the foot of ♊ [☌ & lucida pedis ♊]	13 12 f.

[1] Written out in Fabricius's hand [Manu Fabricii conſcriptæ.].

[2] The codex has 16° 2′. At Tycho's prompting, Fabricius corrected this slip of the pen in a letter sent to him in the year 1599. Cf. Tycho's *Opera*, vol. I, p. 302 and below [Codex habet 16° 2′. Monente Tychone, Fabricius hunc lapſum calami in literis ad eum anno 1599 datis correxit. Cf. Tychonis Opera T. I p. 302 et infra.].

Because of the weakness of my head and the Christmas holidays I have not been able to carry out the calculation. Your Magnificence will easily get this done through your people, and I should like to learn the place in long. and lat. at the two given times, as well as the time of the mean ☍, and to see whether they agree with my calculation (which I shall carry out in the meantime) [Calculum propter capitis imbecillitatem & ferias natalitias inſtituere non potui. T. M. per ſuos hæc facile perficiet, & cupio locum long. & lat. ad data duo tempora vt & tempus mediæ ☍ cognoſcere & videre, an cum meo calculo (quem interim inſtituam) conueniant.].

Praise be to God, who has granted me to take part further in the rites of Urania [Laus Deo qui mihi conceßit Vraniæ ſacris vlterius intereße.].

From[1] my calculation for 19 December, the longitude of ☌ came out as 15 48½ ♋, latit. 0 11½ north, and the right ascension of ☌, found from three stars, 107° 12′ [Ex[1] meo calculo ad 19 Decembris longitudo ☌ prodijt 15 48½ ♋, latit. 0 11½ Bor., Aſcenſio Recta ☌ ex tribus ſtellis inuenta 107° 12′.].

For 28 December: asc. R. 106 57, north decl. 22 56½, longit. 14° 39′ ♋, lat. 0° 14′ north. The motion over the space of the nine intervening days was 70′; therefore the daily motion was 7′ 45″. From this it is established that the Sun had earlier reached ☌ on 26 December at ho. 10 Mi. 40 p. M., at which time the mean place of the Sun [☉[lis]] was 14 57 ♑, opposite which ☌ stood in 14 57 ♋; the true ☍ took place eight hours earlier. The difference between my observations and yours is therefore very small — or, if everything is derived precisely, none [Ad 28 Decembris aſc. R. 106 57, Decl. bor. 22 56½, longit. 14° 39′ ♋, lat. 0° 14′ bor. Motus nouem dierum intermediorum ſpatio fuit 70′. Ergo diurnus fuit 7′ 45″. Ex his conſtat Solem antea aßecutum fuiße ☌ die 26 Decembris ho. 10 Mi. 40 p. M., quo tempore medius locus ☉[lis] fuit 14 57 ♑, cui ☌ oppoſitus fuit in 14 57 ♋, vera ☍ horis octo citius facta fuit. Differentia igitur mearum obſeruationum & veſtrarum admodum exigua, vel ſi omnia præciſe deducantur, nulla.].

N.B. Since it has not been possible here to observe often enough, nor close before and after the acronychal place of ♃, we shall at the same time borrow what David Fabricius carefully observed at Resterhafe in East Frisia, at an elevation of the pole of p. 53 M. 38 and a long. of 29½. [*N.B. Quia non ſatis crebro neque in propinquo ante & poſt ♃ locum Achronichium obſeruare hic licuit, mutuabimur ſimul ea quæ Dauid Fabricius Reſterhauiæ in orientali Friſia diligenter obſeruauit in eleuatione poli p. 53 M. 38 & long. 29½.*]

1. Before the ☍ with the ☉: December, day 20, which was ♂ (Tuesday), from hour 11 until about the 12th P.M., in the following night. [*1. Ante ☍ cum ☉ Decembris die 20 qui erat ♂ ab hora 11 vsque in 12^{am} fere P.M. in nocte ſequenti.*]

I. Dist. of ♃ and Procyon [*I. Diſt. ♃ & Procyonis*]	*16° 2′*	*Here he went wrong in the first* [*Hic aberrauit in prima di-*]
II. Between ♃ and the northern horn of ♉ [*II. Inter ♃ & Bor. Cornu ♉*]	*29 17*	*distance; it should have been 16 52^2.* [*ſtantia, debuit eße 16 52^2.*]
III. From the southern of the two in the head of ♌ [*III. Ab auſt. duarum in Cap. ♌*]	*30 36*	
IIII. ♃ from the bright foot of ♊ [*IIII. ♃ a lucido pede ♊*]	*14 12*	

A test can be made by four triangles. [*Poteſt periculum fieri per quatuor Triangulos.*]

2. After the ☍ with the ☉: December, day 28, around the following midnight. [*2. Poſt ☍ cum ☉ Decembris die 28 iuxta mediam noctem ſequentem.*]

I. Merid. altitude of Procyon [*I. Altitudo Procyonis Merid.*]	*42 34*	
II. Meridian alt. of ♃ [*II. Alt. ♃ Meridiana*]	*59 18½*	*which confirms the declin. of ♃, using* [*quæ probat declin. ♃, adhibita*]
III. Between ♃ and the northern horn of ♉ [*III. Inter ♃ & bor. Cornu ♉*]	*28 8*	*an equator altit. of 36 22.* [*æquatoris altit. 36 22.*]
IIII. ♃ and the southern of the two in the head of ♌ [*IIII. ♃ & auſt. duarum in Cap. ♌*]	*31 42*	
V. Between ♃ and Procyon [*V. Inter ♃ & Procyonem*]	*17 5*	
VI. Between ♃ and the bright foot of ♊ [*VI. Inter ♃ & lucid. pedem ♊*]	*13 12 f.*	

A test can be made both by asc. R. and declinat. and also by four triangles. [*Poteſt periculum fieri & per Aſc. R. & Declinat. & etiam per quatuor Triangulos.*]

Fabricius, moreover, says that these observations were exact, as he is careful in handling such matters; and from them the place of ♃ can be investigated by triangles, reduced to the ☍ of the Sun, and compared with our own observation — and one should rather stand by this one, because it is nearer. [*Dicit autem Fabricius has obſeruationes fuiße exactas vti eſt diligens in talibus tractandis, atque hinc poteſt per Triangulos inquiri locus ♃ & deduci ad Solis ☍ atque conferri cum noſtra animaduerſione, ac ſtandum potius cum hac quia propior.*]

[1] Fabricius communicated the following calculation to Tycho in the same letter [Calculum ſequentem in iiſdem literis cum Tychone communicavit Fabricius.].

[2] Added afterwards by Tycho in the margin [Poſtea a Tychone in margine adſcriptum.].

The following observation, made on 28 December in the year 1598[1]. [Sequens obſeruatio 28 Decembris Anno 1598 inſtituta[1].]

	Longitude [Longitudo]	Latitude [Latitudo]
B	16° 57¾′ ♊	5° 20½′ B.
C	15 3½ ♌	9 40 B.
D	3 29 ♋	6 48⅓ M.
E	20 17 ♋	15 57 M.

Diagram. A figure of curved lines drawn between the table above and the boxed legend. Several curved lines descend from the point A at the top. A long, shallow arc crosses the lower part of the figure, with the letters G, I and H set beneath it from left to right. Points B, C, F, D and E are each marked with a star. B (left) and C (right) are joined by a curved line. F stands between them and somewhat lower, with a short line dropping from F to I on the lower arc. D stands below and to the left of F, and E at the bottom of the figure. Straight lines join B to F, B to E, C to F, C to E, F to E, D to F and D to E. A short vertical line runs down from B towards G, and another from C towards H.

- A (top, apex): A
- B (left, star): B
- C (right, star): C
- F (centre, star): F
- G (lower left, under the arc): G
- I (under the arc, below F): I
- H (lower right, under the arc): H
- D (below left of F, star): D
- E (bottom, star): E

Legend (boxed, to the right of the figure):

- A: Pole of the ecliptic [Polus eclipticæ]
- B: Northern horn of ♉ [Cornu ♉ boreale]
- C: Southern head of ♌ [Auſt. caput ♌]
- D: Bright foot of ♊ [Pes ♊ lucidus]
- E: Bright star of Canis Minor [Lucida canis minor.]
- F: The star of Jupiter [Iovis ſtella]

Observations, year 98, December, day 28 [Obſeruationes Anno 98 X^{bris} Die 28]

BF	28° 8′
CF	31 42
DF	13 12
EF	17 5

	0°10′49″ Bor.		BCF
	0 12 14 Bor.	on the basis of the triangle [ex fundamento trianguli]	ECF
Latitude of Jupiter [Latitudo Iovis]	0 12 31 Bor.		BFE
	0 12 55 Bor.		DFE
	0 14 20½ Bor.		BFD
	14 39 38 ♋		BCF
	14 39 10 ♋	by the triangular procedure [ex proceßu triangulari]	ECF
Longitude of Jupiter [Longitudo Iovis]	14 39 58 ♋		BFE
	14 41 14 ♋		DFE
	14 40 19 ♋		BFD

So both the longitude and the latitude of Jupiter are brought into the open five times by the triangular procedure of this diagram. [Atque ſic quinquies tam longitudo quam latitudo Iovis ex huius ſchematis proceßu triangulari in apertum deducitur.]

It should be noted, however, that the first procedure, made on the basis of triangle BCF, reveals Jupiter's longitude more exactly than its latitude, since the stars from which it is taken are arranged in length rather than in breadth with respect to Jupiter. Therefore the smallest error in the distances, one scarcely noticed, alters the latitude perceptibly. [Notandum vero quod primus proceßus, qui fit ex fundamento trianguli BCF, Iovis Longitudinem exactius pandit quam latitudinem, ſiquidem ſtellæ, ſecundum quas hæc accipitur, quo ad longum reſpectu Iovis quam latum diſpoſitæ ſunt. Ideoque minima in diſtantijs aberratio, quæ vix animaduertitur, latitudinem ſenſibiliter alterat.]

In the procedure carried out through triangle FCE, however, and in the one through BFE, both the longitude and the latitude come out correctly, and the latitude itself becomes known more precisely than before. [In proceßu autem qui fit per triangulum FCE, et eum qui per BFE, tam longitudo quam latitudo recte ſe habet, et ipſa latitudo præciſius quam antea innoteſcit.]

In the remaining two, the latitude is given more readily in DFE, and in BFD the longitude comes out more correctly. [In reliquis duobus DFE latitudo promptius datur, et in BFD Longitudo rectius ſe habet.]

All these results must therefore be compared with one another, and by a suitable limitation one must pick out what will be nearest to the truth, so that the longitude and latitude of Jupiter itself, consistent to the very minute, can be established exactly. [Igitur hæc omnia adinvicem conferre oportet, atque per limitationem competentem diſcernere id, quod veritati proximum erit, vt ipſius Iovis longitudo et latitudo in ipſo minuto ſibi conſentiens ad amußim conſtare poterit.]

Let it therefore be taken for 28 December of the year 98 — two days, that is, after the opposition with the simple Sun — from these observations of David Fabricius, limiting them as was most fitting; it applies, moreover, to the midnight immediately following. [Aßumatur itaque ad diem 28 Decembris A. 98 biduo nimirum poſt oppoſitionem cum ſimplici ☉lis ex his obſeruationibus Dauidis Fabricij, limitando eas prout conuenientius fuit, competit autem mediæ nocti proxime ſequenti.]

[1] A continuation of the dissertation *De triangulis sphæricis et planis*, which is printed in vol. I of Tycho's Works (pp. 297–305). In codex H all the calculations are found carried out by the prosthaphaeretic method; we have omitted them here. Among them is the calculation of the first observation (that of 20 December), which is useless because of a wrong distance. [Continuatio diſſertationis »De triangulis ſphæricis et planis«, quæ T. I Operum Tychonis (pp. 297—305) inſerta eſt. In codice H omnes calculi per methodum proſthaphæreticum inſtituti inveniuntur, quos hic omiſimus. Inter eos eſt calculus primæ obſervationis (diei 20 Decembris), qui ob falſam diſtantiam inutilis eſt.]

	♃	
Longitude [Longitudo]	14°40 ♋	*Quod ſatis concordat cum mea obſeruatione die*
Latitude [Latitudo]	0 13 B.	*30 habita & huc reducta. Ex hac enim colligitur*
		quod fuerit long. ♃ 14 39, lat. 0 14.

This agrees well enough with my observation made on the 30th and reduced to this point. For from it one gathers that the long. of ♃ was 14 39, lat. 0 14.

The observations that the same Fabricius made for 20 December and the midnight immediately following — six days, that is, before the opposition with the simple Sun — are less correct and do not agree with one another[1], so they are not much to be trusted. *Taking them as best one can, however, one gathers that its longitude was 15⅚ ♋, lat. 0⅕ Bor. The daily motion would therefore have been 1⅙p, which seems too much. For Alfonso and the Prutenic alike give only 1° 4′ at most. But one should rather stand by the 28th, which is nearer to the ☍.* [Ad diem 20 Decembris & mediam noctem proxime ſequentem, 6 nimirum diebus ante oppoſitionem cum ſimplici ☉lis, quæ obſeruauit idem Fabricius, minus recte ſe habent neque inuicem concordant[1], quare ijs non admodum fidendum. *Vtcunque tamen accipiendo colligitur quod longitudo eius fuerit 15⅚ ♋, lat. 0⅕ Bor. Fuißet itaque motus diurnus 1⅙p, quod nimium videtur. Nam tam Alphonſus quam*

Prutenicus dat ſaltem 1° 4′ ad ſummum. Sed ſtandum potius cum die 28 qui propior ☍ eſt.]

The place of ♃ for 28 December, computed from the same observations of David Fabricius in another way, namely by the R.A. and the declination. [Locus ♃ ad diem 28 Decembris ex ijsdem Dauidis Fabricij obſeruationibus alio modo, nempe per AR^{am} et Declin. ſupputatus.]

Distance of ♃ from the northern horn of ♉ [Diſtantia ♃ a boreali cornu ♉]	28° 8′	A: pole of the ecliptic [A polus Eclipticæ]	
Distance from the head of ♌ [Diſtantia a capite ♌]	31 42	B: northern horn of ♉ [B bor. cornu ♉]	
Declination of ♃ [Declinatio ♃]	22 56 30″	C: ♃, D: head of ♌ [C ♃, D Caput ♌]	

I. In the oblique triangle ABC. [I. In △^{lo} obliquo ABC.]

Given [Dantur]		Sought [Quæritur]	
AB	61°48′	Angle BAC, the difference of the R.A. of the horn of ♉ and of ♃ [Angulus BAC diff^{a} AR^{æ} cornu ♉ & ♃]	
AC	67 3½		30°43′33″ a.
BC	28 8	R.A. of ♉ [Aſc. R. ♉]	75 14
		R.A. of ♃ [Aſc. R. ♃]	105 57 33

2°. In the oblique triangle ACD. [2°. In △^{lo} obliquo ACD.]

Given [Dantur]		Sought [Quæritur]	
AC	67° 3′30″	Angle DAC, the difference of the R.A. of ♃ and of the head of ♌ [Angulus DAC, diff^{a} Aſc. ♃ & cap. ♌]	
AD	64 24 30		34 44 55 s.
CD	31 42 0	R.A. of the head of ♌ [A.R. cap. ♌]	140 40 0
		R.A. of ♃ [A.R. ♃]	105 55 5
			105 57 33
		Difference [Differentia]	2 28, mean [medium] 1′14″

Limited R.A. of ♃ [A.R. ♃ limitata] 105 56 19

From this right ascension and the declination known before, there is found:

Longitude of ♃ [Longitudo ♃]	14°39′24″ ♋, latitude [Latitudo] 14′14″ B.
From our observations there results [Ex noſtris obſeruatis prouenit]	14 38 35
Difference [Differentia]	49

[Per hanc Aſcenſionem Rectam et Declinationem antea notam inuenitur]

But since I observed here about an hour and a half later, about ½ minute can be added to my observation, so that the longitude of ♃ here at midnight was at 14° 39′ ♋. Thus they differ by scarcely half a minute. Put the longitude of ♃ about midnight, therefore, at 14° 39′ 15″ ♋, and your error will be imperceptible. [Verum quia ego hic obſeruaui quaſi ſesquialtera hora ſerius, poßunt quaſi ½ minuti addi ad meam obſeruationem, ita vt fuerit in media nocte hic longitudo ♃ in 14° 39′ ♋. Ita vt vix dimidio minuto differant. Pone igitur longitudinem ♃ circa mediam noctem 14° 39′ 15″ ♋, et aberrabis inſenſibiliter.]

If[2], from the distances of that more southern star in the head of ♌ from the bright star of the neck and from Pollux, its R.A. is sought, it comes out at 140° 43′ 48″, declination 25° 34′ 10″ B.; and if the R.A. of ♃ is worked out from this R.A., it is found to be 105° 58′ 53″, the difference from the former 1′20″, the mean 40″. Limited R.A. of ♃ 105° 58′ 13″; longitude deduced from it 14° 39′ 24″ ♋, latitude 14′14″ B. [Si[2] ex diſtantijs ſtellæ iſtius auſtralioris in capite ♌ a Lucida ceruicis & Polluce, iſtius A. R. quæratur, prouenit illa 140° 43′ 48″, Declinatio 25° 34′ 10″ B., et iuxta hanc A.R.[am], ſi ♃[uis] exquiritur, inuenitur illa 105° 58′ 53″, differentia a priori 1′20″, medium 40″. A.R. ♃ limitata 105° 58′ 13″, Longitudo inde deducta 14° 39′ 24″ ♋, Latitudo 14′14″ B.]

[1] Because of an error in the distance between Jupiter and Procyon, 16° 2′ for 16° 52′. See above, p. 156. [Ob errorem in diſtantia inter Iovem et Procyonem, 16° 2′ pro 16° 52′. Vide ſupra p. 156.]

[2] Added afterwards in another hand. [Alia manu poſtea adſcriptum.]

ASTRONOMICAL OBSERVATIONS OF THE YEAR 1599, MADE AT WITTENBERG, WHERE THE ALTITUDE OF THE POLE IS 51 52½, AND AFTERWARDS AT PRAGUE IN BOHEMIA. [OBSERUATIONES ASTRONOMICÆ ANNI 1599 VITEBERGÆ HABITÆ VBI POLI ALTITUDO 51 52½ ET POSTEA PRAGÆ BOHEMORUM.]

OBSERVATIONS OF THE SUN. [OBSERUATIONES SOLIS.]

DIE 17 FEBRUARIJ. [17 February]

Meridian altitude of the ☉ [Altit. ☉ merid.]	29° 43½′

DIE 20 FEBRUARIJ. [20 February]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	30 51
The elevation of the pole is derived from it [Poli eleuatio inde elicitur]	51 52 51

DIE 7 MARTIJ ☿. [7 March, the day of ☿]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	36 43

DIE 23 MARTIJ. [23 March]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	42 57⅔

DIE 24 MARTIJ. [24 March]

Meridian altitude of the ⊙ [Alt. ⊙ merid.]	43 21
By the transversals [Transuerſales]	43 20⅚

After this time the fiducial line of the quadrant was verified, so that it showed correctly both above and below [*Poſt hoc tempus verificata eſt linea fiduciæ quadrantis ita, vt tam ſupra quam infra recte monſtraret.*].

DIE 25 MARTIJ, DIE ⊙. [25 March, the day of the ⊙]

The meridian altitude of the ⊙ was observed [Obſeruabatur Altitudo ⊙ merid.]

Revolving quadrant [Q. Volub.]	43 43
Steel instrument [Chalyb.]	43 43

DIE 26 MARTIJ. [26 March]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	44 5

DIE 27 MARTIJ. [27 March]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	44 28⅓

The observed meridian altitudes of the fixed stars attest that the quadrant shows the altitudes ⅔ of a minute too small; therefore this meridian altitude of the ☉, corrected, will be [Fixarum Altitudines meridianæ obſeruatæ Quadrantem Altitudines ⅔ Minuti minores exhibere teſtantur, ideoque Altit. hæc ☉ meridiana correcta erit]	44 29

DIE 29 MARTIJ, DIE ♃. [29 March, the day of ♃]

Meridian altitude of the ☉ [Altit. ☉ merid.]	45 11½

DIE 15 MAIJ, QUI ERAT ♂. [15 May, which was ♂]

Meridian altitude of the ☉ [Altit. ☉ merid.]	59 0 40

OBSERVED AT PRAGUE IN BOHEMIA. [PRAGÆ BOHEMORUM OBSERUATA.]

DIE 22 JULIJ STYLO NOUO. [22 July, New Style]

The end of a certain small eclipse of the ☉ was observed in this way [Obſeruabatur finis paruulæ cuiusdam Eclipſeos ☉^{lis} in hunc modum.].

In the little tower of the College, where for lack of another place we had set up some small instruments, it was not possible to observe the place of the ☉ itself on the horizon. But as soon as it rose above the houses, its altitude was taken with the gilt quadrant as 1° 58′, and at that moment something blackish was seen in the upper part of the ☉, toward the north, in this way [In turricula Collegij, vbi propter alterius loci defectum inſtrumenta quædam paruula collocaueramus, ipſum ☉^{lis} in Horizonte locum obſeruare non licuit, verum vbi primum ſupra domos eminuit, Altitudo eius per Quadrantem inauratum accepta fuit 1° 58′, & tunc nigricans quiddam in ſuperiori ☉^{lis} parte verſus ſeptentrionem cernebatur in hunc modum.].

Diagram. A plain circle drawn in a thin line, set to the right of the text in the lower half of the page. A solid black, narrow, crescent-like mark lies along the upper-left part of the circumference, inside the line. No letters, labels or other marks are drawn.

A little later, as we watched carefully, the circle appeared whole and entire. Its altitude was then taken with the same gilt quadrant as 2° 10′, and after that nothing darkened could be seen any longer [Poſt modicum deinde diligenter attendentibus totus & integer videbatur circulus. Altitudo eius tunc per eundem Quadrantem inauratum accepta erat 2° 10′, nihilque amplius obſcuratum cernere poſtea licuit.].

Master Christiernus[1], writing from Rostock to Lord Tycho, mentions this eclipse of the ☉, which he also observed there, in these words [De hac Eclipſi

⊙lis M. Chriſtiernus[1] Roſtochio ad Dominum Tychonem ſcribens, vbi etiam eam obſeruauit hiſce verbis meminit.]:

The eclipse of the Sun on 11 July, Old Style, observed by me here in the morning. Its end came when the ⊙, at its refracted altitude, stood scarcely 5° above the horizon of Rostock; and the greatest obscuration, right on the threshold of the horizon, was, as I think, about three digits, for when it was about 1° high I noticed that 2 digits were missing [Solis deliquium 11 Julij ſtylo veteri mane a me hic obſeruatum, cuius finis erat, cum ⊙ vix 5° ſupra Horizontem Roſtochianum refracte eleuaretur, & maxima obſcuratio in ipſo finitoris limine prout puto ad tres fere digitos, nam cum quaſi 1° altus eßet, 2 digitos abeße animaduerti.].

[1] Longomontanus.

DIE 26 JULIJ ☾æ. [26 July, the day of the ☾]

The meridian altitude of the ⊙ was observed with the brass azimuthal quadrant [Obſeruabatur Quadrante orichalcico Azimuthali Alt. ⊙ merid.]	59 29
From this the elevation of the pole comes out as [Eleuatio poli hinc prouenit]	50 7 30

DIE 27 JULIJ. [27 July]

The meridian altitude of the ⊙ was observed, taking it until the ⊙ became highest [Obſeruabatur Altitudo ⊙ merid. ſumendo donec altißimus ⊙ fieret]	59 14
	50 9 14

DIE 28 JULIJ. [28 July]

The meridian altitude of the ⊙ was observed [Obſeruabatur Altit. ⊙ merid.]	58 58

DIE 29 JULIJ. [29 July]

Meridian altitude of the ⊙ [Altit. ⊙ Merid.]	58 47

DIE 30 JULIJ. [30 July]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	58 31

DIE 31 JULIJ. [31 July]

Meridian altitude of the ☉ [Altit. ☉ merid.]	58 15
Altitude corrected by the parallax [Altit. per Parallaxin correcta]	58 16 30
True place of the ☉ 6°29′33″ ♋, declination [Verus locus ☉ 6°29′33″ ♋, Decl.]	18 22 52
Altitude of the equator [Altitudo æquatoris]	39 53 38
Elevation of the pole [Eleuatio poli]	50 6 22

In the year 1416 Doctor Syndel, a Bohemian by nation and a skilled astronomer, observed the elevation of the ☉ at the summer solstice as 63° 26′; elevation of the pole 50° 3′ 40″[1] [Anno 1416 obſeruauit Doctor Syndel Bohemus natione, peritus Aſtronomus eleuationem ☉ in Solſtitio æſtiuo 63° 26′, Eleuatio poli 50° 3′ 40″[1].].

OBSERVATIONS MADE IN THE IMPERIAL CASTLE AT BENÁTKY. [OBSERUATIONES HABITÆ IN ARCE CÆSARIANA BENNACHIA.]

N.B. On 28 August, the day on which the instruments were first set up for observations at Benátky, both the sextant and the revolving quadrant always increased the altitudes by two minutes; this has been corrected in all the observations, as many as could be found [N. B. 28 Auguſti Die quo primum Inſtrumenta Benachiæ pro obſeruationibus diſpoſita fuerunt, cum Sextans tum Volubilis quadrans duobus ſemper minutis Altitudines adauxerunt, quod in omnibus quotquot reperire licuit correctum eſt.].

DIE 11 SEPTEMBRIS. [11 September]

The meridian altitude of the ☉ was observed [Obſeruabatur Altit. ☉ meridiana]

by the brass sextant [per Sext. Orichalcicum]	44 12⅓
by the revolving quadrant [per Quadr. Volub.]	44 12 10

DIE 12 SEPTEMBRIS. [12 September]

The meridian altitude of the ☉ was observed [Obſeruabatur Altit. ☉ merid.]

by the large revolving quadrant [per Quadr. magnum Volub.]	43 44⅓
by the brass sextant [per Sext. orichalc.]	43 45

DIE 14 SEPTEMBRIS. [14 September]

Meridian altitude of the ☉ [Altit. ☉ merid.]

by the revolving quadrant [per Q. Volub.]	43 3
by the brass sextant [per Sext. orichalc.]	43 2

DIE 16 SEPTEMBRIS. [16 September]
The meridian altitude of the ☉ was observed [Obſeruabatur Altit. ☉ merid.]

by the revolving quadrant [per Quadr. Volub.]	42 29⅙

DIE 17 SEPTEMBRIS. [17 September]
The meridian altitude of the ☉ was observed [Obſeruabatur Altit. ☉ merid.]

by the quadrant [per Quadr.]	41 58⅙
On the same day, with the brass sextant [Eodem die Sextante orich.]	41 58

DIE 18 SEPTEMBRIS. [18 September]
Meridian altitude of the ☉ [Altit. ☉ merid.]

Steel quadrant [Quadr. Chalyb.]	41 45

DIE 22 SEPTEMBRIS. [22 September]

The meridian altitude of the ☉ was observed according to the meridian line that had been found, by the revolving quadrant [Obſeruabatur Altit. ☉ merid. iuxta lineam Meridianam inuentam per Quadr. Volub.]	40 10

DIE 24 SEPTEMBRIS. [24 September]
The meridian altitude of the ☉ was observed [Obſeruabatur Altit. ☉ merid.]

by the quadrant [per Quadr.]	39 23⅙

DIE 25 SEPTEMBRIS. [25 September]

Meridian altitude of the ☉ by the revolving instrument [Altit. ☉ merid. per Volub.]	39 1⅓

DIE 28 SEPTEMBRIS. [28 September]

The meridian altitude of the ☉ was observed [Obſeruabatur Altit. ☉ merid.]

by the revolving instrument [per Volub.]	37 52⅓

DIE 5 OCTOBRIS. [5 October]
Meridian altitude of the ☉ [Altit. ☉ merid.]

by the revolving quadrant [per Q. Volub.]	35 4½
by the brass sextant [per Sext. orich.]	35 4⅓
Elevation of the pole from this [Eleuatio poli hinc]	50 16 43

DIE 6 OCTOBRIS. [6 October]

Meridian altitude of the ☉ by the revolving instrument [Altit. ☉ merid. per Volub.]	34 41 30
Elevation of the pole from this [Eleuatio poli hinc]	50 16 37

DIE 11 OCTOBRIS. [11 October]
The meridian altitude of the ☉ was observed [Obſeruabatur Altit. ☉ merid.]

Revolving instrument [Volub.]	32 48⅓
Sextant [Sextante]	32 47⅚

[1] Cf. T. V, p. 228, and Kepler's *Opera*, T. III, p. 54 [Cfr. T. V. p. 228 et Kepleri Opera T. III p. 54.].

DIE 13 OCTOBRIS. [13 October]

Meridian altitude of the ☉, revolving instrument [Altit. ☉ merid. Volub.]	32 2 0
Sextant [Sextante]	32 1 40
Smaller azimuthal quadrant [Q. minori Azimuthali]	32 21 0[1]

DIE 14 OCTOBRIS. [14 October]

Meridian altitude of the ☉, revolving instrument [Altit. ☉ merid. Volub.]	31 39⅚
Sextant [Sextante]	31 39⅓
Smaller azimuthal quadrant [Q. minori Azimuth.]	32 0[1]

DIE 17 OCTOBRIS. [17 October]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	30 34½

DIE 18 OCTOBRIS. [18 October]

Meridian altitude of the ⊙, revolving instrument [Altit. ⊙ merid. Volub.]	30 12⅔

DIE 19 OCTOBRIS. [19 October]

Meridian altitude of the ⊙, revolving instrument [Altit. ⊙ merid. Volub]	29 50⅙

DIE 20 OCTOBRIS. [20 October]

Meridian altitude of the ⊙ by the revolving instrument [Altit. ⊙ merid. per Volub.]	29 28½

DIE 21 OCTOBRIS. [21 October]

Meridian altitude of the ⊙ by the revolving instrument [Altit. ⊙ merid. per Volub.]	29 5⅙

DIE 22 OCTOBRIS. [22 October]

Meridian altitude of the ⊙ by the revolving instrument [Altit. ⊙ merid. per Volub.]	28 45⅔

DIE 12 DECEMBRIS, BENNACHIÆ. [12 December, at Benátky]

Meridian altitude of the ⊙ [Altit. ⊙ merid.] by the revolving quadrant [per Quadr. Volub.]	16 36⅔

DIE 13 DECEMBRIS, GIRSIZÆ. [13 December, at Girsizæ]

Meridian altitude of the ⊙ [Alt. ⊙ merid.]	

by the brass quadrant [per Q. orichal.]	16 25

DIE 23 DECEMBRIS. [23 December]

The meridian altitude of the ☉ was observed at Girsizæ with the Norican quadrant, which consists of a solid brass plate, through the slits; the upper limb, since it was not quite clear [Obſeruabatur altit. ☉ merid. Girſizæ per Quadrantem Noricum conſtantem lamina orichalcica ſolida per rimulas, ſuperior limbus, cum non eßet ſatis ſerenum]	16 27

DIE 31 DECEMBRIS, BENNACHIÆ. [31 December, at Benátky]

Meridian altitude of the ☉ by the revolving instrument [Altit. ☉ merid. per Volub.]	16 33⅓
by the sextant [per Sextantem]	16 33½

OBSERVATIONS OF THE MOON. [OBSERUATIONES LUNÆ.]

DIE 31 JANUARIJ. [31 January]

Times of the eclipse of the ☾ observed at Wittenberg, where the elevation of the pole is 51° 52′ 30″, as far as could be done amid rather dense clouds passing across from time to time [Tempora Eclipſeos ☾ᵉ Witebergæ vbi Poli eleuatio 51° 52′ 30″ obſeruata, quantum inter nubes denſiuſculas ſubinde intercurrentes fieri potuit.].

$3^{H}45\frac{1}{6}^{M}$ larger [Maius]	Some thought that something of the ☾ was missing toward the east [Putabant aliqui deeße ☾ᵉ verſus ortum quiddam.]	
3 41 smaller [Minus]	The altitude of the head of Ophiuchus was then 30°5′ by the brass azimuthal [Altit. Capitis Ophiuchi tunc erat 30°5′ per orichalc. Azimuthal.]	
	Upper limb of the ☾ by the steel quadrant [Supremus ☾ᵉ limb. per Quadr. Chalyb.]	29°45′

But the darkening had actually occurred about 2 M. of time earlier, as could be gathered from what follows [Verum 2 M. ferme temporis prius facta eſt obſcuratio, veluti ex ſequentibus colligere licuit.].

3 50° larger [Maius]	The tail of ☋ [Cauda ☋]	
3 45½ smaller [Minus]	by the armillae, west [per Armill. occ.]	28 17

When the town clock struck 4, almost ¼ of the ☾ had been darkened [Cum horolog. vrbis ſonaret 4, obſcurata erat ferme ¼ de ☾.].

3 57⅓ larger [Maius]	Altitude of the head of Ophiuchus [Altit. Capitis Ophiuchi]	
3 51½ smaller [Minus]	by the brass instrument [per Orichalc.]	31 30
	Upper limb of the ☾ [Supremus limb. ☾ᵉ]	
	by the steel instrument [per Chalyb.]	28 50

4 10⅝ larger [Maius]	The lower limb of the ☾ had [Habuit inferior limbus]	
4 5 smaller [Minus]	an altitude by the steel instrument of [☾ᵉ Alt. per Chal.]	25 20
	The middle of the ☾ was then seen, so to speak, in the shadow [Medium quaſi ☾ᵉ in vmbra tunc cernebatur.]	

5 7⅓ by the larger [per Maior.]	Altitude of Aquila by [Aquilæ altit. per]	
4 58 by the smaller [per Minor.]	the brass instrument [Orichalc.]	17 14
	Spica, west, was then [Fuit tunc Spica occident.]	22 19
	The ☾ was then entirely in the shadow, and its lower part brighter than the upper [☾ tota tunc erat in vmbra & inferior eius pars lucidior ſuperiore.]	

5 16 larger [Maius]	Spica, west [Spica occid.]	
	by the armillae [per Armill.]	24 16
5 5 smaller [Minus]	Altitude of Aquila [Alt. Aquilæ]	
	by the brass instrument [per Orich.]	18 42

5 30 larger [Maius]	The altitude of Aquila was [Fuit Alt. Aquilæ]	20 37
5 19 smaller [Minus]	And at the same instant Spica stood away from the meridian toward the west by [Et eodem inſtanti diſtabat Spica a Meridiano verſus occaſum]	27 44

The northern scale-pan of ♎ stood about 2° from the meridian toward the east when the ☾ was, by estimate, wholly plunged into the shadow [Lanx borealis ♎ per 2° circiter a Meridiano diſtabat verſus ortum, cum ☾ᵃ tota æſtimatiue in vmbram mergeretur.].

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

Examination of the time from the altitude of the ☾ at the beginning of the eclipse. [Examinatio temporis ex Altitudine ☾ ad initium Eclipſis.]

The place of the ☾ at the middle is taken as [Locus ☾ᵉ in medio aßumitur]	21°12′♌
Minutes of incidence and of half the duration together [Scrup. inciden. & moræ dimid. ſimul]	51′
Place of the ☾ at the beginning of the eclipse [Locus ☾ᵉ ad initium Eclipſis]	20 21 ♌
Latitude of the ☾ [Latitudo ☾ᵉ]	9 M.
The apparent altitude of the ☾, as to its centre, 29°30′ [Altitudo ☾ᵉ viſa 29°30′ quo ad centrum.]	
Parallax in the altitude circle 46′ [Parallaxis in circulo altit. 46′]	
This gives, as to longitude [Hoc facit quo ad longum]	22 m.
latitude [latum]	41 a.
Therefore the apparent place of the ☾ is [Ergo viſus Locus ☾ᵉ eſt]	20° 0′♌
Its latitude [Latitudo eius]	50 M.
Declination [Declinatio]	14 3 S.
Right ascension [Aſcenſ. Recta]	142 9
Angle of distance from the M.C. [Ang. diſt. a M.C.]	59 45 0
Therefore the beginning of the eclipse is given as H. 3 M. 54 from midnight [Ergo initium Eclipſis datur H. 3 M. 54 a M.N.]	
And from the right ascension of the ☉ the right ascension of the M.C. is given, in apparent time [Et ex Aſcenſione recta ☉ datur Aſc. R. M.C. in tempore apparenti.]	

At the following noon the quadrant did not agree with the armillae: when it showed noon, the armillae showed P. 0 49^{M} exactly. The armillae always count 3′ of time more than the quadrant [Quadrans cum Armillis in Meridie ſequenti non conueniebat, nam cum is Meridiem oſtenderet, Armillæ monſtrabant P. 0 49^{M} exacte, 3′ temporis plus numerant ſemper Armillæ quam Quadrans.].

Investigation of the time from the altitude of the head of Ophiuchus. [Temporis ex Altitudine Capitis Ophiuchi inueſtigatio.]

At the beginning of the eclipse, when the altitude of the head of Ophiuchus had been observed toward the east with the brass azimuthal [Ad initium Eclipſis cum Altitudo Capitis Ophiuchi per Orichalc. Azimuthalem verſus ortum eßet obſeruata]	30° 5′
The angle of distance from the meridian was [Erat Angulus diſt. a Merid.]	57 16 54
The time deduced from it [Tempus inde deducitur]	H. 15 54′ 0″
When the altitude of the same head was [Cum eiuſdem Capitis Altitudo eßet]	31°36′ 0″
Angle of distance from the M.C. [Angulus diſtantiæ a M.C.]	54 50 39
Time [Tempus]	H.16 M.4 0″
When the altitude of Aquila was [Cum Aquilæ Altit. eßet]	17°12′
Angle of distance from the M. C. [Ang. diſtantiæ a M. C.]	72 8

Time [Tempus]	H.17 M.9
But Spica, taken in the armillae at the same instant, gives [At Spica eodem inſtanti in arm. accepta dat]	H.17 M.0
Altitude of Aquila [Altit. Aquilæ]	18°41′0″
Angle of distance from the M.C. [Angulus diſt. a M.C.]	69 41 29
Time [Tempus]	H.17 M.19 0
Spica yields [Spica præbet]	17 7 16
Altitude of Aquila [Aquilæ Altitudo]	20°37′0″
Angle of distance from the M.C. [Ang. diſtantiæ a M.C.]	66 28 0
Time [Tempus]	H.17 M.32 0
Spica gives [Spica dat]	17 21 16
When the smaller clock showed [Cum horologium minus monſtraret]	5 29 0
the larger [maius]	5 36 0
The northern claw was crossing the M.C., and so the time is deduced from this as [Tranſibat chele borealis per M.C., ideoque tempus hinc deducitur]	H.5 22

The observations of this eclipse made in Cimbria by M. Christiernus Longomontanus, formerly of my household, as he wrote them out to me from Rostock to Wittenberg — the words of his letter run as follows [Huius Eclipſis obſeruationes a M. Chriſtierno Longomontano meo olim domeſtico in Cimbria habitæ prout ad me Roſtochio Witebergam perſcripſit, verba ex ipſius Epiſtola ſic habent.].

"The eclipse of the ☾ which your letters mention as lately noted by you at Wittenberg I observed, with what diligence I could, in the village of Longomontanus, my native soil, which lies 10 miles west of Viborg but only one east of Bovbjerg, a famous promontory of the ocean shore; and the sky was then very clear. I found, moreover, from stars both crossing the meridian and standing in one vertical at the same time (a method I had to use, since I was without instruments) — I found, I say, that the beginning of this eclipse set in at H. 3 M. 28, or at most M. 30; so that, from careful attention both to the other phases and especially to the immersion and the first emersion from the earth's shadow, the middle had occurred at H. 5½, or rather about three minutes before. I see that this agrees moderately with your observations made at Wittenberg, allowing for the difference of the meridians, which is to be estimated from the travelling distance along the same parallel. Yet I do not cease to wonder with you where the 10 M. come from by which the motion of the ☾ falls short in the restored calculation — unless one must examine the motion around the apogee and perigee of the epicycle of the ☾, where perhaps further anomalies of it, as

in ♄ and ♃, may still lie hidden, so far unresolved. Among the phenomena of the ☾ to be examined, I recall that in those places, for the most part, difficul-" [Eclipſin ☾^{æ}, quam tuæ commemorant vltimo a vobis Witebergæ denotatam, ego in pago Longomontano patrio ſolo quod 10 miliaribus Viburgo ad occaſum, vno vero duntaxat Bouonbergo famoſo Oceani littoris promontorio ad ortum diſtat, diligentia qua potui obſeruaui, idque cœlo tunc temporis ſereniſſimo exiſtente. Deprehendi autem ex ſtellis Meridianum tum tranſeuntibus, tum in vno verticali eodem tempore conſtitutis (qua pragmateia vtendum fuit, cum inſtrumentis deſtituebar) deprehendi inquam principium deliquij huius H. 3 M. 28 vel ad ſummum M. 30 ingruiße, adeo vt ex diligenti animaduerſione tum aliarum phaſium tum præcipue ingreßus ac primi exitus ex vmbra terrena medium H. 5½ vel potius tribus minutis quaſi ante factum eßet. Quod veſtris animaduerſionibus Witebergæ habitis mediocriter pro differentia Meridianorum ex diſtantia itineraria ſub eadem parallela æſtimanda, conſentire video. Nec tamen tecum admirari deſino, vnde 10 M. ☾^{æ} motui in calculo reſtituto defectus? niſi diſpiciendum, quod circa Apogæum & Perigæum Epicyclij ☾^{ris} motus, vbi forſan adhuc aliæ eius anomaliæ vt in ♄ & ♃ latere poßunt hactenus inextricatæ. Inter phænomena ☾^{æ} examinanda memini in ijs locis vt plurimum difficul-]

ties opposed to the restoration, however it is set up, and not cited by M.T. The eclipse of the year 81 agreed with this rule in every respect; in it I recall that a very few M. were limited [limitata], so that the rest around the perigees agreed. — Thus he." [tates reſtitutioni quomodocunque inſtitutæ repugnantes nec citatæ a M.T. Eclipſis anni 81 per omnia huic normæ aßentiebatur, in qua paucula M. limitata recordor, vt reliquæ circa Perigæa conuenirent. — Hæc ille.]

From these observations of mine, therefore, once the meridians have been compared, one must examine carefully in what part the difficulty [ſcrupulus] lies, and why this one does not correspond accurately enough with the others we have observed; and one must see whether a reconciliation can be made through the mean motions, or whether, on the contrary, some still undiscovered inequality underlies the anomaly itself, one that shows itself most around the apogee and perigee. Yet a doubt is raised here by the eclipse of the ☾ of the year 98, on 6 August, in the perigee itself, which agreed excellently with our numbers. From these last two, therefore, which occurred near the apogee and the perigee — comparing also the one that took place in the year 81 near the apogee, and any others of the kind that may be had — an inquiry into this matter must be set up, drawing into counsel also the eclipses once observed at Nuremberg by Regiomontanus and his pupil Gualtero [Bernhard Walther], if only some of them suit this purpose; and so, over a longer interval of time, this matter can be more fully confirmed. [Ex meis itaque his obſeruationibus collatione Meridianorum habita accurate diſpiciendum qua in parte ſcrupulus ſubſit, & cur hæc cæteris a nobis obſeruatis non ſatis accurate correſpondeat, & videndum an per medios motus conciliatio inſtitui poßit, an vero ipſi anomaliæ aliqua adhuc

incomperta ſubſit inæqualitas, quæ circa Apogæum & Perigæum maxime ſe prodit. Dubium tamen hic mouet Eclipſis ☾ᵉ Anni 98 Die 6 Auguſti in ipſo Perigæo quæ noſtris numeris apprime conſentiebat. Ex his itaque duabus vltimis, quæ iuxta Apogæum & Perigæum contigerunt, collatione etiam facta eius, quæ Anno 81 extitit prope Apogæum & ſi quas alias eiuſcemodi habere licuerit, huius rei disquiſitio inſtituenda erit, adhibitis etiam in conſilium Eclipſibus olim a Regiomontano & eius diſcipulo Gualtero Norimbergæ obſeruatis, ſi modo aliquæ ex illis huic intentioni congruant, ſicque per maius temporis interuallum res hæc plenius comprobari poteſt.]

DIE 3 OCTOBRIS. [3 October]

IN ARCE BENNACHIA. [In the castle at Benátky]

9^{H} 54^{M}	The distance of the western limb of the ☾ from the right shoulder of ♒ was observed [Obſeruabatur diſt. occid. limbi ☾ᵉ a dextro humero ♒]	39 9
	The left shoulder of ♒ [Siniſter hum. ♒]	
	was then west [erat tunc occ.]	19 45
10 5½	Repeated distance [Diſtantia repetita]	39 15½
	N.B. Remember to subtract from all these distances of the ☾ [N.B. Memineris omnibus his diſtantijs ☾ribus eße ſubtrah.]	1° 16′
	The same distance repeated [Diſtantia eadem repetita]	39 15½
	Left shoulder of ♒, west, by the armillae [Sin. hum. ♒ occ. per Arm.]	21 24
10 11½	Repeated distance [Diſtantia repetita]	39 15½
	Afterwards was taken [Poſtea ſumebatur]	
10 25½	the distance of the western limb of the ☾ from the star that is in the nostrils of Pegasus [Diſt. occid. limbi ☾ᵉ ab illa quæ eſt in naribus Pegaſi]	43 32
	The shoulder of ♒ was then west [Erat tunc humer. ♒ occ.]	25 35
	Repeated distance [Diſtantia repetita]	43 36
	The left shoulder of ♒, west [Humerus ♒ ſiniſter occ.]	26 42
	Repeated distance [Diſtantia repetita]	43 36½
	The shoulder of ♒, west [Humerus ♒ occid.]	28 19
	Repeated distance [Diſtantia repetita]	43 37
	Meridian altitude of the upper limb of the ☾ [Altit. merid. limbi ſuper. ☾ᵉ]	46 8
	by the sextant [per Sextantem]	46 8½
	Meridian altitude of the lower limb of the ☾ [Altit. merid. limbi infer. ☾ᵉ]	45 26
	Sextant [Sextante]	45 27

We could not take other distances on the ☾ conversely, nor for the declination, because the narrowness of the window prevented it, so that we could not turn [the instrument] round [Diſtantias alias in ☾ vice verſa atque pro Declinatione capere non potuimus impediente feneſtræ anguſtia, ita vt circumagere non poßemus.].

OBSERVATIONS OF SATURN. [OBSERUATIONES SATURNI.]

DIE 10 JANUARIJ. [10 January]

$1^{H}\ 56^{M}$	Regulus transits the meridian [Tranſ. Regulus merid.]	52 1⅙
2 5	Transit of the bright star of the neck of ♌ [Tranſ. luc. ceruicis ♌]	
2 26½	The distance of ♄ was observed [Obſeruabatur diſt. ♄]	
	from Arcturus [ab Arcturo]	27 11½
	Repeated distance [Repetita diſtantia]	27 11⅔
2 31⅔	Repeated distance [Diſt. repetita]	27 11
2 37⅓	Repeated distance [Repetita diſtantia]	27 11½
2 39⅓	Repeated distance [Repetita diſtantia]	27 11½
3 23⅙	Distance between the first [Diſt. inter primam]	
	of the wing of ♍ and ♄ [alæ ♍ & ♄]	23 37
3 26⅓	Repeated distance [Repetita diſtantia]	23 37
3 31	Repeated distance [Repetita diſtantia]	23 37
3 40	The tail of ♌ transits the meridian [Cauda ♌ tranſ. merid.]	54 58⅔
5 20	♄ crossed [Tranſiuit ♄]	
	the meridian, having an altitude of [per Merid. habens altit.]	34 2⅓

N.B.[1] ♄ was eastern, between quadrature and trine with the ☉ [cum $\odot^{le}$]; and so this observation is suitable for the semidiameter of the annual digression [diuagationis annuæ], which the ancients measure in the epicycle and Copernicus in the great orb of the earth. I, however, in the solar orb itself. But observations of ♄ are to be repeated, so that, conversely, its distance from stars near the zodiac or the equator may be had [N.B.[1] ♄ fuit orientalis intra quadratum & trinum cum $\odot^{le}$, ideoque hæc obſeruatio accommoda pro ſemidiametro diuagationis annuæ, quam veteres in Epicyclo, Copernicus in orbe magno terræ metiuntur. Ego vero in ipſo orbe Solari. Sed reiterandæ obſeruationes in ♄, ita vt vice verſa habeatur eius diſtantia a ſtellis iuxta zodiacum vel æquatorem.].

[1] Added later in another hand [Poſtea alia manu adſcriptum.]

DIE 15 JANUARIJ. [15 January]

$2^{H}\ 8^{M}$	The distance was observed [Obſeruabatur diſtantia]	27 10
2 11	of ♄ from Arcturus [♄ ab Arcturo]	27 10
2 16	Repeated distance [Repetita diſtantia]	27 10
2 33		27 10½
2 38		27 10

N.B. ♄ observed near the first station [*N. B.* ♄ *iuxta ſtationem primam obſeruatus.*].

3 36⅓	Distance of ♄ from the other, following one [Diſt. ♄ ab altera ſequen-]	10 28

3 44⅚	in the left wing of ♍ [te in ſin. alæ ♍]	10 28
3 47	Repeated distance [Repetita diſt.]	10 28
5 6⅚	♄ was crossing [Tranſibat ♄]	
	the meridian, having an altitude of [per Merid. habens Altit.]	34 2½
5 36	The distance of ♄ was taken [Capiebatur diſt. ♄]	26 35
5 41½	from the northern scale-pan of ♎ [a Bor. lance ♎]	26 35
5 45⅔	Repeated distance [Repetita diſtantia]	26 34½
5 47	Repeated distance [Repetita diſtantia]	26 35
5 59	Distance between ♄ [Diſt. inter ♄]	21 58
6 3½	and the southern scale-pan of ♎ [& lancem auſtral. ♎]	21 57
6 29½	Distance between ♄ and the following one [Diſt. inter ♄ & ſequentem] of the two upper ones in [duarum ſuperiorum in]	
	the square of Corvus [quadrato Corui]	15 47
6 32	Repeated [Repetita]	15 46½

As the twilight was then gradually obscuring the stars, this little one could not be observed any longer [Crepuſculo tunc paulatim obſcurante ſtellas, non poterat hæc paruula amplius obſeruari.].

Remember that the parallax of the sextant, namely 1° 16′ 30″, has not yet been added to these observations [Memineris Parallaxin Sextantis nempe 1° 16′ 30″ nondum eße his obſeruationibus additam.].

DIE 23 JANUARIJ. [23 January]

4^{H} 50^{M}	The meridian altitude of ♄ was observed [Obſeruabatur Altit. ♄ meridiana]	34 8½
5 6	The distance was observed [Obſeruabatur diſt.]	28 1
5 11	between ♄ and the northern scale-pan [inter ♄ & lanc. bor.]	28 2½
5 17	Repeated distance [Repetita diſtantia]	28 1
5 20	Repeated distance [Repetita diſtantia]	28 1
5 28	Conversely was observed [Obſeruabatur vice verſa]	24 56½
5 33	♄ from the one that is at the end [♄ ab illa quæ in extremo]	24 56
5 40	of the southern and left wing of ♍ [alæ Auſtrinæ & ſin. ♍]	24 56
5 43	Repeated distance [Repetita diſtantia]	24 55
	To test the sextant [Pro examinando Sextante]	
5 50	The distance between Spica [Capiebatur diſt. inter Spicam] and the southern scale-pan was taken [& lancem auſtral.]	21 23½
5 57	Repeated [Repetita]	21 23
	Repeated [Repetita]	21 23

One minute and a half must be taken away from the distances, because the observation among the fixed stars exceeds by that much [Vnum minutum cum ſemiße a diſtantijs debent auferri, quia tantum obſeruatio in fixis abundat.].

DIE 9 MARTIJ[1]. [9 March[1]]

The meridian altitude of the third in the wing of Virgo was observed [Obſeruabatur Altitudo Merid. tertiæ in ala Virginis]	38° 53′
The heart of ♌ was then, in the armillae, western [Cor ♌ erat tunc in Armillis occidental.]	40 10
Meridian altitude of the little one that is above the third, toward Vindemiatrix [Alt. mer. paruulæ quæ ſupra tertiam verſus vindemiatricem]	43 45
Meridian altitude of Vindemiatrix [Alt. mer. vindemiatricis]	51 17⅓
Meridian altitude of ♄ [Alt. mer. ♄]	35 8⅙
The tail of ♌ was then western [Cauda ♌ erat tunc occidental.]	21 34
Meridian altitude of Spica of ♍ [Alt. mer. Spicæ ♍]	29 9⅔
At the same instant the distance of ♄ from the heart of ♌ was taken, but among clouds [Eodem inſtanti capiebatur diſt. ♄ a corde ♌ verum inter nubes]	49 54
The tail of ♌, west [Cauda ♌ occid.]	23 21
Repeated distance [Diſt. repet.]	49 51
The tail of ♌, west [Cauda ♌ occid.]	26 31
Repeated distance [Diſt. repet.]	49 53½
The tail of ♌, west [Cauda ♌ occid.]	28 5
Repeated distance [Diſt. repet.]	49 53½
The tail of ♌, west [Cauda ♌ occid.]	30 41
Conversely [Viceverſa.]	
The distance of ♄ was taken [Sumebatur diſt. ♄]	
from the northern scale-pan [a boreali lance]	30 7½
The tail of ♌, west, among clouds [Cauda ♌ occ. inter nubes]	32 19
Repeated distance [Diſt. repet.]	30 8
Repeated distance, west [Diſt. repet. occid.]	33 40
Repeated distance [Diſt. repet.]	30 8

Nothing could be taken on the armillae because of the clouds. It was growing dark; otherwise, more [In armillis nil propter nubes poterat capi. Obſcurum fiebat, alias plura.].

Examination of the observation of Spica: at this time it has a declination of [*Examinatio obſerv. Spicæ hoc tempore habet declinationem*]	9 0 30
but the observation gives only [*at obſeruatio dat ſaltem*]	8 57 50
difference [*differentia*]	2 40
The altitude should therefore have been smaller [*Debet itaque minor fuiße altitudo*]	29 7
Examination of the third in the wing of ♍ [*Examinatio tertiæ in ala* ♍]	
At this time it should have [*Debet hoc tempore habere*]	0 47 10
The declination found is [*Decl. inuenta eſt*]	0 45 30 1 40

N.B. The preceding stars were taken with sufficient care in their elevations, for two of them give more than is right and two less than is right [*N.B. antecedentes ſtellæ ſunt ſatis diligenter in ſuis eleuationibus acceptæ, nam duæ ex illis plus iuſto dant, duæ minus iuſto.*].

Let a trial be made on ♄, setting its declination at [*Fiat periculum in ♄^{no} ponendo declinat^{em} eius*]	2° 59′	southern [*meridio-*]
distance from the heart of ♌ [*diſt. a corde ♌*]	49 53½	[*nalem*]
distance from the northern scale-pan [*diſt. a bor. lance*]	30 8	

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[1] All struck through with a thin line [Omnia linea tenui inducta.]

DIE 16 MARTIJ. [16 March]

First, the distance of ♄ from Regulus [Primum diſtantia ♄ a Regulo]		49 24
The heart of ♌, west [Cor ♌ occidentale]	27 12	
Repeated distance [Diſtantia repetita]		49 23⅓
The heart of ♌, west [Cor ♌ occident.]	29 20	
Repeated distance [Diſtantia repetita]		49 24
Repeated distance [Diſtantia repetita]		49 24
Distance of ♄ from the tail of ♌ [Diſt. ♄ a Cauda ♌]		28 53½
The heart of ♌, west [Cor ♌ occid.]	33 43	
Repeated distance [Diſtantia repetita]		28 54
Repeated distance of ♄ [Diſt. ♄ repetita]		28 54
Meridian altitude of ♄ [Altitudo meridiana ♄]		35 19⅓
The tail of ♌ was then west [Cauda ♌ erat tunc occ.]	20 57	
Conversely [Vice verſa.]		
♄ from the southern scale-pan [♄ ab auſtrali Lance]		25 59
The tail of ♌, west [Cauda ♌ occid.]	23 50	
Repeated distance [Diſtantia repetita]		25 59
Repeated [Repetita]		25 59
Again. Distance between ♄ and [Rurſus. Diſt. inter ♄ &]		
the northern scale-pan [lancem borealem]		30 32½
The tail of ♌, west [Cauda ♌ occident.]	26 4	
Repeated distance [Diſtantia repetita]		30 32½
Repeated distance [Diſtantia repetita]		30 32½
To test the sextant [Pro examinando Sextante.]		
Spica from the northern scale-pan [Spica a lance Bor.]		27 35½ twice [bis]
But the Book of Letters has [At liber Epiſtolarum habet]		27 34
Spica from the heart of ♌ [Spica a corde ♌]		54 2
Repeated [Repetita]		54 2½
But the book has [At liber habet]		54 2

DIE 20 MARTIJ. [20 March]

When the town bell was indicating the first hour, there was taken [Cum Campanula vrbis primam indicaret, capiebatur]		
the meridian altitude of ♄ [Altitudo ♄ meridiana]		35 19⅔

When this altitude of ♄ was being taken, it had passed the meridian a little, so that it must be increased by 8′; it ought to be 35 26½ [Cum capiebatur hæc Altitudo ♄, tranſiuerat paululum Merid., ita vt 8′ augenda ſit, *debet eße 35 26½*].

Afterwards [Poſtea]

The distance of ♄ from the heart of ☋ was taken [Capiebatur diſt. ♄ a Corde ☋]		49 5½
The tail of ☋, west [Cauda ☋ occid.]	34 17	
Repeated distance [Diſtantia repetita]		49 5½
Repeated distance [Diſtantia repetita]		49 5½
Conversely [Vice verſa.]		
The distance was taken between ♄ [Capiebatur diſt. inter ♄]		
and the northern scale-pan [& lancem borealem]		30 51⅓
The tail of ☋, west [Cauda ☋ occid.]	40 40	
Repeated distance [Diſtantia repetita]		30 51
Repeated distance [Diſtantia repetita]		30 51½
Again. Distance of ♄ from the tail of ☋ [Rurſum. Diſt. ♄ a Cauda ☋]		28 36⅙
Repeated distance [Diſt. repetita]		28 36⅙
Repeated distance [Diſt. repetita]		28 36⅙
Conversely [Vice verſa.]		
Distance of ♄ from the southern scale-pan [Diſt. ♄ a lance auſtrali]		26 17½
Spica, west [Spica occid.]	25 45	
Repeated distance [Diſt. repetita]		26 17⅓
Repeated distance [Diſt. repetita]		26 17⅓

DIE 22 MARTIJ, FUIT DIES ♃. [22 March; it was the day of ♃]

The distance of ♄ from the heart of ☋ was taken [Sumebatur diſt. ♄ a Corde ☋]		48 53½
The heart of ☋, west [Cor ☋ occid.]	22 56	
Repeated distance [Diſt. repetita]		48 54
The heart of ☋, west [Cor ☋ occid.]	24 38	
Repeated distance [Diſt. repetita]		48 54
Repeated distance [Diſt. repetita]		48 54

Distance of ♄ from the bright star of the neck of ♌ [Diſt. ♄ a lucida Ceruicis ♌]		49 13⅙[1]
The heart of ♌, west [Cor ♌ occidentale]	34 44	
Repeated distance [Diſtantia repetita]		49 13⅚
Repeated distance [Diſt. repetita]		49 13⅚
Meridian altitude of ♄ [Altitudo meridiana ♄]		35 30

But here too the lower ruler did not coincide exactly at the same point; it showed only 35 29⅓. One must see from the preceding fixed stars which of the two we ought to follow [Verum & hic inferior regula non præciſe in idem punctum coincidebat, ſed tantum 35 29⅓ monſtrabat, videndum ex præcedentibus fixis, vtram partem ſequi debeamus.].

This evening ♄ was in a straight line with Spica ♍ and the one that is in the right side under the girdle, except that ♄ deviated a little toward the east by the diameter of its own body [♄ hac veſpera erat in linea recta cum Spica ♍ & illa quæ in dextro latere ſub cingulo, niſi quod ♄ ſui corporis diametro orientem verſus paululum declinabat.].

And again with that little one, to which it is very close, and the one that is under the girdle [perizomate] on the right haunch, except that here too ♄ was more northerly by almost twice the diameter of its body [Rurſuſque cum paruula iſta cui admodum propinquus eſt & illa quæ ſub perizomate in clune dextra, niſi quod & hic ♄ duplici ferme corporis ſui diametro borealior erat.].

And this was the arrangement of the stars [Talis autem ſtellarum diſpoſitio erat.].

Diagram. A small figure set in the right column, at the left of the paragraphs ”Rurſuſque cum…” and ”Talis autem…”, in a handwritten style. A long straight line runs from a star mark at its upper right end to a star mark at its lower left end. A second, shorter line runs from a star mark at the upper left down to a cluster of star marks lying on the long line; a short stroke continues from that cluster to a further star mark just below it. Two labels are written by hand:

- ♄ (beside the cluster on the long line): ♄
- Spica (beside the star mark at the lower left end of the long line): Spica

Distance of ♄ from the third in the wing of ♍ [Diſtantia ♄ a tertia in ala ♍]		8 33½
The tail of ♌, west [Cauda ♌ occid.]	33 5	
Repeated distance [Diſt. repetita]		8 34⅓
Repeated distance [Diſt. repetita]		8 34⅓
Conversely [Vice verſa.]		
Distance of ♄ from the northern scale-pan [Diſtantia ♄ a lance Boreali]		30 59½
Repeated distance [Diſt. repetita]		31 0
Repeated distance [Diſt. repetita]		31 0
Repeated distance [Diſt. repetita]		31 0

[1] Perhaps 13⅝ [Forſitan 13⅝.]

Distance of ♄ from the northern hand of Ophiuchus [Diſt. ♄ a bor. manu Ophiuchi]		45 6⅛
Spica, west [Spica occidentalis]	24 57	
Repeated distance [Diſtantia repetita]		45 6
Spica, west [Spica occid.]	25 30	
Repeated distance [Diſt. repetita]		45 6⅛
Repeated distance [Diſt. repetita]		45 6⅛

DIE 23 MARTIJ. [23 March]

Distance between ♄ and Regulus [Diſt. inter ♄ & Regulum]		48 49½
The heart of Hydra, west [Cor Hydræ occid.]	31 35	
Repeated distance [Diſt. Repetita]		48 50
Repeated distance [Diſt. Repetita]		48 50
Meridian altitude of ♄ [Altitudo meridiana ♄]		35 32⅓
Transversals [Transuerſales]		35 32
Distance between ♄ and the third of the wing of ♍ [Diſt. inter ♄ & 3^{tiam} alæ ♍]		8 28½
The tail of ♌, west [Cauda ♌ occid.]	27 46	
Repeated distance [Diſt. repetita]		8 29
Repeated distance [Diſt. repetita]		8 29
Set here [*Pone hic*]		8 28¾
Conversely [Vice verſa.]		
Distance of ♄ from the northern scale-pan [Diſt. ♄ a lance Boreali]		31 4
The tail of ♌, west [Cauda ♌ occid.]	29 30	
Repeated distance [Diſt. repetita]		31 4
Repeated distance [Diſt. repetita]		31 4
Distance of ♄ from the northern hand of Ophiuchus [Diſt. ♄ a Borea manu Ophiuchi]		45 10⅓
Spica, west [Spica occid.]	15 11½	
Repeated distance [Diſt. repetita]		45 10⅓
Repeated distance [Diſt. repetita]		45 10⅓

With each altitude carefully limited, set: [*Circumſpecte limitatis ſingulis altitudinibus pone*]	
the meridian altitude of ♄ [*Altitudinem ♄ meridianam*]	35°32′15″
the altitude of the equator [*Altitudinem æquatoris*]	38 7 30
Therefore the southern declination [*Ergo Declinatio merid.*]	2 35 15

Distance of ♄ from Regulus [♄ *Diſt. a Regulo*]	48 50 45
Distance of ♄ from the northern scale-pan [♄ *Diſt. a Lance Borea*]	31 4 45
Distance of ♄ from the third of the wing [*Diſt.* ♄ *a tertia alæ*]	8 39
Distance of ♄ from the hand of Ophiuchus [*Diſt.* ♄ *a manu Ophiuchi*]	45 11

Make a trial also between Regulus and the northern hand of Ophiuchus, since they have almost the same distance; and between the northern scale-pan and the third of the wing. In future, however, care must be taken that roughly equal distances are taken on either side [*Fac etiam periculum inter Regulum & Borealem manum Ophiuchi, ſiquidem eandem ferme habent diſtantiam. Et inter Lancem Boream & 3^{tiam} alæ. Videndum autem inpoſterum vt æquales quaſi diſtantiæ vtrinque capiantur.*].

Note. The third of the wing of ♍ has the same latitude as ♄, and therefore its distance from this star gives the longitude of ♄ very nearly. At this time the longitude of that star is 4° 34′ ♎, and so for the longitude of ♄ it adds 8 39. Therefore the longitude of ♄ is ♎ 13 13 [*Nota. Tertia alæ* ♍ *habet eandem Latitudinem cum* ♄*, ideoque diſtantia eius ab hac ſtella longitudinem* ♄ *quam proxime pandit; eſt autem hoc tempore long. dictæ ſtellæ 4° 34′* ♎*, ideoque longit.* ♄ *addit 8 39 Ergo* ♄ *longitudo* ♎ *13 13*].

But this is not precise enough, because the latitude from the ecliptic is about 3° [*Sed hæc non ſatis præciſe, quia latitudo ab Ecliptica eſt quaſi 3 partium.*].

DIE 24 MARTIJ. [24 March]

Meridian altitude of ♄ [Altitudo meridiana ♄]		35 33½
Distance of ♄ from Regulus [Diſtantia ♄ a Regulo]		48 45⅓
Repeated distance [Diſt. repetita]		48 45
Repeated distance [Diſt. repetita]		48 45
Distance of ♄ from the third of the wing of ♍ [Diſt. ♄ a 3^{tia} alæ ♍]		8 23½
Set here [*Pone hic*]		8 23¾
Repeated distance [Diſt. repetita]		8 23½
Repeated distance [Diſt. repetita]		8 23½
Conversely [Vice verſa.]		
Distance of ♄ from the northern scale-pan [Diſt. ♄ a lance boreali]		31 9
Spica, west [Spica occidentalis]	19 30	
Repeated distance [Diſt. repetita]		31 9⅓
Repeated distance [Diſt. repetita]		31 9
Distance of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtrali]		26 36
Spica, west [Spica occid.]	24 35	
Repeated distance [Diſt. repetita]		26 36
Repeated distance [Diſt. repetita]		26 36
Distance of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]		7 9⅓ three times [ter]
Distance of ♄ from Vindemiatrix [Diſt. ♄ a Vindemiatore]		15 54
Repeated distance [Diſt. repetita]		15 54⅙
Distance of ♄ from the girdle of ♍ [Diſt. ♄ a cingulo ♍]		9 11½ twice [bis]

N.B. I myself was present afterwards and noted, with a thread, that ♄ was in the straight line drawn from Spica to the girdle of ♍. On the other side it was in the line that runs from the lower one near ♄, that of the fourth magnitude, distant from ♄ about as much as the two in the left hand of Ophiuchus; the line tended toward the one that is near the bright star of the Crown, toward the west. About this time the one of the third magnitude that is behind the hands of Ophiuchus was on the meridian, having an altitude of 23° 0′ 0″. When a line is drawn from the heart of ♏ to this one, it falls approximately on the two lower and more southerly ones in the body of the Lyre; from this you will recognise the star [*N.B. Ipſemet poſtea aderam & animaduerti cum filo quod* ♄ *eßet in linea recta quæ ducitur a Spica in cingulum* ♍*, fuit ab altera parte in linea quæ eſt ab inferiori prope* ♄ *illa quartæ magnitudinis, diſtans quaſi a* ♄ *prout duæ in manu ſiniſtra Ophiuchi, tendebat linea in eam quæ prope lucidam coronæ verſus occaſum. Fuit circa hæc tempora in Meridiano ea quæ eſt poſt manus Ophiuchi tertiæ magnitudinis habens altitudinem 23° 0′ 0″. Quando a Corde* ♏ *in hanc ducitur linea, cadit ea quaſi in duas inferiores & auſtraliores in corpore lyræ, hinc noſces ſtellam.*].

Distance of ♄ from the uppermost [Diſtantia ♄ a ſuprema]		
in the foreheads of ♏ [in frontibus ♏]		44 34½
Repeated distance [Diſtantia repetita]		44 34½
Distance of ♄ from the heart of ♏ [Diſt. ♄ a Corde ♏]		51 37½
The heart of ♏ was then distant [Cor ♏ aberat tunc]		
from the meridian, west [a Mer. occ.]	15 16	
At 4 in the morning, repeated distance [H. 4 matutina Diſt. repetita]		51 38

And these just before dawn, which also took them from sight. There were then ♄ and the uppermost in the forehead and [Et hæc ſub ipſam Auroram quæ etiam conſpectum earum eripiebat. Erant tunc ♄ & ſuprema in fronte &]

the heart of ♏ at almost the same altitude, and so refraction could introduce no perceptible discrepancy here [Cor ♏ fere in eadem Altitudine, ideoque refractio nullam hic ſenſibilem poterat inferre diſcrepantiam.].

DIE 25 MARTIJ, DIE ☉. [25 March, the day of ☉]

Meridian altitude of ♄ [Altitudo ♄ meridiana]		35
		35⅙
Distance of ♄ from the heart [Diſtantia ♄ a Corde]		48 40
1^H12^M Spica, west [1^H12^M Spica occid.]	15 26	
Repeated distance [Diſt. repetita]		48 40
Distance of ♄ from the third in the wing of ♍ [Diſt. ♄ a 3^{tia} in ala ♍]		8 20
1^H25^M Spica, west [1^H25^M Spica occid.]	18 43	
Repeated distance [Diſtantia repetita]		8 20.
Repeated distance [Diſt. repetita]		8 20
Conversely [Vice verſa.]		

Distance of ♄ from the northern scale-pan [Diſt. ♄ a lance Boreali]		31 13
$1^{H}37^{M}$ Spica, west [$1^{H}37^{M}$ Spica occid.]	21 50	
Repeated distance [Diſt. repetita]		31
		12⅝[1]
Repeated distance [Diſt. repetita]		31
		12⅙
Distance of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtrali]		26
		40⅓
Repeated distance [Diſt. repetita]		26
		40⅓
Repeated distance [Diſt. repetita]		26
		40⅓
♄ from Spica ♍ [♄ a Spica ♍]		7 12½
$14^{H}18^{M}$ Spica, west [$14^{H}18^{M}$ Spica occid.]	31 57	
Repeated distance [Diſt. repetita]		7 12½
Repeated distance [Diſt. repetita]		7 12½
Distance of ♄ from the girdle of ♍ [Diſt. ♄ a cingulo ♍]		9 9
$14^{H}42^{M}$ Spica, west [$14^{H}42^{M}$ Spica occid.]	38 0	
Repeated distance [Diſt. repetita]		9 8⅔
Distance of ♄ from Vindemiatrix [Diſt. ♄ a Vindemiatore]		15
		51⅔
Repeated distance [Diſt. repetita]		15
		51⅔
Repeated distance [Diſt. repetita]		15
		51⅔
H. 4½ the heart of ♏, west [H. 4½ Cor ♏ occid.]	18 10	
Distance of ♄ from the heart of ♏ [Diſt. ♄ a Corde ♏]		51
		42½
Repeated distance [Diſt. repetita]		51 43
Repeated distance [Diſt. repetita]		51
		42½
On the reckoning of the previous day it ought to have been distant from the uppermost in the forehead of ♏ [*Debuit ratione prioris diej diſtare a ſuprema in fronte* ♏]		*44* *39½*

DIE 26 MARTIJ. [26 March]

Meridian altitude of ♄ [Altitudo ♄ meridiana]		35 36¾
Distance of ♄ from the tail of ☌ [Diſt. ♄ a Cauda ☌]		28 10
$13^{H}47^{M}$ Spica, west [$13^{H}47^{M}$ Spica occ.]	25 20	
Repeated distance [Diſt. repetita]		28 10⅙
Repeated distance [Diſt. repetita]		28 10

On this occasion the distance of ♄ from the heart of ☌, as also from the bright star of the neck, could not be taken because of the Moon, which, being very close to Regulus, hindered greatly with its brightness [A Corde ☌ hac vice veluti & lucida Ceruicis diſtantia ♄ propter ☾^{am}, quæ ſuo fulgore, Regulo proxima, plurimum impediebat, capi non poterat.].

Meridian altitude of the northern scale-pan [Altit. merid. lancis Boreæ]		30 18
Distance of ♄ from the third of the wing of ♍ [Diſt. ♄ a 3^{tia} alæ ♍]		8 14
$2^{H}31^{M}$ Spica, west [$2^{H}31^{M}$ Spica occid.]	35 10	
Repeated distance [Diſt. repetita]		8 14¾ *
Repeated distance [Diſt. repetita]		8 13½ *
Repeated distance [Diſt. repetita]		8 14 twice [bis]
Set [*Pone*]		*8 14*

* These two are doubtful and cancel each other out [**Hæ duæ dubiæ & ſe inuicem elidunt.*].

Conversely [Vice verſa.]		
Distance of ♄ from the northern scale-pan [Diſt. ♄ a lance boreali]		31 17½
$2^{H}44^{M}$ Spica, west [$2^{H}44^{M}$ Spica occid.]	39 35	
Repeated distance [Diſtantia repetita]		31 17½
Repeated distance [Diſt. repetita]		31 17½
Distance of ♄ from the southern scale-pan [Diſt. ♄ a lance auſtrali]		26 45
3^{H} 3^{M} Spica, west [3^{H} 3^{M} Spica occident.]	44 23	
Repeated distance [Diſt. repetita]		26 45
Repeated distance [Diſt. repetita]		26 45
Distance of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]		7 17
Repeated distance [Diſt. repetita]		7 17
Repeated distance [Diſt. repetita]		7 17

The distances from the girdle of ♍ and from Vindemiatrix could not be taken because of the Moon [A Cingulo ♍ & vindemiatore propter ☾^{am} diſtantiæ capi non poterant.].

As the Moon was just setting, some very small clouds were rising, which took both the stars of ♐ and those of ♏ from sight [☾ iam iam occidente paruulæ quædam nubeculæ oriebantur, quæ & ♐ & ♏ ſtellas oculis eripiebant.].

N.B. To the altitudes of ♄ from 24 March onward, after the fiducial line was corrected, 35″ must be added everywhere, so that its altitude is as follows [*N.B. ♄ altitudinibus inde a die 24 Martij, poſtquam linea fiduciæ emendata eſt, addenda ſunt vbique 35″, vt ſit eius altitudo vt ſequitur.*].

Day [*Die*]	Altitude observed and limited [*Altitudo obſeruata & limitata*]	Declination [*Declinatio*]
24	*35° 34′ 5″*	*2° 33′ 25″*
25	*35 35 45*	*2 31 45*
26	*35 37 25*	*2 30 5*

Set, for the 26th at H. 2 M. 42 A.M. [*Pone die 26 H. 2 M. 42 A.M.*]:

the distance from the third in the wing [*dist. a 3tia in ala*]	*8 15*
from the northern scale-pan [*a lance Boreali*]	*31 18½*
and the southern declination [*& declin. Meridianam*]	*2 29 50*

And so you will err imperceptibly [*Sicque insensibiliter aberrabis.*].

For deriving the opposition of ♄ to the Sun [*Pro ☍ ♄ ad Solem deducenda.*].

N.B. This year, 1599, in March, the third of the wing has longitude 4° 33′ 45 ♎, latitude 2 50 0 B. [*N.B. Tertia alæ habet hoc anno 1599 in Martio Longitudinem 4° 33′ 45 ♎ Latitudinem 2 50 0 B.*]

And since it has the same latitude as ♄ to within a minute, it will be easy to derive the longitude of ♄ from the said distance, so long as account is taken of the roughly three degrees by which they are removed from the ecliptic; in that position, according to the table of Apianus [Petrus Apianus] in the *Cosmographia*, these make 5″ more for each degree [*Cumque habeat eandem cum ♄ intra minutum Latitudinem, facile erit Longitudinem ♄ ex dicta distantia hinc deducere, ita vt habeatur ratio trium ferme graduum, quibus ab Ecliptica remouentur, quo in loco ex Tabula Apiani in Cosmographia faciunt 5″ pro quolibet gradu plus.*]. From this it follows that on the 26th, in the last [*Hinc sequitur quod die 26 vltima ob-*]

[1] Perhaps 12⅙ [Forsitan 12⅙.]

preceding observation, at the distance 8. M. 15, 8. 15. 40 is to be added to the longitude of the star, so that the longitude of ♄ is 12 49 25 ♎ [*seruatione præcedenti in distantia 8. M. 15 fuerint addenda 8. 15. 40 ad Longitudinem stellæ, vt sit Long. ♄ 12 49 25 ♎.*].

From the preceding observations [Ex obseruationibus præcedentibus.]

For the 16th of March [Ad diem 16 Martij.]	
Longitude of ♄ [Longitudo ♄]	13° 36′ 55″ ♎
Latitude [Latitudo]	2 49 16 A.
By the triangles there results [Per △la prouenit]	
Longit.	13 37 16 ♎
Latit.	2 50 34
For the 22nd of March [Ad 22 Martij.]	
Longitude [Longitudo]	13 8 20 ♎
Latitude [Latitudo]	2 47 58
	Southern, from the book[1] [Australis ex libro [1]]
For the 25th of March [Ad diem 25 Martij.]	
Longitude [Longitudo]	12 53 43 ♎
Latitude [Latitudo]	2 48 38
	Northern [Borea]

But the parallax of ♄, sought from its distance from the Earth at that time, 9400 of the units of which the Earth's semidiameter is 1, increases this latitude

by 18″, so that in reality it is 2° 48′ 56″ [Verum hanc latitudinem Parallaxis ♄ per diſtantiam eius tunc a terra 9400, qualium ſemidiameter terræ 1, quæſita 18″ adauget, vt reuera ſit 2° 48′ 56″.].

If the place of ♄ for the time of this opposition is sought according to Lord Tycho's limitation, there results long. of ♄ ♎ 12° 55′ 57″, lat. 2° 49′ 5″ Bor. [Si ad tempus hoc ☍ locus ♄ iuxta Domini Tychonis limitationem quæratur, emergit Long. ♄ ♎ 12° 55′ 57″, Latit. 2° 49′ 5″ Bor.]

Opposition of ♄ and ☉ [☍ ♄ & ☉.]

Thus the opposition of the true place of ♄ with the mean ☉ fell this year, 1599, on the 25th day of March, Old Style, at hour 4½ after the following midnight, ♄ being in G. 12 M. 54 ♎, lat. 2 49 B. And since the limit of northern latitude was found by me to be at 20½ ♎, ♄ was distant from it p. 7 M. 36; from this it follows that its greatest northern latitude can be p. 2 M. 50, which agrees well enough with what I found earlier [*Fuit itaque ☍ veri loci ♄ cum medio ☉ hoc anno 1599 Martij die 25 ſtylo veteri Hora 4½ poſt mediam noctem ſequentem, ♄^{no} exiſtente in G. 12 M. 54 ♎, Latit. 2 49 B. Cumque limes Boreæ Latitudinis a me repertus ſit in 20½ ♎ abfuit ♄ ab hoc p. 7 M. 36, hinc conſequitur quod latitudo eius borea maxima eße poßit p. 2 M. 50, quod ſatis conſentit cum ijs quæ antea a me adinuenta ſunt.*].

DIE 11 APRILIS. [11 April]

Meridian altitude of ♄ [Altitudo ♄ meridiana]		36 3½
The tail of ☋, west [Cauda ☋ occid.]	18 57	
Distance of ♄ from the heart of ☋ [Diſtantia ♄ a Corde ☋]		47 24
The tail of ☋, west [Cauda ☋ occid.]	27 54½	
Repeated distance [Diſtantia repetita]		47 24
Repeated distance [Diſtantia repetita]		47 24
Distance of ♄ from the third in the wing of ♍ [Diſt. ♄ a 3^{tia} in ala ♍]		7 5
The tail of ☋, west [Cauda ☋ occid.]	30 45	
Repeated distance [Diſt. repetita]		7 5
Repeated distance [Diſt. repetita]		7 5
Conversely [Vice verſa.]		
Distance of ♄ from the northern scale-pan [Diſt. ♄ a lance boreali]		32 26
Spica, west [Spica occid.]	11 46	
Repeated distance [Diſt. repetita]		32 26
Repeated distance [Diſt. repetita]		32 26
Distance of ♄ from the southern scale-pan [Diſt. ♄ a lance auſtrali]		27 54
Spica, west [Spica occid.]		
among clouds [inter nubes]	15 53	
Repeated distance [Diſt. repetita]		27 54
Repeated distance [Diſt. repetita]		27 54

From the preceding [Ex præcedentibus.]

Longitude [Longitudo]	11° 39′ 50″ ♎
Latitude [Latitudo]	2 47 20 B.
But the parallax a. [*Sed parallaxis a.*]	*20*
True latit. [*Vera Latit.*]	*2 47 40*

DIE 19 APRILIS. [19 April]
♄ was observed in this way [Obſeruabatur ♄ in hunc modum.]

First, the distance of ♄ from the heart of ☋ [Primum diſtantia ♄ a Corde ☋]		46 52
The heart of ☋, west [Cor ☋ occid.]	29 54	
Repeated distance [Diſt. repetita]		46 52
Repeated distance [Diſt. repetita]		46 52
Meridian altitude of ♄ [Altitudo meridiana ♄]		36 16
The tail of ☋ was then west [Cauda ☋ tunc occ.]	18 31	
Distance of ♄ from the third in the wing of ♍ [Diſt. ♄ a tertia in ala ♍]		6 33
Repeated distance [Diſt. repetita]		6 33
Conversely [Vice verſa.]		
H. 12, distance of ♄ from the northern scale-pan [H. 12 Diſt. ♄ a Lance Boreali]		32 58
Spica, west [Spica occid.]	18 20	
Repeated distance [Diſtantia repetita]		32 58
Repeated distance [Diſtantia repetita]		32 58
Distance of ♄ from the southern scale-pan [Diſt. ♄ a lance auſtrali]		28 27
Spica, west [Spica occid.]	22 34	
Repeated distance [Diſtantia repetita]		28 27
Repeated distance, very exactly [Diſt. repetita exactißime]		28 27

N.B. This evening ♄ was in a straight line with Spica ♍ and the little one that is near it [N.B. Erat ♄ hac veſpera in linea recta cum ſpica ♍ & paruula quæ prope illum.].

And again, crosswise, with Arcturus and the more easterly of the two upper ones in the square of the Crow. Likewise with the southern scale-pan and the third of the wing of ♍ [Rurſuſque decußatim cum Arcturo & orientaliori duarum ſuperiorum in □ Corui. Item cum lance auſtrali & tertia alæ ♍.].

Right ascension, limited, 191° 18′ 1″ [Aſc. recta limitata 191° 18′ 1″.].

DIE 20 APRILIS. [20 April]

Meridian altitude of ♄ [Altit. ♄ meridiana]	36 17½

N.B. Twenty-nine years ago, namely in the year 1570, I observed ♄ in opposition to ☉ in almost this same place [*N.B. Ante annos 29 videlicet Anno 1570 ♄ obſeruaui in ☍ ☉ in hoc eodem fere loco.*].

[1] Northern in the *Progymnasmata* (Vol. II p. 262) and in the »Restitution of the Stars« (Vol. III p. 348). Correctly so [Borealis in Prog. (T. II p. 262) et in »Stellarum Reſtitutione« (T. III p. 348). Recte.]

Now the opposition of ♄ with the mean place of ☉ was observed at the time set down, ♄ itself being, as to longitude, in p. 12 M. 54½ ♎, account being taken of its own circle inclined to the ecliptic, which adds M. ½. Our calculation gives the longitude in 12° 55⅔′, so that there is an excess of at least 1⅙ minutes; this can easily happen because the equation of the eccentric has not been limited scrupulously enough, as you know. The Prutenic calculation then gives 13 29, in excess by 34½′; the Alfonsine has 13 53, in excess by almost a whole degree. The New Ephemerides of Everhartus give, for our time, the place of ♄ in 13° 19′ ♎, so these too are in excess, by 25′, which shows that his correction does not agree with the truth [Fuit autem obſeruata ☍ ♄ cum medio loco ☉ ad præſcriptum tempus ipſo exiſtente quo ad Longit. in p. 12 M. 54½ ♎ habito reſpectu proprij circuli inclinati ad Eclipticam qui addit M. ½, noſter calculus dat longitudinem in 12° 55⅔′, vt abundent 1⅙ ſaltem Minuta, quod facile fieri poteſt ob æquationem Eccentrici non ſatis ſcrupuloſe limitatam vti ſcis. Calculus Prutenicus præbet tunc 13 29 abundans minutis 34½, Alphonſinus habet 13 53 abundans integro fere gradu. Nouæ Ephemerides Euerhardi præbent ad noſtrum tempus locum ♄ in 13° 19′ ♎, quare abundant & hæ 25′, quod oſtendit eius correctionem non eße vero conſonam.].

It is therefore clear that, according to Copernicus, there is an excess of G. 3 M. 30 in the apogee of ♄, of G. 0 M. 22 in its longitude, and of a 36th part in the prosthaphaeresis [Greek: προσταφ. (abbreviation, printed with τ; prosthaphaeresis)] of the eccentric: in these three chief requisites he commits an excess, as I have also noticed in other acronychal positions of ♄. But the ratio of the proportion of the two eccentricities is other than the one Ptolemy and Copernicus assumed; as with Mars, they are to be limited from the observations themselves [*Patet itaque quod iuxta Copernicum in ♄ Apogæo abundent G. 3 M. 30 in Longit. eius G. 0 M. 22 in* προσταφ. *Eccentrici pars 36ta, quibus exceſſum committit in his tribus præcipuis requiſitis quemadmodum etiam in alijs Achronychijs ♄ ſitibus animaduerti, ſed alia ratio eſt proportionis eccentricitatis vtriuſque quam a Ptolomæo & Copernico aßumpta eſt, quæ vti in Marte ex obſeruationibus ipſis limitandæ.*].

DIE 21 APRILIS. [21 April]

Meridian altit. of ♄ [Altit. ♄ merid.]	36 18½

DIE 22 APRILIS. [22 April]

Meridian altit. of ♄ [Altit. ♄ merid.]	36 19¾

DIE 16 MAIJ. [16 May]

The distance of ♄ was observed [Obſeruabatur diſtantia ♄]		
from the northern scale-pan [a lance boreali]		34 13
The northern scale-pan was distant [Lanx borealis aberat]		
from the meridian [a Meridiano]	30 28	
Repeated distance [Diſt. repetita]		34 12
Repeated distance [Diſt. repetita]		34 13
Distance of ♄ from the uppermost in the forehead of ♏ [Diſt. ♄ a ſuprema in fronte ♏]		47 41½
The northern scale-pan, west [Lanx borealis occid.]	33 4	
Repeated distance [Diſt. repetita]		47 42
Repeated distance [Diſt. repetita]		47 41½

Because of scattered clouds we could not observe more, either of ♄ or of the fixed stars [Plura & in ♄ & in ſtellis fixis propter nubes rariuſculas obſeruare non potuimus.].

DIE 19 MAIJ. [19 May]

♄ was observed from the tail of ♌ [Obſeruabatur ♄ a Cauda ♌]	25 23
Repeated distance [Diſt. repetita]	25 23
Repeated distance [Diſt. repetita]	25 23

DIE 7 JUNIJ. [7 June]

Distance of ♄ from the third in the wing of ♍ [Diſt. ♄ a tertia in ala ♍]	5° 1′

The star below the heart of ♏ was then on the meridian [Erat tunc illa quæ ſub corde ♏ in meridiano.].

Repeated distance [Diſt. repetita]	5 1
Set this distance [*Pone hanc diſtantiam*]	*4 50½*

♄ was then precisely in a straight line with the third of the wing of ♍ and the uppermost in the forehead of ♏ [Erat tunc ♄ præciſe in linea recta cum tertia alæ ♍ & ſuprema in fronte ♏.].

Distance of ♄ from Spica ♍ [Diſt. ♄ a ſpica ♍] 9 41

The head of Ophiuchus was then almost on the meridian [Erat tunc Caput Ophiuchi quaſi in meridiano.].

Repeated distance [Diſt. repetita] 9 41½

N.B. ♄, observed near its second station, beginning to become direct[1] [*N.B. ♄ obſeruatus iuxta alteram ſtationem incipiens directus fieri*[1].].

♄ was moreover in a straight line with two stars of the third magnitude set above Spica, the first and lower of which forms a nearly isosceles triangle with Spica and the third of the wing. So it must be determined which these two are [Erat præterea ♄ in linea recta cum duabus ſtellis tertiæ magnitudinis ſupra ſpicam conſtitutis, quarum prima & inferior △^{lum} ferme iſoſceles cum ſpica & tertia alæ conſtituit; videndum ergo quænam iſtæ duæ ſint.].

From the fact that ♄ was exactly in a straight line with the third of the wing of ♍ and the uppermost in the forehead of ♏, I first infer its latitude in this way [*Ex hoc quod ♄ erat exacte in linea recta cum tertia alæ ♍ & ſuprema in fronte ♏ colligo primo eius latitudinem in hunc modum.*].

The latitude of the third of the wing is 2° 50′ B., that of the uppermost in the forehead of ♏ 1° 5′; the difference between them is 1° 45′. Now, since the distance between the fixed stars is very nearly 53° 0′ (which can also be found more precisely from the difference of longitude, if one wishes), I say: over an interval of 53° the latitude changes by 1° 45′; by how much does it change when the interval is changed to p. 4 M. 51, which is the distance of ♄ from the third of the wing of ♍? The result is about 10′, by which the latitude of ♄ must be less than the latitude of the star in the third of the wing. Therefore, by setting the latitude of ♄ at 2° M. 40, we shall err imperceptibly. But the difference of longitude could be established from the observed distance from the third of the wing and the complement of the latitudes, for three sides are thus given, and so the angle of the difference of longitude will become known [*Latitudo tertiæ alæ eſt 2° 50′ B., ſupremæ in fronte ♏ 1° 5′, differentia vtriuſque 1° 45′. Quia vero diſtantia fixarum eſt quamproxime partium 53° 0′, quæ etiam ex differentia longitudinis inquiri poteſt præciſius ſi lubet, dico interuallo 53 partium, mutata eſt latitudo part. 1° 45′, quantum mutato interuallo p. 4 M. 51, quantum videlicet diſtat ♄ a tertia alæ ♍. Proueniunt 10 minuta fere, quibus latitudo ♄ minor eſſe debet latitudine eius quæ in tertia eſt alæ. Quare ponendo latitudinem ♄ partium 2 M. 40 inſenſibiliter aberrabimus. At differentia longitudinis conſtare poterat ex diſtantia obſeruata a tertia alæ & complemento latitudinum, ſunt enim ſic data tria latera, ergo angulus differentiæ longitudinis innoteſcet.*].

[1] Written in the margin [In margine adſcriptum.]

Working it out mechanically, we found that the longitude of ♄ was about 9° 25′ ♎ and the latitude very nearly 2° 40′. This falls short of the Prutenic calculation by 25′, and in latitude it exceeds the same calculation by about a quarter of a degree [Mechanice operando inuenimus ♄ longitudinem fuiße iuxta 9° 25′ ♎, Latit. 2° 40′ quam proxime, quod a calculo Prutenico deficit 25′ & in latitudine abundat quaſi quarta gradus pars vltra eundem calculum.].

N.B. From this it is inferred that, around this second station, the place of ♄ in the heavens precedes the one the Prutenic calculation gives by ⅖ of one degree; at the time of the opposition with the ☉, however, it preceded by ⅗ of a degree, as is clear from the above, when it was observed in the acronychal position. So the difference is found to be at least ⅙°. The Alfonsine calculation has 50′ more, but at the opposition it was in excess by 1° 2′, so that the difference here is 12′, nearly as before in the Prutenic [N.B. Ex his colligitur quod Locus ♄ ad ⅖ vnius gradus ſit in cœlo anterior eo, quem dat calculus Prutenicus circa hanc ſtationem ſecundam; iuxta tempus vero ☍ cum ☉^{le} erat per ⅗ gradus anterior, vti patet ex ſuperioribus, quando in Acronychio ſitu obſeruatus eſt. Differentia itaque ſaltem inuenitur ⅙°. Alphonſinus calculus habet 50′ plus, at in ☍ abundauit 1° 2′, vt hic ſit differentia 12′, fere vt prius in Prutenico.].

DIE 8 JUNIJ. [8 June]

The distance between ♄ [Obſeruabatur diſtantia inter ♄] and Spica ♍ was observed [& Spicam ♍]	9 42
The heart of ♏ was then almost on the meridian [Erat tunc Cor ♏ quaſi in Meridiano.]	
Repeated distance, among clouds [Diſt. repetita inter nubes]	9 42
To test the Radius, the distance was taken [Pro examinando Radio ſumebatur] between the bright star of the Chair and [diſt. inter lucidam Cathedræ &] the Knee of Cassiopeia [Genu Caßiopeæ]	9 42½ twice and exactly [bis & exacte.]
The book *Epist.* has [Liber Epiſt. habet]	9 41.
So set the distance of ♄ and Spica [Pone itaque diſt. ♄ & Spicæ]	*9 40½*
or at most [vel ad ſummum]	*9 41*
Distance of ♄ from the girdle of ♍, among clouds [Diſt. ♄ a Cingulo ♍ inter nubes]	7 6
Set here [Pone hic]	*7 5*

This evening ♄ was still in a straight line with the uppermost in the forehead of ♏ and the third of the wing, and again with Arcturus and a star of the second magnitude that stands directly above Arcturus. The arrangement of the stars was as follows [Erat ♄ hac veſpera adhuc in linea recta cum ſuprema in fronte ♏ & tertia alæ, rurſusque cum Arcturo & ſtella ſecundæ magnitudinis quæ directe ſupra Arcturum conſtituitur. Erat vero talis poſitus ſtellarum.].

Diagram. A sketch set in the left column below the paragraph above, drawn and lettered in a handwritten style. It shows five star-marks (asterisks) joined by two straight lines. One line runs from the uppermost mark through the "Arcturus" mark down to the mark labelled ♄. The second, longer line runs from the mark at the lower left, through the ♄ mark, to the mark at the right. The ♄ mark thus stands where the two lines meet.

- Upper end of the first line: "Quæ in [?]." — the second word, handwritten, begins with "c" and appears to end in "-dice"; not resolved.
- Second mark on the first line: "Arcturus" (handwritten, with an abbreviated ending).
- Junction of the two lines: "♄" (a small cross-like stroke stands just left of the sign).
- Right end of the second line: "ʒ[a] alæ" (handwritten; the superscript after the ʒ is read as "a").
- Left end of the second line: "fro. ♏" (handwritten; a mark stands above the "o", and the sign after the stop is a handwritten ♏).

DIE 10 JUNIJ. [10 June]

The distance between ♄ and the third of the wing was observed [Obſeruabatur diſt. inter ♄ & ʒ[tiam] alæ]	
with the larger radius [per mai. radium]	5° 3′
The uppermost of the forehead of ♏ was then [Erat tunc ſuprema frontis ♏]	
on the meridian [in meridiano.]	
Repeated distance [Diſt. repetita]	5 3½
With the smaller the distance was [Per minorem erat diſt.]	
twice, exactly [bis exacte]	4 53
Distance between ♄ and the girdle of ♍ [Diſt. inter ♄ & cingulum ♍]	
with the larger [per maio.]	7 9½
Repeated distance [Diſt. repetita]	7 9
The smaller Radius gave [Minor Radius dabat]	6 55
Repeated distance [Diſt. repetita]	6 55

These observations are to be trusted rather than the earlier ones [Fidendum potius his obſeruationibus quam prioribus.].

The distance between ♄ and [Obſeruabatur diſt. inter ♄ &]	
Spica was observed with the larger [ſpicam per maiorem]	9 40½
Repeated distance [Diſt. repetita]	9 41
With the smaller, twice [Per minorem bis]	9 30
Between the bright star of the Chair and the Knee [Inter Luc. Cathedræ & Genu]	
of Cassiopeia, to test the [Caßiop. pro examinando]	9 42½
larger Radius. The book has [Radio mai. Liber habet]	9 41
Repeated distance [Repetita diſtantia]	9 43
With the smaller, twice [Per Minorem bis]	9 30

Distance of ♄ from that little one [Diſt. ♄ a paruuala illa quæ]	
which was near it [prope illum erat]	2 58
It is the one that is last in the left wing of ♍ [Illa eſt quæ vltima in ſiniſtra ala ♍]	
counted; its longitude [numeratur, Long. illius]	12 37 ♌
Repeated [Repetita]	2 58
With the smaller, twice [Per minorem bis]	2 52
Distance of ♄ from the star above it [Diſtantia ♄ ab illa quæ ſupra ipſum]	
of the 3rd magnitude, which forms with Spica [eſt, 3^{tiæ} magnit., & ferme cum ſpi-]	
and the 3rd of the wing a nearly isosceles triangle [ca & 3^{tia} alæ △^{lum} iſoſceles conſti-]	
(I think it is the one below the girdle [tuit (puto eße illam quæ ſub peri-]	
on the right haunch) [zomate in clune dextra)]	
With the larger, twice [Per Maiorem bis]	9 14
The town's bell was then indicating that the first hour had passed [Campanula vrbis præterlapſam tunc]	
[horam primam indicabat.]	
With the smaller also, twice [Per Minorem etiam bis]	9 0

This evening ♄ was still in a straight line with the uppermost in the forehead of ♏, and with the 3rd of the wing of ♍. From the line drawn from those two that are above it, however, ♄ had moved away toward the east by about the diameter of its own body [Erat ♄ hac veſpera adhuc in linea recta cum ſuprema in fronte ♏ & cum 3^{tia} alæ ♍, ab illa autem linea quæ a duabus iſtis quæ ſupra ipſum ſunt ducitur, ♄ diametro quaſi ſui corporis ortum verſus ſeceßerat.].

N.B. The observations made on this day are more exact than those made on the preceding days, so in examining the place of ♄ they are rather to be trusted. It should be known, moreover, that the larger radius with which these distances were taken was that of Master Jöstel [Mag. Jœſtelij], Professor of Mathematics at Witte- [N. B. Obſeruationes hoc die factæ ſunt exactiores quam eæ quæ præcedentibus, quare ijs potius in examinando ♄ loco fidendum. Sciendum inſuper quod radius ille maior quo hæ capiebantur diſtantiæ erat Mag. Jœſtelij Profeßoris Mathematici Witte-]

nberg. The other, the smaller, was that of D. Wolfgang Franz [D. Wolfgangi Franzij], Professor of History in the same place; but that smaller one made the distances everywhere smaller than they should be, by about 10′, which must be guarded against. The distances taken with the larger Radius, however, can be limited from similar intervals among the stars of Cassiopeia observed with the same one, since the difference is very small [bergæ. Alter minor erat D. Wolfgangi Franzij Profeßoris Hiſtorici ibidem, ſed minor ille quaſi in 10 minutis vbique diſtantias iuſto minores fecit, quod præcauendum eſt. Diſtantiæ vero per Maiorem Radium acceptæ poßunt limitari iuxta ſimiles in Caßiopeæ ſtellis per eundem obſeruatas intercapedines, cum differentia ſit perexigua.].

DIE 11 JUNIJ. [11 June]

The distance of ♄ from the 3rd of the wing of ♍ was observed [Obſeruabatur diſt. ♄ a 3^{tia} alæ ♍]	
with the larger [per maiorem]	5° 5′
Repeated distance [Diſt. repetita]	5 5
With the smaller, twice [Per minorem bis]	4 55
Distance of ♄ from Spica ♍ [Diſt. ♄ a ſpica ♍]	
with the larger [per maiorem]	9 40½
Repeated distance [Diſt. repetita]	9 40½
The same distance with the Smaller, twice [Diſt. eadem per Minorem bis]	
repeated [repetita]	9 42
Distance between the girdle of ♍ and ♄ [Diſt. inter cingulum ♍ & ♄]	7 10½
Repeated with the larger [Repetita per maiorem]	7 11
With the smaller [Per minorem]	7 3
Repeated [Repetita]	7 4

GIRSITZÆ DIE 12 DECEMBRIS. [At Girsitzæ, 12 December]

♄ from Spica [♄ a Spica]	8 49½ three times [ter]
♄ from Arcturus [♄ ab Arcturo]	29 15⅚ three times [ter]
♄ from the last in the tail of Hydra [♄ ab vltima in cauda Hydræ]	17 55 three times [ter]
♄ from the northern scale-pan of ♎ [♄ a boreali lance ♎]	18 48 three times [ter]

NOCTU QUÆ SEQUEBATUR 13 DECEMBRIS. [On the night that followed, 13 December]

Distance of ♄ from Spica ♍ [Diſtantia ♄ a ſpica ♍]		8 59
Altitude of Spica [Altitudo ſpicæ]	24 5	
Distance of ♄ from Arcturus [Diſt. ♄ ab Arcturo]		29 28
Altitude of Spica [Altit. ſpicæ]	26 5	
♄ from the last in the tail of Hydra [♄ ab vlt. in cauda Hydræ]		16 44⅚
Altitude of Spica [Altit. ſpicæ]	27 43	
Distance of ♄ from the northern scale-pan of ♎ [Diſt. ♄ a Boreali lance ♎]		27 33
Altitude of Spica [Spicæ altit.]	28 30	

BENACHIÆ DIE 31 DECEMBRIS. [At Benátky, 31 December]

Distance of ♄ from the third of the wing of ♍ [Diſtantia ♄ a tertia alæ ♍]	22 36
Repeated [Repetita]	22 36
Conversely, the distance of ♄ [Vice verſa diſt. ♄]	
from the northern scale-pan of ♎ [a lance Bor. ♎]	17 31

Repeated [Repetita]	17 31
Meridian altitude of ♄ [Altit. ♄ meridiana]	
by the revolving instrument [per Volub.]	31 20
Right ascension of ♄ from the 3rd of the wing of ♍ [Aſc. R. ♄ e 3ª alæ ♍]	206 6 0
from the northern scale-pan [ex lance Bor.]	206 13 3
limited [limitata]	206 9 31
Longitude of ♄ [Longitudo ♄]	♎ 27 14 49
Latitude [Latitudo]	B. 2 25 25

OBSERUATIONES IOUIS. [Observations of Jupiter]
DIE 2 JANUARIJ. [2 January]

10^H27^M	The distance of ♃ and Aldeb. was [Diſt. ♃ & Aldeb. fuit]	
	with the smaller sextant [per Sext. minor.]	40 16½
10 35	The same repeated [Eadem repetita]	40 16½
10 40		40 16½
10 42	(two minutes have been added)[1] [(duo min. ſunt addita)[1]]	40 16½
10 54	♃ crossed [Tranſiuit ♃]	
	the meridian, having an altitude of [merid. habens altit.]	61 10
	Distance between Aldeb. and [Diſt. inter Aldeb. &]	
	Procyon, to test [Procyonem pro exami-]	
	the instrument [nando inſtrumento]	45 5

DIE 4 JANUARIJ. [4 January]

11^H52^M	♃ was observed with the Radius [Obſeruabatur ♃ per Radium]	
	and its distance was found [eiusque diſtantia adinuenta ab]	
	from the one in the shoulders of the preceding ♊ [illa quæ in ſcapulis præcedentis ♊]	4 55
12 1	Distance of ♃ from the one which [Diſt. ♃ ab illa quæ]	
	is in the belly, southern, of ♊ [in ventre Merid. ♊]	0 51
12 10	Distance of ♃ from the left shoulder [Diſt. ♃ a ſiniſtro humero]	
	of the following ♊ [ſequentis ♊]	5 18
12 16	♃ from the northern and upper knee [♃ a boreali & ſupr. genu]	9 16
	this was taken among clouds [inter nebulas capiebatur hæc.]	
12 23	♃ from the bright foot of ♊ [♃ a lucido pede ♊]	12 7
	and this among clouds too [& hæc inter nubes.]	
12 40	♃ from the southern [♃ ab auſtr.]	
	knee of the following [genu ſequentis]	4 53
1 5	From the lower head of ♊, ♃ [Ab infer. Capite ♊ ♃]	7 14
1 24	From the upper head of ♊, ♃ [A ſuperiori Capite ♊ ♃]	9 39

It then became obscure; otherwise ♃ would also have been observed by straight lines [Obſcurum tum fiebat, alias per lineas rectas etiam ♃ obſeruatus fuißet.].

[1] Added afterwards [Poſtea adſcriptum.].

DIE 8 JANUARIJ. [8 January]

$9^{H}40^{M}$	Distance of ♃ from the one in the belly [Diſtantia ♃ ab illa quæ in ven-] of ♊, taken twice with the Radius [tre ♊, per Radium bis accepta]	0° 24′
10 8	Distance of ♃ from Aldeb. [Diſt. ♃ ab Aldeb.] with the smaller sextant [per Sext. min.]	38 3
10 18	The same repeated [Eadem repetita]	38 3½
10 23	Meridian altitude of ♃ [Altitudo ♃ meridiana]	61 11

10 30. With a straight line taken carefully by means of paper and thread, the star ♃ appeared to be almost in line with the one in the armpit or right shoulder of the upper ♊ and the one near the rump of the lower. That very small little star which is seen quite close to the upper Head of ♊ coincided as nearly as possible; for the star in the Head of the upper ♊ itself was removed a little toward the east from this line [10 30 Videbatur ♃ ſtella in linea recta per papirum & filum diligenter ſumpta pene cum ea, quæ eſt in axilla ſiue humero dextro ſuperioris ♊ atque ea, quæ iuxta podicem inferioris. Coincidebat quam proxime ſtellula illa paruula, quæ admodum propinqua cernitur ſuperiori Capiti ♊. Nam ipſa ſtella in Capite ſuperioris ♊ paululum verſus ortum remouebatur ab hac linea.].

It also appeared, crosswise, in a straight line with Praesepe, the nebulous cluster [gyro] of ♋, and with the uppermost in the feet of ♊ and propo: — for these three fixed stars, together with ♃, made an exactly straight line to the eye looking along the paper [Videbatur etiam decußatim in linea recta cum præſepe nebuloſo gyro ♋ & ſuprema in pedibus ♊ atque propo: hæ enim tres fixæ cum ♃ faciebant ad intuitum per papirum directe lineam rectam.].

About the same time ♃ also appeared in the straight line that runs from the one in the Head of the lower ♊, beside its left shoulder-blade or armpit, and the one in the left knee of the same lower ♊. In this transverse construction made across the little stars of ♊, however, I missed the little star that would be cut off at the place where ♃ was and where the lines met. It seemed, namely, to be the one at the navel of the lower ♊, a little south of the ecliptic. I think, therefore, that it was eclipsed by ♃, or removed from it by a very small amount [Apparuit etiam ♃ circa idem tempus in linea recta quæ eſt ab ea in Capite inferioris ♊ iuxta eius ſcapulam ſiniſtram ſiue axillam atque ea quæ in genu ſiniſtro eiusdem inferioris ♊, ſtellulam autem interceptam in hac transuerſali delineatione per ♊ ſtellulas facta deſideraui in loco, vbi ♃ erat & vbi linearum fiebat concurſus, videbatur nempe ea, quæ eſt ad vmbilicum inferioris

♊ iuxta Eclipticam paululum meridionalis, puto itaque eam eclipſatam a ♃ vel permodicum remotam.].

DIE 9 JANUARIJ. [9 January]

7^{H} 45^{M}	The distance of ♃ was observed with the [Obſeruabatur diſtantia ♃ per]	
	Radius from the little one in the navel of the [Radium a paruula in vmbilico in-] lower ♊ [ferioris ♊]	0° 20′

7 59½. ♃ was in a straight line with the lower Head of ♊ and the foot farthest toward the south [7 59½ Erat ♃ in linea recta cum inferiori Capite ♊ & extremo verſus auſtrum pede.].

8 4. Crosswise, it was in another line with Procyon and the northern shoulder-blade of the upper ♊ [8 4 Erat decußatim in altera linea cum Procyone & boreali ſcapula ſuperioris ♊.].

8 12½. ♃ was in a straight line with the little one near the head of the upper ♊, with the southern shoulder-blade of the same, and with the one in the rump of the lower ♊ [8 12½ Erat ♃ in linea recta cum paruula quæ iuxta caput ſuperioris ♊ cum auſtrali ſcapula eiusdem & cum iſta quæ in podice inferioris ♊.].

8 14. Again with the shoulder of the lower ♊ and with the southern knee of the same; but ♃ was a little more northerly [8 14 Rurſum cum humero inferioris ♊ & cum auſtrali genu eiusdem, verum ♃ paululum erat borealior.].

8 30. ♃ was in a straight line with the little one in the navel of the lower ♊ and with the southern shoulder of the upper ♊ [8 30 Erat ♃ in linea recta cum paruula in vmbilico inferioris ♊ & cum humero auſtrali ſuperioris ♊.].

8 38. ♃ was in a straight line with the bright foot of Erichthonius and the northern knee of the upper ♊ [8 38 Erat ♃ in linea recta cum lucido pede Erichtonij & boreali genu ſuperioris ♊.].

11 5½	The distance of ♃ [Obſeruabatur diſt. ♃]	
	from Aldeb. was observed [ab Aldeb.]	37 59
11 22	Repeated [Repetita]	37 59
11 26	Repeated [Repetita]	37 59⅓
11 42	Conversely, the distance [Capiebatur vice verſa]	
	from Regulus was taken [diſt. a Regulo]	39 46⅔
11 45½	Repeated [Repetita]	39 46
11 48	Repeated [Repetita]	39 46⅔
11 52⅓	Repeated [Repetita]	39 46
11 56	Repeated [Repetita]	39 46½

Two minutes have been added[1] [Duo minuta ſunt addita[1].].

DIE 10 JANUARIJ. [10 January]

$9^{H}57\frac{1}{3}^{M}$	Distance of ♃ from Aldeb. [Diſtantia ♃ ab Aldeb.]	37 52⅓
	1° 17′ 30″ have been added [1°17′30″ addita ſunt.]	
10 0⅔	Repeated [Repetita]	37 53⅓
10 3½	Repeated [Repetita]	37 53⅓
10 8	Repeated [Repetita]	37 53⅓
10 12½	Repeated [Repetita]	37 53⅓
10 22⅔	The distance between ♃ [Capiebatur diſt. inter ♃]	
	and the bright star of Orion's shoulder was taken [& luc. hum. Orionis]	24 16[2]
10 24½	Repeated [Repetita]	24 15½
10 26⅓	Repeated [Repetita]	24 14½
10 42⅙	Repeated [Repetita]	24 14½
11 0	♃ was crossing the meridian, [Tranſibat ♃ Meridia-]	
	having an altitude of [num habens altit.]	61 17
	1⅓′ have been added to the altitude [1⅓′ ſunt addita altitudini.]	

These distances, like the preceding ones, were taken with the smaller sextant; therefore 1° 17½′ must be added to them [Hæ diſtantiæ vt et antecedentes ſumptæ ſunt per Sextantem minorem, ideoque illis addenda 1° 17½′.].

$1^{H}22^{M}$	The distance of ♃ was taken [Capiebatur diſt. ♃]	
	from the heart of ♌ [a Corde ♌]	39 58
1 29½	Repeated [Repetita]	39 59
1 43	Repeated [Repetita]	39 58
1 46	Repeated [Repetita]	39 58

[1] Added afterwards in the margin [Poſtea in margine adſcriptum.].
[2] Struck through with lines [Lineis inducta.].

DIE 15 JANUARIJ. [15 January]

9^{H} 12½^{M}	Distance between ♃ and Aldebaran [Diſt. inter ♃ & Aldeb.]	37° 24′ 0″
	1′ 15″ have been added [1′15″ addita ſunt.]	
9 16	Repeated [Repetita]	37 22 0
9 19	Repeated [Repetita]	37 22
9 24	Repeated [Repetita]	37 22⅓
9 28	Distance between ♃ and [Diſt. inter ♃ &]	
	the bright star of Orion's shoulder [luc. hum. Or.]	23 49 0
9 32⅙	Repeated [Repetita]	23 49
9 35⅓	Repeated [Repetita]	23 49
9 38½	Repeated [Repetita]	23 49

N.B. It will be necessary to add 1^{P} 17^{M} to all the distances because of the difference of the pinnule [N.B. Omnibus diſtantijs oportebit addere propter diuerſitatem pinnacidij 1^{P} 17^{M}.].

$9^{H}50^{M}$	Distance between ♃ and [Diſt. inter ♃ &]	
	the northern horn of ♉ [boreale cornu ♉]	24 38½
9 53	Repeated [Repetita]	24 39
9 55	Repeated [Repetita]	24 39
9 58½	Repeated [Repetita]	24 39
10 27½	♃ crossed the meri- [Tranſibat ♃ per Meri-]	
	dian, having an altitude of [dianum habens altit.]	61 21⅓
	10″ have been added [10″ addita ſunt.]	
11 24¾	Distance between ♃ and [Diſtantia inter ♃ &]	
	Regulus [Regulum]	40 35
11 30½	Repeated [Repetita]	40 35
11 38⅓	Repeated [Repetita]	40 35½
11 40½	Repeated [Repetita]	40 35
3 2	Distance of ♃ from the little one in the navel [Diſtantia ♃ a paruula in vmbi-] of the lower ♊, with the Radius [lico inferioris ♊ per Radium] taken twice [bis ſumpta]	0° 34′

And the line drawn from that one through ♃ tended toward the space that lies midway between the shoulders of Erichthonius [Vergebatque linea ab illa per ♃ ducta ad ſpacium, quod inter humeros Erichtonij eſt medium.].

DIE 17 JANUARIJ. [17 January]

$10^{H}51^{M}$	The meridian altitude of ♃ was observed [Obſeruabatur Altit. Merid. ♃] among clouds [inter nubes]	61 22⅚

DIE 20 JANUARIJ. [20 January]

$10^{H}40^{M}$	The meridian altitude of ♃ was observed [Obſeruabatur Altit. ♃ Merid.]	61 22½ doubtful [dubia]

DIE 23 JANUARIJ. [23 January]

$8^{H}57^{M}$	Distance of ♃ from Aldebaran [Diſt. ♃ ab Aldeb.]	37 52
9 7	Repeated [Repetita]	37 53
9 17		37 46
9 23	Repeated [Repetita]	37 51
9 30	Repeated [Repetita]	37 46
	two minutes have been subtracted from here [duo minuta hinc ſunt ſubtracta]	
9 35	Repeated [Repetita]	37 45½
9 39	Repeated [Repetita]	37 46
10 2	♃ crossed the meridian [Tranſibat ♃ Meridianum]	
	having an altitude of [habens Alt.]	61 25⅚
11 6	The distance was observed [Obſeruabatur diſt.]	42 46
11 10	between Regulus and ♃ [inter Regulum & ♃]	42 45
11 17	2 min. subtracted [2 min. ſubtracta]	42 45½
11 32		42 46
11 40		42 46

It then became obscure [Obſcurum tunc fiebat.].

DIE 24 JANUARIJ. [24 January]

	After hour 8, the distance between ♃ [Poſt horam 8 Diſtantia inter ♃] and Aldebaran [& Aldebor.]	27 37
$9^{H}44^{M}$	Meridian altitude of ♃ [Altit. ♃ Meridiana]	61 27⅓
	Distance between ♃ and Aldebaran, repeated [Diſt. inter ♃ & Aldeb. repetita]	27 37½
	Distance repeated [Diſt. repetita]	27 37
	Distance between ♃ and Regulus [Diſt. inter ♃ & Regulum]	42 40
	Distance repeated [Diſt. repetita]	42 40
	Distance repeated [Diſt. repetita]	42 40½

DIE 28 JANUAR1J. [28 January]

$9^{H}17^{M}$	The meridian altitude of ♃ was observed [Obſeruabatur Altit. Merid. ♃] with the revolving quadrant [per Q. Volub.]	61 27⅚

Before this meridian altitude of ♃ was taken, the following distances of ♃ were taken [Antequam hæc ♃ Altitudo Merid. ſumeretur, ſequentes diſtantiæ ♃ acceptæ ſunt.].

$8^{H}44^{M}$	Distance from Aldebaran [Diſtantia ab Aldebor.]	37 26

	Repeated [Repetita]	37 22
	Repeated [Repetita]	37 22
9 28	Distance between ♃ [Diſtantia inter ♃] and Regulus [& Regulum]	43 11
9 30	Repeated [Repetita]	43 11½
9 35	Repeated [Repetita]	43 11½
9 41	Repeated [Repetita]	43 11

For the 9th of January [Ad diem 9 Januarij.]
The meridian altitude of ♃ was not observed, [Altitudo ♃ Merid. non eſt obſeruata,]
but derived from the preceding ones propor- [ſed ex præcedentibus proportio-]

tionally [naliter deducta]	61° 14′ 0″
Declination [Declinatio]	23 6 30
Distance from Aldebaran [Diſt. ab Aldeb.]	39 18 0
Angle of the ascensional difference [Ang. diff. Aſcenſ.]	42 23 38
Right ascension of ♃ [Aſcenſio recta ♃]	104 19 50
Distance from Regulus [Diſt. ab Regulo]	41 5 30
Angle of the difference [Ang. diff.]	41 2 21
Right ascension of ♃ [Aſcenſio recta ♃]	104 17 20
Therefore the corrected right ascension of ♃ [Ergo Aſc. R. ♃ correcta]	104 18 35
Longitude of ♃ [Longitudo ♃]	13 8 29♋
Latitude [Latitudo]	0 15 10B.

For the 10th of January [Ad diem 10 Januarij.]

Declination of ♃ [Declin. ♃]	23 9 30
Distance from Aldebaran [Diſt. ab Aldebora]	39 10 50
Angle of the ascensional difference [Ang. diff. aſc^{alis}]	40 54 18
Right ascension of ♃ [Aſc. recta ♃]	104 9 17
Distance from Regulus [Diſt. a Regulo]	41 15 30
Angle of the ascensional difference [Ang. diff. aſc.]	42 34
Right ascension of ♃ [Aſc. recta ♃]	104 9 28
Therefore the right ascension of ♃ [Ergo Aſc. recta ♃]	104 9 22
Longitude [Longitudo]	12 59 40♋
Latitude [Latitudo]	0 16 19B.

For the 15th of January [Ad diem 15 Januarij.]

Declination of ♃ [Declin. ♃]	23 13 50
Distance from Aldebaran [Diſt. ab Aldeb.]	38 27
Angle of the difference [Ang. diff.]	40 17 14
Distance from Regulus [Diſt. a Regulo]	41 50

Angle of the difference [Ang. diff.]	43 11 25
Right ascension of ♃ [Aſc. recta ♃]	103 32 8
Longitude of ♃ [Longitudo ♃]	12 25 9♋
Latitude [Latitudo]	0 17 22B.

For the 23rd of January [Ad diem 23 Januarij.]	
Declination of ♃ [Declin. ♃]	23 18 20
Distance from Aldebaran [Diſt. ab Aldeb.]	37 44
Distance from Regulus [Diſt. a Regulo]	42 44 30
Right ascension derived from these [Aſc. recta inde deducta]	102 34 31
Longitude of ♃ [Longitudo ♃]	11 30 31♋
Latitude [Latitudo]	0 16 56B.

For the 28th of January [Ad diem 28 Januarij.]	
Declination of ♃ [Declin. ♃]	23 20 20
Distance from Aldebaran [Diſt. ab Aldeb.]	37 26
Distance from Regulus [Diſt. a Regulo]	43 11 30
Right ascension of ♃ [Aſcenſio recta ♃]	102 6 0
Longitude [Longitudo]	11 5 45♋
Latitude [Latitudo]	0 16 50B.

DIE 9 FEBRUARIJ. [9 February]

$8^{H}56^{M}$	Meridian altitude of ♃ by the [Altitudo ♃ Meridiana per] revolving quadrant [Volubilem Quadrantem]	61 32⅔

DIE 25 FEBRUARIJ, VESPERI. [25 February, in the evening]
N.B. ♃ near the station [N.B. ♃ Iuxta ſtationem.].

Meridian altitude of ♃ [Altitudo ♃ meridiana]	61 38
When Aldebaran, in the armillae, [Cum Aldebor. in Armillis] was west [eßet occid.]	33 11
The distance of ♃ from Aldebaran was [Erat diſtantia ♃ ab Aldebor.]	36 4½
Repeated [Repetita]	36 5
Repeated [Repetita]	36 5
Afterwards, when Canicula was east [Poſtea cum Canicula eßet orientalis] of the merid. [a merid.]	16 46
Conversely, the distance of ♃ was [Erat diſtantia ♃ vice verſa]	

from Regulus [a Regulo]	44 10
Repeated [Repetita]	44 9½
Repeated [Repetita]	44 10

DIE 28 FEBRUARIJ. [28 February]

Meridian altitude of ♃ [Altitudo ♃ meridiana]		61 36⅔
The bright star of Orion's foot, west [Luc. pes Or. occ.]	26 10	
Distance of ♃ from Aldebaran [Diſtantia ♃ ab Aldebor.]		36 11⅓
Canis Major, west [Canis maior occ.]	12 0	
Distance repeated [Diſtantia repetita]		36 11
Canis Major, west [Canis maior occ.]	12 56	
Repeated [Repetita]		36 11
Sirius, west [Syrius occidental.]	13 50	
Conversely [Vice verſa.]		
Distance of ♃ from Regulus [Diſtantia ♃ a Regulo]		44 10
Sirius in the armillae, west [Syrius in Arm. occ.]	16 30	
Repeated, but doubtful [Repetita ſed dubia]		44 12

None could be taken in the equator because of clouds [In æquatore nullæ poterant capi propter nubes.].

N.B. In the preceding observations ♃ was near the other station. Observations made with the old sextant, which gave the distances two minutes smaller than correct [N.B. ♃ in antecedentibus obſeruationibus fuit iuxta ſtationem alteram. Obſeruationes factæ per Sextantem veterem, qui diſtantias duobus minutis iuſto minores præbuit.].

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

The meridian altitude of ♃ was observed [Obſeruabatur Altit. ♃ Merid.]		61 37⅚
Aldebaran was west [Aldeb. erat occ.]	36 0	
Distance between ♃ and Aldebaran [Diſtantia inter ♃ & Aldeb.]		36 17
Aldebaran then west [Aldeb. tunc occ.]	35 17½	
Distance repeated [Diſtantia repetita]		36 16⅔
Canicula, east [Canicula or.]	9 27	

DIE 6 MARTIJ. [6 March]

♃ was observed in this manner [Obſeruabatur ♃ in hunc modum.].

First [Primum.].

Its distance from Aldebaran, taken [Diſt. eius ab Aldeb. ſumpta]	36 21

Canicula was, in the armillae, [Canicula erat in Armillis]		
west of the meridian [a Merid. occid.]	6 30½	
Distance repeated [Diſt. repetita]		36 21
Canicula, west [Canicula occid.]	9 41	
Distance repeated [Diſt. repetita]		36 21
Canicula, west [Canicula occid.]	11 15	
Conversely [Vice verſa.]		
Distance of ♃ from the heart of ♌ [Diſtantia ♃ a Corde ♌]		44 3
Canicula, west [Canicula occid.]	14 18	
Distance repeated [Diſtantia repetita]		44 3½
Canicula, west [Canicula occid.]	14 59	
Distance repeated [Diſt. repetita]		44 3
Canicula, west [Canicula occid.]	16 0	

[1] Codices H. and K. have "Die 3 Januarij" [Codices H. & K. habent »Die 3 Januarij«.].

Procyon from the bright star of Orion's shoulder [Procyon a luc. hum. Orion.]	26 1½ three times [ter]	
to examine the sextant [pro examinando Sextante.]		
Afterwards, the distance between Sirius [Poſtea. Diſt. inter Syrium]	23 39	
and the bright foot of Orion [& luc. pedem Orionis]	23 38½	
	23 38½	

DIE 12 MARTIJ. [12 March]

The meridian altitude of ♃ was observed [Obſeruabatur Altit. ♃ merid.]		61 35¾
Canicula was east [Canicula erat or.]	8 40	

DIE 14 MARTIJ. [14 March]

$6^{H}30^{M}$ Meridian altitude of ♃ [Altit. ♃ Meridiana]		61 35½
Distance of ♃ from Aldebaran [Diſtantia ♃ ab Aldebora]		36 47
The bright shoulder [Luc. humerus]		
of Orion, west [Orion. occid.]	36 47	
Distance repeated [Diſt. repetita]		36 46½
Distance repeated [Diſt. repetita]		36 47
Conversely [Vice verſa]		
Distance of ♃ from Regulus [Diſtantia ♃ a Regulo]		43 37
Canicula, west [Canicula occid.]	21 57	
Repeated [Repetita]		43 37⅓

DIE 16 MARTIJ. [16 March]

Distance of ♃ from Aldebaran [Diſtantia ♃ ab Aldebora]		36 48
The bright star of Orion's shoulder, west [Luc. hum. Or. occid.]	38 2	
Repeated [Repetita]		36 49
Repeated [Repetita]		36 49
Conversely [Vice verſa]		
Distance of ♃ from the heart of ♌ [Diſt. ♃ a Corde ♌]		43 37⅔
The heart of Hydra, west [Cor Hydræ occ.]	21 51	
Repeated [Repetita]		43 38
Repeated [Repetita]		43 38

DIE 7 JUNIJ. [7 June]

Distance of ♃ from ♀ [Diſt. ♃ a ♀]	1° 8′
♀ was then raised above the horizon [♀ tunc eleuata erat ſupra horiz.]	5 50
♃ was high [♃ erat altus]	4 48
♃ from ♀ [♃ a ♀]	1 8½
♀ was then high [♀ erat tunc alta]	3 20
♀ from the heart of ♌ [♀ a corde ♌]	30 2
Repeated [Repetita]	30 0

I could see no other stars near the horizon there [Nullas ibidem prope Horizontem alias ſtellas poteram videre.].

DIE 20 OCTOBRIS. [20 October]

In the castle of Benátky [In arce Bennachia.].

Distance of ♃ from the bright foot of ♊ [Diſtantia ♃ a lucido pede ♊]	45 9⅓
Distance repeated [Diſt. repetita]	45 9⅓
Repeated [Repetita]	45 9⅓
Conversely [Vice verſa.]	
Distance of ♃ from the bright star of the loin of ♌ [Diſtantia ♃ a lucida lumbi ♌]	22 2½
Distance repeated twice [Diſt. bis repetita]	22 2½
Distance of ♃ from the bright star of Hydra [Diſt. ♃ a lucida Hydræ]	23 17
Distance repeated twice [Diſt. bis repetita]	23 17

But remember that the parallax of the instrument, 2′ 30″, has not yet been added to all these distances; and ♂ and ♃ were in the morning sky, around

the solar □ [Sed memineris omnibus his diſtantijs Inſtrumenti parallaxin 2′ 30″ nondum eße additam, & erant ♂ & ♃ matutini circa □ ☉lis.].

DIE 21 OCTOBRIS. [21 October]

♃ from the heart of Hydra [♃ a Corde Hydræ]	23 16¾
Distance repeated twice [Diſtantia bis repetita]	23 17
Distance of ♃ from the bright star of the head of ♌ [Diſtantia ♃ a lucida Capitis ♌]	9 32⅔
Distance repeated twice [Diſt. repetita bis]	9 32⅔
Distance of ♃ from the bright star of the loin of ♌ [Diſt. ♃ a lucida lumbi ♌]	21 55¾
Distance repeated [Diſt. repetita]	21 55¾
Distance repeated [Diſt. repetita]	21 56
Conversely [Vice verſa.]	
Distance of ♃ from the bright foot of ♊ [Diſtantia ♃ a lucido pede ♊]	45 16¾
Distance repeated [Diſt. repetita]	45 16¾

To examine the sextant [Pro examinando Sextante.]: the northern head of ♊ from Aldebaran, 43 11, three times, exactly; the Book of Epist. gives 43 12½ [Bor. caput ♊ ab Aldeb. 43 11, ter, ex- / Liber Epiſt. dat 43 12½ acte]. This deviation, therefore, is to be added to the observations [Hæc igitur deuiatio obſeruationibus addenda.].

DIE 24 OCTOBRIS. [24 October]

Distance of ♃ from the heart of Hydra [Diſt. ♃ a Corde Hydræ]	23 15½
Repeated twice [Repetita bis]	23 15½
Conversely [Vice verſa]	
Distance of ♃ from the lower of the preceding stars [Diſtantia ♃ ab inferiori præcedentium]	
in the square of Ursa Major [in □to vrſæ maioris]	44 37
Distance repeated twice [Diſtantia repetita bis]	44 37
Distance of ♃ from the heart of ♌ [Diſt. ♃ a Corde ♌]	5 31
Repeated twice [Repetita bis]	5 31
Conversely, ♃ from the bright foot of ♊ [Vice verſa ♃ a lucido pede ♊]	45 42⅓
Repeated twice [Bis repetita]	45 42⅓

DIE 25 OCTOBRIS. [25 October]

♃ from the lower of the preceding stars in the □ [♃ ab inferiori præcedentium in □to]	
of Ursa Major [vrſæ maioris]	44 37½
Distance repeated [Diſt. repetita]	44 37⅔
Repeated [Repetita]	44 37⅔
Conversely, the distance of ♃ [Vice verſa Diſt. ♃]	
from the bright star of Hydra [a luc. Hydræ]	23 15
Repeated [Repetita]	23 15
Distance of ♃ from the heart of ♌ [Diſt. ♃ a Corde ♌]	5 28
Distance repeated [Diſt. repetita]	5 28⅙
Distance repeated [Repetita diſt.]	5 28⅙
♃ from the bright foot of ♊ [♃ a lucido pede ♊]	45 51½
Distance repeated [Diſtantia repetita]	45 51
Repeated [Repetita]	45 51

To examine the sextant, the distance of Aldebaran from the northern head of ♊ was taken, 43 13, but only once, because of the twilight. The Book has 43 12½ [Pro examinando Sextante ſumebatur diſt. Aldeb. a Bor. cap. ♊ 43 13 ſed ſemel tantum propter crepuſculum. Liber habet 43 12½.].

These observations of Jupiter were made when it was not far from quadrature with the ☉ [Hæ obſeruationes Iouis habitæ ſunt, cum non longe a quadrato ☉lis aberat.].

	Longitude [Longitudo]	Latitude [Latitudo]
The bright foot of ♊ [Lucidus pes ♊]	3° 29′ 56″ ♋	6° 48′ 30″ A.
The lower preceding star in the □ of Ursa Major [Inf. præc. in □ vrſæ mai.]	13 42 28 ♌	45 3 30 B.
The bright star of the head of ♌ [Lucida Cap. ♌]	15 4 56 ♌	9 40 0 B.
The heart of Hydra [Cor Hydræ]	21 44 26 ♌	22 24 0 A.
The heart of ♌ [Cor ♌]	24 15 25 ♌	0 26 30 B.
The bright star of the loin of ♌ [Lucida lumbi ♌]	5 39 56 ♍	14 20 0 B.

For the true place of Jupiter on 20 October of the year 1599, from the morning observations made at Benátky in the imperial castle [Pro vero loco Iouis ad 20 Octobris Anni 1599 ex obſeruationibus matutinis habitis Benachiæ in arce Cæſarea.].

Latitude of ♃ from the bright foot of ♊ [Latitudo ♃ ex luc. pede ♊]	0° 39′ 14 B.
from the heart of Hydra [ex corde Hydræ]	0 39 43 B.
limited [limitata]	0 39 29 B.
Place of ♃ from the bright foot of ♊ [Locus ♃ ex luc. pede ♊]	18 10 28 ♌

from the heart of Hydra [ex corde Hydræ]	18 7 39 ♌
from the bright star of the loin of ♌ [ex luc. lumbi ♌]	18 8 6 ♌
True place of ♃, limited [Verus locus ♃ limitatus]	18 9 17 ♌

For the true place of ♃ on 21 October [Pro vero loco ♃ ad 21 Octobris.].

Latitude of ♃ from the bright foot of ♊ [Latitudo ♃ ex luc. pede ♊]	0 40 59 B.
from the bright head of ♌ [ex luc. capite ♌]	0 37 52 B.
Latitude, limited [Latitudo limitata]	0 39 22 B.
True place of ♃ [Verus locus ♃]	
from the bright foot of ♊ [ex luc. pede ♊]	18 17 56 ♌
from the bright star of the loin of ♌ [ex luc. lumbi ♌]	18 17 1 ♌
True place of ♃, limited [Verus locus ♃ limitatus]	18 17 28 ♌

For the true place of ♃ on 24 October [Pro vero loco ♃ ad 24 Octobris.].

Latitude of ♃ from the lower preceding star [Latitudo ♃ ex inf. præc.]	
in the □ of Ursa Major [in □ Vrſæ mai.]	0 41 5 B.
from the heart of Hydra [ex corde Hydræ]	0 39 43 B.
Latitude, limited [Latitudo limitata]	0 40 24 B.
Place of ♃, limited [Locus ♃ limitatus]	18 43 27 ♌

For the true place of ♃ on 25 Oct. [Pro vero loco ♃ ad 25 Oct.].

Latitude of ♃ from the lower preceding star [Latitudo ♃ ex inf. præc.]	
in the □ of Ursa Major [in □ Vrſæ mai.]	0 40 35 B.
from the heart of Hydra [ex corde Hydræ]	0 39 32 B.
Latitude, limited [Latitudo limitata]	0 40 5 B.
Place of ♃, limited [Locus ♃ limitatus]	18 49 25 ♌

DIE 12 DECEMBRIS, GIRSITZÆ. [12 December, at Girsitz]

♃ from the southern head of ♊ [♃ a merid. Cap. ♊]	34 26
Repeated [Repetita]	34 26
Repeated [Repetita]	34 26
♃ had a meridian altitude of [♃ in meridiano altit. habuit]	53 16
♃ from the tail of ♌, repeated three times [♃ a Cauda ♌ ter repetita]	26 39

DIE 13 DECEMBRIS, MANE. BENACHIÆ. [13 December, morning. At Benátky]

Meridian altitude of ♃ [Altitudo ♃ merid.]	
by the quadrant [per Quadr.]	54 46⅝
by the sextant [per Sextantem]	54 46⅔
Distance of ♃ and the heart of ♌, with the Radius [Diſt. ♃ & Cordis ♌ Radio]	2 14
Repeated [Repetita]	2 14
To examine the Radius [Pro examinando Radio]	4 15
distance between the heads of ♊ [Diſt. inter Cap. ♊]	4 16
Distance of ♃ and the bright star of the neck of ♌ [Diſt. ♃ & luc. Ceruicis ♌]	7 43
Repeated [Repetita]	7 43

At that time ♃ was in a straight line with the bright star of Hydra and the one in the neck of ♌, the more northerly of three [Erat eo tempore ♃ in linea recta cum lucida Hydræ & illa, quæ in collo ♌ trium borealior.].

Conversely, with the left armpit and the heart of ♌, except that ♃ here was more northerly by the diameter of its own body [Viceverſa cum ſiniſtra axilla & Corde ♌, niſi quod ♃ hic eßet diametro ſui corporis borealior.].

GIRSITZÆ. [At Girsitz]

In the night following 13 December [Noctu quæ ſequebatur 13 Decembris.].

Distance of ♃ from the neck of ♌ [Diſtantia ♃ a Ceruice ♌]		8 15
Altitude of the heart of ♌ [Altitudo Cordis ♌]	26 5	
Distance of ♃ from the southern head of ♊ [Diſt. ♃ a merid. Capite ♊]		34 24½
Altitude of the heart of ♌ [Altitudo Cordis ♌]	32 28	
Distance of ♃ from the bright star of the loin of ♌ [Diſt. ♃ a luc. lumbi ♌]		19 18
Altitude of the heart of ♌ [Altit. cordis ♌]	46 38	
Distance of ♃ from the heart of Hydra [Diſt. ♃ a Corde Hydræ]		23 14
Altitude of the heart of ♌ [Altit. Cordis ♌]	51 10	
Meridian altitude of ♃ [Altitudo ♃ meridiana]		54 35
Altitude of Arcturus [Altit. Arcturi]	29 40	
Meridian altitude [Altit. merid.] of the heart of ♌ [cordis ♌]	53 40	

DIE 14 DECEMBRIS ♂. [14 December ♂]

Distance of ♃ from the bright star in the neck of ♌ [Diſt. ♃ a lucida Ceruice ♌]	8 11¾
Repeated [Repetita]	8 12
Repeated [Repetita]	8 11¾

The bright one of ♊ was then about two degrees from the meridian, toward the east [Lucidus ♊ aberat tunc a Merid. verſus ortum duobus ferme gradibus.].

Distance between ♃ and the heart of Hydra [Diſt. inter ♃ & Cor Hydræ]	23 16½
The bright foot of ♊ was then crossing the [Tranſibat tunc lucidus pes ♊]	
meridian, having an altitude of [Merid. habens Altit.]	56 24 40

Distance repeated [Diſt. repetita]	23 17⅓
Distance repeated [Diſt. repetita]	23 17⅓
Distance of ♃ from the southern head of ♊ [Diſtantia ♃ a Mer. Capite ♊]	34 26⅔
Repeated [Repetita]	34 26⅔
Repeated [Repetita]	34 26⅔
The brighter one in the neck of Procyon was then crossing the meridian [Tranſibat tunc per Merid. lucidior in collo Procyonis]	
Distance of ♃ from the bright star of the loin of ♌ [Diſt. ♃ a lucida lumbi ♌]	19 17
Distance repeated [Repetita diſt.]	19 17
Distance repeated [Repetita diſt.]	19 16½

If you subtract the elevation of the equator there from the altitude of ♃ observed at Benátky, and limit the recession from the equator according to the diurnal motion, the true declination of Jupiter for the morning of 14 December will be 15 5 35 [Si ex altitudine ♃ Benachiæ obſeruata æquatoris ibidem eleuationem ſubtraxeris & iuxta motum diurnum receßionem ab æquatore limitaris, erit vera declinatio Iouis ad 14 Decembris mane 15 5 35].

On 13 December [Die 13 Decembris]	15 5 55
On 11 December [Die 11 Decembris]	15 6 34

NOCTE QUÆ PRÆCEDEBAT DIEM 30 DECEMBRIS, BENACHIÆ.
[The night preceding 30 December, at Benátky]

Meridian altitude of ♃ [♃ alt. merid.]	
by the revolving quadrant [per Q. Volub.]	55 6
by the sextant [per Sext.]	55 5½
Meridian altitude of the heart of ♌ [Alt. mer. Cordis ♌]	
by the quadrant [per Quad.]	53 34⅔
by the sextant [per Sext.]	53 33⅚
The bright star of the neck of ♌ [Luc. ceruicis ♌]	

by the revolving instrument [per Volub.]	61 31

DIE 31 DECEMBRIS. [31 December]

Distance of ♃ from Pollux [Diſtantia ♃ a Polluce]	33 42
Repeated [Repetita]	33 42
Meridian altitude of ♃ [Altit. ♃ meridiana]	55 6⅓
Meridian altitude of the heart of ♌ [Alt. merid. Cordis ♌]	
by the revolving instrument [per Volub.]	53 34⅚
Meridian altitude of the bright star of the neck of ♌ [Alt. merid. luc. ceruicis ♌]	61 33
Distance of ♃ from the tail of ♌ [Diſt. ♃ a Cauda ♌]	27 20
Repeated twice [Repetita bis]	27 20

For ♃ on 31 December of the year 1599 [Pro ♃ ad 31 Decembris Anni 1599.].

Right ascension of ♃ [Aſc. Recta ♃]	
from Pollux [ex Polluce]	143 42 47
from the tail of ♌ [ex Cauda ♌]	143 41 42
limited [limitata]	143 42 15
True place of ♃ [Verus locus ♃]	20 59 25 ♌
Latitude [Latitudo]	0 55 17 B.

The true place of Jupiter in longitude and latitude [Verus locus Iouis ſecundum Longitudinem & Latitudinem.]

Days of October [Octobris Dies]	Longitude according to observation [Longitudo ſecundum Obſeruationem]	Longitude according to Alfonso [Longitudo ſecundum Alphonſum]	Longitude according to Copernicus [Longitudo ſecundum Copernicum]	Latitude from observation [Latitudo ex Obſeruatione]	Latitude from Alfonso [Latitudo ex Alphonſo]	Latitude from Copernicus [Latitudo ex Copernico]
20	$18^{G}\ 9^{M}\ 41^{S}$ ♌	$17^{G}\ 27^{M}$ ♌	$17^{G}\ 54^{M}$ ♌	$0^{G}\ 38^{M}\ 38^{S}$ B.	$0^{G}\ 32^{M}$ B.	$0^{G}\ 15^{M}\ 48^{S}$
21	18 17 51	17 35	18 2	0 38 39	0 33	0 16 0
24	18 43 28	17 59	18 24	0 40 24	0 33	0 16 36
25	18 49 31	18 6	18 32	0 40 5	0 34	0 16 48

OBSERVATIONES MARTIS. [Observations of Mars]
DIE 4 SEPTEMBRIS. [4 September]
In the castle of Benátky [In arce Bennachia.].
In the morning, three or four hours before the rising of the ☉, I saw by eye that ♂ was in a straight line with the two heads of ♊, standing below them;

and it was distant from the lower one by about double the distance of the said ones, as far as could be made out by sight. It was also on another straight line, drawn through the bright shoulder of Orion to the little star that is in the breast of ♉ [Mane tribus horis uel quatuor ante ortum ☉ vidi ad intuitum quod ♂ eßet in linea recta cum duobus capitibus ♊ infra hæc exiſtens; diſtabat autem ab inferiori quaſi ad duplum diſtantiæ dictarum, quantum per viſum diſcernere licuit. Erat etiam in alia linea recta ducta per lucidum humerum Orionis in ſtellulam quæ eſt in pectore ♉.].

Around this time, while I was making this observation, the bright foot of Orion was approximately on the meridian [Circa hæc tempora cum animaduerſionem hanc facerem, erat lucidus pes Orionis quaſi in Meridano.].

DIE 21 OCTOBRIS, MANE. [21 October, morning]

The distance of ♂ from the bright foot of ♊ was observed when the upper head was on the meridian [Obſeruabatur diſtantia ♂ a lucido pede ♊, cum ſuperius Caput eßet in meridiano]	28 35¾

Distance repeated [Diſt. repetita]	28 35¾
Distance repeated [Diſt. repetita]	28 35¾
Conversely [Vice verſa]	
Distance of ♂ from the heart of ♌ [Diſtantia ♂ a Corde ♌]	23 13¾
Distance repeated twice [Diſt. repetita bis]	23 13¾
For the latitude [Pro Latitudine.]	
♂ from Procyon was taken [Sumebatur ♂ a Procyone]	20 13½
Distance of ♂ from Procyon repeated [Diſt. ♂ a Procyone repetita]	20 13½
Distance of ♂ from the lower head of ♊ [Diſt. ♂ ab inferiori Cap. ♊]	14 19½
Distance repeated, but doubtful because of the twilight [Diſt. repetita ſed dubia propter crepuſculum]	14 19½

But remember that the parallax of the instrument, 2′ 30″, has not yet been added to all these distances; and ♂ and ♃ were in the morning sky, around the solar □ [Sed memineris omnibus his diſtantijs Inſtrumenti parallaxin 2′ 30″ nondum eße additam, & erant ♂ & ♃ matutini circa □ ☉^{lis}.].

DIE 21 OCTOBRIS, MANE. [21 October, morning]

The distance of ♂ was observed from the southern and following one of the left foot of the hind feet [Obſeruabatur diſtantia ♂ ab auſtrali & ſequenti ſiniſtri pedis poſteriorum]	30 44 0
Distance repeated twice [Diſt. repetita bis]	30 44 0
Distance of ♂ from Procyon [Diſt. ♂ a Procyone]	20 29¾
Distance repeated twice [Diſt. repetita bis]	20 29¾
♂ from the bright foot of ♊ [♂ a lucido pede ♊]	29 4
Distance repeated [Diſt. repetita]	29 4
Distance of ♂ from the heart of ♌ [Diſt. ♂ a Corde ♌]	22 46
Distance repeated [Diſt. repetita]	22 46
Distance repeated [Diſt. repetita]	22 46
Distance of ♂ from the lower preceding one [Diſt. ♂ ab inferiori præced.] in the □ of Ursa Major [in □ vrſæ maioris]	45 3½
Distance repeated [Diſt. repetita]	45 3½
Distance repeated [Diſt. repetita]	45 3½

The bright foot of ♊ was then on the meridian [Lucidus pes ♊ erat tunc in Meridiano.].

DIE 24 OCTOBRIS. [24 October]

Distance of ♂ from the lower preceding one [Diſt. ♂ ab inferiori præced.] in the □ of Ursa Major [in □ vrſæ maioris]	44 44½
Repeated [Repetita]	44 44
Repeated [Repetita]	44 44½
Distance of ♂ from Procyon [Diſt. ♂ a Procyone]	21 22
Repeated twice [Repetita bis]	21 22½
Distance of ♂ from the heart of ♌ [Diſt. ♂ a Corde ♌]	21 21½
Repeated twice [Repetita bis]	21 21½
Conversely, from the bright foot of ♊ [Vice verſa a lucido pede ♊]	30 28⅚
Distance repeated twice [Diſtantia repetita bis]	30 28⅚

DIE 25 OCTOBRIS, DIE ☾æ. [25 October, the day of the ☾]

In the morning, one hour before twilight, the distance of ♂ from the lower preceding one in the □ of Ursa Major was observed [Obſeruabatur mane vna hora ante crepuſculum diſt. ♂ ab inferiori præced. in □ vrſæ maior.]	44 38
Distance repeated [Diſtantia repetita]	44 38
Distance repeated [Diſtantia repetita]	44 38⅓
Distance of ♂ from the lower of the following ones [Diſt. ♂ ab infer. ſequentium] in the same □ [in eodem □]	49 22
Repeated [Repetita]	49 22
Repeated [Repetita]	49 22

Distance of ♂ from Procyon [Diſt. ♂ a Procyone]	21 39
Repeated [Repetita]	21 39
Distance of ♂ from the heart of ♌ [Diſt. ♂ a Corde ♌]	20 55⅓
Repeated [Repetita]	20 55
Repeated [Repetita]	20 55
Distance of ♂ from the bright foot of ♊ [Diſtantia ♂ a lucido pede ♊]	30 54½
Distance repeated [Diſtantia repetita]	30 54½
Repeated [Repetita]	30 54⅓

DIE 26 OCTOBRIS. [26 October]

♂ was in a straight line with the heart of ♌ and the one in the belly of the more southern ♊, except that ♂ was more northerly by the diameter of its own body [Erat ♂ in linea recta cum Corde ♌ & illa quæ in ventre Meridionalioris ♊, niſi quod ♂ diametro ſui corporis borealior eßet.].

Again, with the lower head of ♊ and the little star that is in the breast of ♌, below the heart, toward the west [Rurſus cum inferiori capite ♊ & ſtellula quæ eſt in pectore ♌ ſub corde verſus occaſum.].

Conversely, ♂ was in a straight line with the small lower one of the left foot of the hind feet, which in ♋ is very close to it, and the third, which precedes the head of Hydra, of the third magnitude [Vice verſa erat ♂ in linea recta cum inferiori ſiniſtri pedis poſteriorum paruula, quæ in ♋ illi vicinißima & tertia quæ Caput Hydræ præcedit tertiæ magnitudinis.].

It must therefore be examined which these were [Videndum igitur quænam hæ fuerint.].

DIE 27 OCTOBRIS. [27 October]

Distance of ♂ from the lower preceding one [Diſt. ♂ ab inferiori præced.] in the □ of the Bear [in □ vrſæ]	44 24½
Repeated [Repetita]	44 24½
Distance of ♂ from Procyon [Diſt. ♂ a Procyone]	22 13¾
Repeated [Repetita]	22 13¾
Distance of ♂ from the bright foot of ♊ [Diſtantia ♂ a lucido pede ♊]	31 48
Repeated [Repetita]	31 48
Repeated [Repetita]	31 48
Conversely, distance of ♂ from the heart of ♌ [Vice verſa diſt. ♂ a Corde ♌]	19 59½
Repeated [Repetita]	19 59½
Repeated [Repetita]	20 0

DIE 29 OCTOBRIS, MANE. [29 October, morning]

The distance between ♂ and the lower preceding one [Capiebatur diſtantia inter ♂ & infer.]	
of the □ of Ursa Major was taken [præced. □to vrſæ maioris]	44 12½
Repeated [Repetita]	44 12½
Repeated [Repetita]	44 12½
Distance between ♂ and the lower following one [Diſt. inter ♂ & inferior. ſequent.]	
in the □ of Ursa Major [in □ vrſæ maioris]	48 48
Repeated [Repetita]	48 48
Repeated [Repetita]	48 48

Distance of ♂ and the more northern one [Diſt. ♂ & borealioris]	
in the back of the head of Hydra [in occipite Hydræ]	12 45⅔
Repeated three times [Repetita ter]	12 45½
Distance of ♂ and Procyon [Diſt. ♂ & Procyonis]	22 49
Repeated [Repetita]	22 48⅚
Repeated [Repetita]	22 48⅚
Distance of ♂ and the heart of ♌ [Diſtantia ♂ & Cordis ♌]	19 8⅓
Repeated [Repetita]	19 8⅓
Repeated [Repetita]	19 8⅓
Distance of ♂ from the bright foot of ♊ [Diſtantia ♂ a lucido pede ♊]	32 39⅚
Repeated [Repetita]	32 39⅚
Repeated [Repetita]	32 39⅚

Calculation of ♂ in longitude and latitude from the observations made on 20, 21, 24, 27 and 29 October, around the solar □ [Calculus ♂ ſecundum Longitudinem & Latitudinem ex obſeruationibus habitis 20, 21, 24, 27 & 29 die Octobris circa □ ☉lis.].

On 20 October [Die 20 Octobris.].

Longitude of ♂ [Longitudo ♂]	
from the bright foot of ♊ [a Lucido pede ♊]	1° 2′ 1″ ♌
from the heart of ♌ [a Corde ♌]	0 59 52
Longitude of ♂, limited [Longitudo ♂ limitata]	1 0 56 ♌
Latitude of ♂ from Procyon [Latitudo ♂ ex Procyone]	1 19 0 B.
from Pollux [ex Polluce]	1 17 3
Latitude of ♂, limited [Latitudo ♂ limitata]	1 18 1 B.

For the true place of ♂ on 21 October [Pro vero loco ♂ ad 21 Octobris.].

Latitude from the lower preceding one [Latitudo ex inf. præc.]	
in the □ of Ursa Major [in □ Vrſæ mai.]	1 15 37 B.
Longitude from the bright foot of ♊ [Long. ex Lucido pede ♊]	1 30 9
from the heart of ♌ [ex Corde ♌]	1 28 41
Longitude of ♂, limited [Longitudo ♂ limitata]	1 29 25 ♌

For the true place of ♂ on 24 October [Pro vero loco ♂ ad 24 Octobris.].

Latitude from the lower preceding one [Latitudo ex inf. præc.]	
in the □ of Ursa Major [in □ Vrſæ mai.]	1 21 43
from Procyon [ex Procyone]	1 21 46
Latitude of ♂, limited [Latitudo ♂ limitata]	1 21 45 B.
Longitude from the heart of ♌ [Long. ex Corde ♌]	2 57 9
from the bright foot of ♊ [ex Lucido pede ♊]	2 54 14
Longitude of ♂, limited [Longitudo ♂ limitata]	2 55 41 ♌

For the true place of ♂ on 27 October [Pro vero loco ♂ ad 27 Octobris.].

For the latitude, from the bright foot of ♊ [Pro Latit. ex Lucido pede ♊]	1 27 32
from Procyon [ex Procyone]	1 24 30
Latitude of ♂, limited [Latitudo ♂ limitata]	1 26 0 B.
For the longitude, from the bright foot [Pro Longit. ex Lucido pede]	4 15 9
Conversely, from the heart of ♌ [Vice verſa a Corde ♌]	4 19 10
Longitude of ♂, limited [Longitudo ♂ limitata]	4 17 10 ♌

For the true place of ♂ on 29 October [Pro vero loco ♂ ad 29 Octobris.].

From the lower preceding one [Ex inferiori præced.]	
in the □ of Ursa Major, latitude [in □ vrſæ maior. Latit.]	1 31 13
From the lower following one [Ex inferiori ſequent.]	
in the □ of Ursa Major, latitude [in □ vrſæ maior. Latit.]	1 20 12
From Procyon, latitude [Ex Procyone Latit.]	1 28 9
From the more northern one in the back of the head [Ex Borealiori in occipite]	
of Hydra, latitude [Hydræ Latit.]	1 30 49
Latitude of ♂, limited [Latitudo ♂ limitata]	1 29 40 B.
For the longitude [Pro Longitudine]	
Longitude of ♂ from the bright foot of ♊ [Long. ♂ ex Lucido pede ♊]	5 7 35
from the heart of ♌ [ex Corde ♌]	5 10 48
Longitude of ♂, limited [Longitudo ♂ limitata]	5 9 10 ♌

DIE 12 DECEMBRIS, GIRSITZÆ. [12 December, at Girsitzæ]

♂ from the southern head of ♊ [♂ a Merid. Cap. ♊]	30 26⅝
Repeated [Repetita]	30 27
Repeated [Repetita]	30 27
Repeated [Repetita]	30 27
Meridian altitude of ♂ [♂ Altitudo meridiana]	57 55 10
Distance of ♂ from the heart of ♌ [Diſt. ♂ a Corde ♌] repeated three times [ter repetita]	29 15⅙

DIE 13 DECEMBRIS, MANE. BENACHIÆ. [13 December, morning. At Benátky]

Meridian altitude of ♂ by the quadrant [Altit. merid. ♂ per Quadr.]	57 59
♂ from the heart of ♌ [♂ a Corde ♌]	6 20
Repeated twice [Repetita bis]	6 21
♂ from the bright star of the neck of ♌, twice [♂ a lucida ceruicis ♌ bis]	7 55

♂ was in a straight line with the bright star of the tail of ♌ and with the one in the haunch that is the preceding and northern of the two [♂ erat in linea recta cum Lucida Caudæ ♌ & illa quæ in clune duarum præcedens & borea.].

In the night that followed 13 December [Noctu quæ ſequebatur 13 Decembris.].

Distance of ♂ [Diſtantia ♂] from the bright star of the neck of ♌ [a lucida Ceruicis ♌]	8 6⅝
The altitude of the heart of ♌ was then [Cordis ♌ Altit. tunc erat]	24 0
Distance of ♂ from the southern head of ♊ [Diſt. ♂ a Merid. Cap. ♊]	30 34⅙
Altitude of the heart of ♌ [Altit. Cordis ♌]	29 50
Conversely [Vice verſa.]	
Distance of ♂ from the heart of ♌ [Diſt. ♂ a Corde ♌]	6 40
Altitude of the heart of ♌ [Altit. Cordis ♌]	35 25
Distance of ♂ from the heart of Hydra [Diſt. ♂ a Corde Hydræ]	25 41⅝
Altitude of the heart of ♌ [Altit. Cordis ♌]	42 50
Meridian altitude of ♂ [Altitudo ♂ Merid.]	57 27
Meridian altitude of the heart of Hydra[1] [Alt. Cordis Hydræ Merid.]	32 20[1]
The altitude of Arcturus was then [Altitudo Arcturi tunc erat]	28 30

[1] It should be 32° 45′ [Debet eße 32° 45′.].

DIE 14 DECEMBRIS ♂. [14 December ♂]

♂ from the bright star of the neck of ♌, three times [♂ a lucida Ceruicis ♌ ter]	8 2½
The bright shoulder of Orion was then crossing [Tranſibat tunc luc. hum. Orionis]	

the meridian, having an altitude of [per Merid. habens Altit.]	46 59⅙
Distance of ♂ from the heart of Hydra [Diſt. ♂ a Corde Hydræ]	25 44½
Sirius had then passed a little beyond the meridian [Syrius tum paululum pertranſiuerat Meridianum]	
Distance repeated twice [Diſt. bis repetita]	25 44½
♂ from the southern head of ♊ [♂ a Meridionali Capite ♊]	30 40⅓
Procyon on the meridian [Procyon per Meridianum.]	
Meridian altitude of the southern head of ♊ [Alt. merid. Cap. Merid. ♊]	68 30⅙
Distance repeated [Diſt. repetita]	30 40½
Distance of ♂ from the heart of ♌ [Diſt. ♂ a Corde ♌]	6 33½
Repeated [Repetita]	6 34
Repeated [Repetita]	6 33½

If you subtract the elevation of the equator there from the altitude of ♂ observed at Benátky, and limit the recession from the equator according to the diurnal motion, the true declination of ♂ will be, for [Si ex Altitudine ♂ Benachiæ obſeruata æquatoris ibidem eleuationem ſubtraxeris & iuxta motum diurnum receßionem ab æquatore limitaris, erit vera declinatio ♂ ad]

the morning of 14 December [14 Decembris mane]	18° 14′ 40″
13	18 16 31
11	18 21 10

N.B. From these observations there results the true place of ♂ [N.B. Prouenit ex his obſeruationibus verus locus ♂]

December [Decembris]	Longitude [Longitudo]	Latitude [Latitudo]
13	18° 9′ 12″ ♌	3° 0′ 5″ B.
14	18 14 39	2 58 38 B.

BENACHIÆ. [At Benátky]

In the night that preceded 30 December [Nocte quæ præcedebat 30 Decembris]

The meridian altitude of ♂ was observed [Obſeruabatur Altit. ♂ Merid.] by the revolving quadrant [per Quadr. Volub.]	58 47⅙

DIE 31 DECEMBRIS. [31 December]

Distance of ♂ from Pollux [Diſtantia ♂ a Polluce]	30 0⅓
Repeated twice [Repetita bis]	30 0⅓
Meridian altitude of ♂ by the revolving quadrant [Alt. ♂ merid. per Q. Volub.]	58 53
by the solid quadrant [per Q. ſolidum]	58 54
Conversely, ♂ from the tail of ♌, twice [Vice verſa ♂ a Cauda ♌ bis]	29 26
Repeated [Repetita]	29 26½

For the place of ♂ on 31 December of the year 1599 [Pro loco ♂ ad 31 Decembris Anni 1599.].

Right ascension of ♂ from Pollux [Aſc. recta ♂ ex Polluce]	141 23 4
from the tail of ♌ [ex Cauda ♌]	141 14 40
limited [limitata]	141 18 52
True place of ♂ [Verus locus ♂]	17° 38′ 9′ ♌
Latitude [Latitudo]	3 45 17 B.

The true place of Mars in longitude and latitude on certain days of October of the current year 1599 [Verus Locus Martis ſecundum Longitudinem & Latitudinem ad certos dies Octobris Anni 1599 currentis.]

Days of October [Octobris Dies]	Longitude according to observation [Longitudo ſecundum Obſeruationem]	Longitude according to Alfonso [Longitudo ſecundum Alphonſum]	Longitude according to Copernicus [Longitudo ſecundum Copernicum]	Latitude from observation [Latitudo ex Obſeruatione]	Latitude from Alfonso [Latitudo ex Alphonſo]	Latitude from Copernicus [Latitudo ex Copernico]
20	1^{G} 0^{M} 57^{S} ♌	0^{G} 15^{M} ♌	1^{G} 17^{M} ♌	1^{G} 18^{M} 0^{S} B.	1^{G} 3^{M} B.	0^{G} 43^{M} B.
21	1 29 25	0 42	1 46	1 19 34	1 4	0 44
24	2 55 41	2 1	3 12	1 21 45	1 7	0 48
25	3 22 20	2 27	3 40	1 23 20	1 9	0 49
27	4 17 10	3 18	4 35	1 26 0	1 12	0 52
29	5 9 10	4 8	5 29	1 29 40	1 14	0 55

ALTITUDINES MERIDIANÆ & DISTANTIÆ FIXARUM. [Meridian Altitudes and Distances of the Fixed Stars]

DIE 2 JANUARIJ. [2 January]

$4^{H}53^{M}$	The bright star in the middle of Andromeda [Lucida in medio Androm.] on the meridian [in merid.]	71 42⅓

5 29½	The first of ♈ [Prima ♈]	55 24⅚
5 33	The second, in the horn [Altera in cornu]	56 58⅚
5 46	The bright star of ♈ [Lucida ♈]	59 42⅔
8 11	Meridian altitude of Aldebaran [Aldeboræ alt. mer.]	53 49
8 38⅔	The left shoulder of Orion [Sin. hum. Orionis]	44 3⅓
9 7⅓	The middle of the belt of Orion [Med. Balth. Orionis]	36 37
9 18¾	To test the smaller sextant, the distance of the bright star of ♈ [Obſeruabatur pro examinando minore Sextante Diſt. Luc. ♈]	
	from Aldebaran was observed [ab Aldebora]	34 19
	But by the parallax of the instrument this should be [Verum hoc per parallaxin inſtrumenti debet eße]	35 32
	Difference [Differentia]	1 16
	which are always to be added [quæ ſemper ſunt addenda.]	

When the midpoint of the space between Canis Major and its foot was on the meridian, the line for the greatest digression of the pole star was then marked [Quando medium ſpacium inter Canem maiorem & eius pedem erat in Meridiano, tunc notabatur linea pro maxima digreßione ſtellæ polaris.].

10^{H} 7^{M}	The bright foot of ♊ on the meridian, altitude [Luc. pes ♊ in mer. alt.]	54 48⅓
	To test the instrument, the distance between Aldebaran and Procyon was taken next [Pro examinando inſtrumento capiebatur mox Diſtantia inter Aldeb. & Procyonem]	45 5
		1 17½
		46 22½
11^{H} $2½^{M}$	The upper head of ♊ crossed [Tranſiuit ſup. cap. ♊]	
	the meridian, having an altitude of [Merid. habens altit.]	70 51⅓
11 5⅔	Canis Minor [Canis minor]	44 17
11 13	The lower head of ♊ [Inferius caput ♊]	67 3½

The lower clock was striking 12 H. when I had come back, so that either the upper one had earlier run a little more than ½ hour slower than it should, or this one faster than it should. Trust rather the observations of this day [Horologium inferius ſonabat cum reuerſus eßem 12 H., ita vt prius illud ſuperius paulo plus ½ hora iuſto tardius motum ſit, aut hoc iuſto celerius. Fide potius obſeruationibus huius diej.].

DIE 8 JANUARIJ. [8 January]

$8^{H}55^{M}$	Meridian altitude of the left shoulder [Alt. Mer. ſin. hum.]	
	of Orion [Orionis]	44 3⅚
	Of the middle of the belt [Mediæ balthei]	36 36
	Of the end of the belt [Extremæ balthei]	35 53
9 10	The bright shoulder of Orion [Luc. hum. Orion.]	45 21⅚

These altitudes were taken with the larger sextant, set to another vertical and another plumb-line [Hæ altitudines acceptæ ſunt per maiorem Sextantem ad alium verticalem aliudque perpendiculum diſpoſitum.].

DIE 9 JANUARIJ. [9 January]

$8^{H}40^{M}$	The meridian altitude below the pole of the antepenultimate star in the tail of Ursa Minor was observed at the beginning of the cylinder, and it was [Obſeruabatur altit. merid. infra polum in principio cylindri antepenultimæ in cauda vrſæ min., eaque fuit]	44 26⅔
12 9⅚	The penultimate star of the tail of Ursa Minor was crossing the meridian, having its least altitude [Tranſibat penultima caudæ vrſæ min. Merid. habens altit. minimam]	48 11⅙
4 6	The pole star was crossing at its least altitude [Tranſibat Polaris in alt. min.]	49 1
	Distance from the pole [Diſtantia a polo]	2 51 30
	Altitude of the pole [Altitudo poli]	51 52 30

DIE 10 JANUARIJ. [10 January]

$8^{H}13^{M}$	Aldebaran was crossing the meridian [Tranſibat Aldeb. Merid.]	
	having an altitude of [habens altitudinem]	53 45½
9 13	The preceding shoulder of Orion [Præced. hum. Orion.]	44 2 30
		5 55
		38 7 30
	Altitude of the pole [Altitudo Poli]	51 52 30
9 9	End of the belt [Extrema balthei]	37 28½
9 13	Middle of the belt [Media balthei]	36 36⅙
9 18	End of the belt [Extrema balthei]	35 55⅙
9 34	The bright shoulder of Orion [Luc. hum. Orion.]	45 19⅓
11 13½	The upper head of ♊ crossed the meridian [Tranſiuit ſup. cap. ♊ Merid.]	
	having an altitude of [habens altitudinem]	70 49⅔
11 21	Canis Minor [Canis minor]	44 20⅓
11 25½	The lower head of ♊ [Inf. cap. ♊]	67 3½
11 50	Distance of the bright star of the neck of ♌ [Diſt. luc. ceruicis ♌]	
	and the lower head of ♊ [& inf. cap. ♊]	34 44½
12 30	The same distance [Eadem diſtantia]	34 43⅓
12 46		34 40
12 50		34 44½

12 56⅔		34 44⅓
12 59⅓		34 43
1 3½	Distance between Regulus [Diſt. inter Regulum]	35 59⅚
1 6⅙	and Procyon [& Procyonem]	36 1½
1 8⅙		35 59⅚
1 12⅓		35 59⅚

These distances, like the preceding ones, were taken with the smaller sextant, and therefore 1° 17½′ must be added to them [Hæ diſtantiæ vt et antecedentes ſumptæ ſunt per Sextantem minorem, ideoque illis addenda 1° 17½′.].

1 56	Regulus was crossing [Tranſibat Regulus] the meridian [Merid.]	52 1⅙

2 5	The bright star of the neck of ♌ was crossing [Tranſibat lucid. ceruicis ♌]	
2 41½	Distance between [Diſtantia inter]	31 42⅔
2 45	Arcturus and Spica ♍ [Arcturum & Spicam ♍]	31 43½
2 49⅙		31 42½
2 51⅓		31 43⅔
2 53		31 42⅔
2 56⅔		31 42⅔
3 40	The tail of ♌ crossed [Tranſiuit cauda ♌] the meridian [per Merid.]	54 58⅔

DIE 15 JANUARIJ. [15 January]

5 36	Meridian altitude of the bright star of ♈ [Alt. merid. lucid. ♈]	59 39 50
6 32	The bright star of the jaw of Cetus crossing [Tranſ. luc. mand. Ceti]	40 36 40
7 0	Distance between the bright shoulder [Diſt. inter luc. hum.]	31 59½
7 5	of Orion and the lower head of ♊ [Orion. & inf. cap. ♊]	32 0
7 19		32 0
7 20		32 0½
7 27	Distance between Aldebaran [Diſt. inter Aldeb.]	34 17
7 30	and the bright star of ♈ [& luc. ♈]	34 17
7 35		34 17

N.B. To all the distances it will be necessary to add 1^p 17^m on account of the difference of the pinnule [*N.B. Omnibus diſtantijs oportebit addere 1^p 17^m propter diuerſitatem pinnacidij.*].

7 23⅔	Aldebaran crossing the meridian [Tranſ. Aldeb. Merid.]	53 47⅓
8 15	The left, or preceding, shoulder of Orion [Tranſibat ſin. ſeu]	doubtful [dubia]
	was crossing [præced. hum. Orionis]	44 2⅙
8 25	The first of the belt of Orion [Prima balthei Orion.]	37 30
8 29⅚	The middle of the belt [Media balthei]	36 38
8 34½	The third of the belt of the same [Tertia balthei eiusdem]	35 55
8 58⅔	The bright shoulder of Orion [Luc. hum. Orionis]	45 23⅙
9 46⅔	The bright star of the foot of ♊ [Luc. pedis ♊]	54 47⅚
10 46⅔	The upper head of ♊ crossing [Tranſ. ſup. cap. ♊]	70 48⅔
10 53	Canis Minor crossed [Tranſiuit Can. minor]	44 19⅚
10 56⅓	The lower head of ♊ crossed [Infer. cap. ♊ tranſiuit]	67 4
11 5½	Distance between Canis Minor [Diſt. inter Can. min.]	24 51
11 10⅚	and the bright shoulder of Orion [& luc. hum. Orion.]	24 51
11 19		24 51
1 32	The heart of ♌ crossing the meridian [Tranſ. cor ♌ Merid.]	52 2
1 46	The bright star of the neck of ♌ [Luc. ceruicis ♌]	59 58⅙
2 45	Distance between Arcturus [Diſt. inter Arcturum]	31 43
2 51	and Spica ♍ [& Spicam ♍]	31 42½
2 53		31 43½

To test the sextant [Pro examinando Sextante.].

5 22	Distance between Spica ♍ [Diſt. inter Spicam ♍]	13 8
5 26	and the other, following one [& alteram ſequentem]	13 8
5 28½	in the left wing [in ſiniſtra ala]	13 8
6 5	Meridian altitude of Arcturus [Alt. Merid. Arcturi]	59 27
6 9½	Distance between Spica ♍ [Diſt. inter Spicam ♍]	20 6½
6 13½	and the southern scale-pan [& lancem Auſtr.]	20 6⅓

Remember that the parallax of the sextant, namely 1° 16′ 30″, has not yet been added to these observations [Memineris parallaxin Sextantis nempe 1° 16′ 30″ nondum eße his obſeruationibus additam.].

DIE 17 JANUARIJ. [17 January]

$11^{H}\ 5^{M}$	The upper head of ♊ was crossing [Tranſibat ſup. cap. ♊] the meridian [Merid.]	70 50⅔
11 18	The lower head of ♊ [Infer. cap. ♊]	67 3⅔

These were taken among clouds [Inter nubes hæc ſumebantur.].

DIE 23 JANUARIJ. [23 January]

6 23	The bright star of the jaw of Cetus crossing [Tranſ. luc. mand. Ceti]	40 37
6 50	Distance between the bright star of ♈ and [Diſt. inter luc. ♈ &] Aldebaran (exceeds by 1½) [Aldeb. (abundat 1½)]	35 33½
	Repeated [Repetita]	35 33
	Repeated [Repetita]	35 33½
7 20	Between Aldebaran and the bright shoulder [Inter Aldeb. & luc. hum.] of Orion (exceeds by 2) [Orionis (abundat 2)]	21 25½
	Repeated [Repetita]	21 25
	Repeated [Repetita]	21 25
9 11	Meridian altitude of the bright foot of ♊ [Altit. Merid. luc. ped. ♊]	54 48
10 18	The lower head of ♊ crossing [Tranſ. infer. cap. ♊] the meridian [Merid.]	67 3⅓

DIE 24 JANUARIJ. [24 January]

8^{H} 0^{M}	The distance was observed between [Obſeruabatur diſtantia inter]	
	Sirius and the bright foot of Orion [Syrium & luc. ped. Orion.]	23 31
	Repeated [Repetita]	23 30
	Repeated [Repetita]	23 32½
	Then the distance between the bright foot [Deinde diſt. inter luc. ped.] of Orion and Procyon [Orion. & Procyonem]	38 24½
	Repeated twice [Repetita bis]	38 25
10 4	Altitude of the lower head of ♊ [Alt. inf. cap. ♊]	67 3½
	Distance between the heart of ♌ and the lower head of ♊ [Diſt. inter cor ♌ & inf. cap. ♊]	36 53
	Repeated [Repetita]	36 53½
	Repeated [Repetita]	36 53¾

DIE 28 JANUARIJ. [28 January]

$7^{H}15^{M}$	Meridian altitude of Aldebaran [Alt. merid. Aldeb.]	53 45⅔
7 55	The preceding shoulder of Orion [Præced. hum. Orion.]	44 3
8 3	The middle of the belt of the same [Media balthei eiusdem]	36 37
8 8	The end of the belt [Extrema balthei]	35 55½
8 21	The following shoulder of Orion [Sequens hum. Orion.]	45 24
8 26	Distance of Aldebaran and the bright star of ♈ [Diſt. Aldeb. & luc. ♈]	35 30½
8 30		35 31
8 34		35 31
9 20	Sirius was crossing the meridian [Tranſibat Syrius Mer.]	21 56½
	To test the sextant [Pro examinando Sextante]	
9 11	the distance was taken between [ſumebatur diſt. inter]	23 42
	Sirius and the bright [Syrium & lucidum]	23 41
	foot of Orion [pedem Orionis]	23 42

DIE 9 FEBRUARIJ [9 February]

$8^{H}10^{M}$	Distance between Aldebaran [Diſt. inter Aldeb.]	21 15
8 21	and the bright shoulder of Orion [& luc. hum. Orion.]	21 16
8 51		21 16
8 55		21 16

DIE 20 FEBRUARIJ. [20 February]

9^{H} 0^{M}	Meridian altitude of Sirius [Alt. Merid. Syrij]	21 56
	Meridian altitude of the upper head of ♊ [Alt. Mer. ſup. cap. ♊]	70 48½
	Meridian altitude of Procyon [Alt. Mer. Procyonis]	44 21
	Meridian altitude of Pollux [Alt. Mer. Pollucis]	67 3½
	Declination [Declinatio]	28 56 7
	Altitude of the equator [Altit. æquat.]	38 7 23

DIE 21 FEBRUARIJ. [21 February]

	Meridian altitude of the bright star of the foot of ♊ [Altit. mer. Luc. pedis ♊]	54 47 40
	Declination [Declinatio]	16 40 35
	Altitude of the equator [Altit. æquatoris]	38 7 5
	Meridian altitude of the bright shoulder of Orion [Alt. mer. Luc. hum. Orion.]	45 23 0
	Of Pollux [Pollucis]	67 3 40
	Declination [Declinatio]	28 56 7
	Altitude of the equator [Alt. æquat.]	38 7 33

DIE 28 FEBRUARIJ. [28 February]

Altitude of Pollux [Altitudo Pollucis]	67 2 20
Declination [Declinatio]	28 56 7
Altitude of the equator [Altitudo æquat.]	38 7 13
Of the pole [Poli]	51 52 47

DIE 14 MARTIJ. [14 March]

Meridian altitude of the lower head of ♊ [Alt. merid. inf. cap. ♊]	67 3½
Then, to test the sextant [Deinde pro examinando Sextante]	
Distance of Aldebaran and Canis Major [Dist. Aldeb. & Canis mai.]	45 57½
(the very distance set down in the book) [(ipsa distantia in libro posita)]	
Meridian altitude of the heart of Hydra [Alt. merid. cordis hydræ]	31 12⅚
Of the heart of ☌ [cordis ☌]	52 3½
Of the bright star of the neck of ☌ [Luc. ceruicis ☌]	60 0⅚

DIE 16 MARTIJ. [16 March]

Meridian altitude of Procyon [Altit. merid. Procyonis]	44 20½
Of the lower head of ♊ [Infer. cap. ♊]	67 2½
Of the heart of Hydra [Cordis hydræ]	31 10½
Of the heart of ☌ [Cordis ☌]	52 1⅔
Of the bright star of the neck of ☌ [Luc. colli ☌]	59 57⅓
Of the bright star in the loins of ☌ [Luc. in lumbis ☌]	60 47½
Of the tail of ☌ [Caudæ ☌]	54 56⅓
Of the third of the wing of ♍ [Tertiæ alæ ♍]	38 52⅓
Of Vindemiatrix [Vindemiatricis]	51 15⅓
Of Spica ♍ [Spicæ ♍]	29 7
Distance between Spica and [Dist. inter Spicam &]	
the northern scale-pan [lancem bor.]	27 35½
twice, to test the sextant. [bis, pro examinando Sextante.]	
But the book of Letters has [At liber Epistolar. habet]	27 34
Distance between Spica and the heart of ☌ [Dist. inter Spicam & cor ☌]	54 2
Repeated [Repetita]	54 2½
But the book has [At liber habet]	54 2
Distance between Spica and the tail of ☌ [Dist. inter Spicam & caud. ☌]	35 3
Repeated [Repetita]	35 2⅔
The book has [Liber habet]	35 1½
Meridian altitude of Arcturus [Alt. merid. Arcturi]	59 25½
Of the northern scale-pan [Lancis bor.]	30 18⅙
When this one was crossing, there was [Cum hæc transiret erat]	
Spica, west [Spica occ.]	26 18
Meridian altitude of the heart of ☌ [Alt. mer. cordis ☌]	52 1⅔
Of the bright star of the neck of ☌ [luc. ceruicis ☌]	59 57⅔

DIE 20 MARTIJ. [20 March]

Meridian altitude of Spica ♍ [Alt. mer. Spicæ ♍]	29 7
Of Arcturus [Arcturi]	59 25⅔
Of the southern scale-pan [Lancis auſtralis]	23 50⅓
Of the northern scale-pan [Lancis borealis]	30 18⅚
Of the bright star of the Crown [Lucidæ Coronæ]	66 14

These meridian altitudes are in moderately good order [Altitudines hæ Meridianæ mediocriter bene ſe habent.].

DIE 22 MARTIJ. [22 March]

Meridian altitude of the heart of Hydra [Alt. mer. cordis Hydræ]	31 9⅔
Of the heart of ♌ [Cordis ♌]	52 2⅙
Of the bright star of the neck of ♌ [Luc. ceruicis ♌]	59 58
Of the bright star in the loins of ♌ [Luc. in lumbis ♌]	60 47½
To test the sextant [Pro examinando Sextante] the distance between the heart of ♌ and [ſumebatur diſt. inter cor ♌ &] the tail was taken, twice, most accurately [caudam, bis accuratißime]	24 39
But the book gives [At liber dat]	23 39¾
Meridian altitude of the tail of ♌ [Alt. mer. caudæ ♌]	54 55½
Of the preceding of the two upper [præced. duarum ſupe-] ones in the □ of Corvus [riorum in □ Corui]	22 51⅔
Of the third in the wing of ♍ [tertiæ in ala ♍]	38 54
But here the line of the ruler on the lower [Verum hic Regulæ linea in in-] limb showed [feriori limbo monſtrabat]	38 54¾
Meridian altitude of the one which is in the right [Alt. mer. illius quæ in dextro] side of ♍ below the girdle [latere ♍ ſub cingulo]	43 44⅓
But here too the upper part of the fiducial [Verum & hic ſuperior fiduciæ] showed [pars monſtrabat]	43 45
Meridian altitude of Vindemiatrix [Alt. mer. Vindemiatricis]	51 14½
It should be [Debet eße]	51 16½
Meridian altitude of Spica ♍ [Alt. mer. Spicæ ♍]	29 7
Of Arcturus [Arcturi]	59 25⅔
Of the southern scale-pan [Lancis auſtralis]	23 51⅓

DIE 23 MARTIJ. [23 March]

To test the sextant, the distance between [Pro examinando Sextante, Diſt. inter]	
Procyon and the bright star of Hydra, [Procyonem & luc. Hydræ,]	
most exactly [exactißime]	30 19⅓
The book gives [Liber dat]	30 20
Meridian altitude of the heart of Hydra [Alt. mer. cordis Hydræ]	31 10⅔
According to the transversals [Iuxta transuerſales]	31 10⅙
Distance between the heart of ♌ and [Diſt. inter cor ♌ &]	
Procyon, twice [Procyonem, bis]	37 20
The book of Letters gives [Liber Epiſt. præbet]	37 19½
Meridian altitude of the heart of ♌ [Alt. mer. cordis ♌]	52 1⅔
By the transversals [Per transuerſales]	52 2
Meridian altitude of the bright star in the neck of ♌ [Alt. mer. luc. in ceruice ♌]	59 58½
By the transversals [Per transuerſales]	59 58⅓
Of the bright star in the loins [Lucidæ in lumbis]	
on both [vtrobique]	60 50½
Of the tail of ♌ [Caudæ ♌]	54 56
By the transversals [Per transuerſales]	54 55⅓
Distance between the heart of ♌ and Spica [Diſt. inter cor ♌ & Spicam]	54 0⅔
Repeated exactly [Repetita exact.]	54 0⅔
This distance falls short by M. 1⅓ [Hæc diſtantia deficit M. 1⅓]	
Meridian altitude of the third in the wing of ♍ [Alt. mer. tertiæ in ala ♍]	38 54½
By the transversals [Transuerſales]	38 54
Meridian altitude of the girdle [Alt. mer. cinguli]	43 45½
By the transversals [Transuerſales]	43 45
Meridian altitude of Vindemiatrix [Alt. mer. Vindemiatricis]	51 16½
By the transversals [Transuerſales]	51 16⅙
Meridian altitude of Spica ♍ [Alt. mer. Spicæ ♍]	29 7⅓
By the transversals [Transuerſales]	29 7
Meridian altitude of Arcturus [Alt. mer. Arcturi]	59 26½
By the transversals [Transuerſales]	59 26
Meridian altitude of the southern scale-pan [Alt. mer. Lancis auſtralis]	23 50⅓
Of the northern scale-pan [Lancis bor.]	30 18⅚
By the transversals [Transuerſales]	30 18⅔

DIE 24 MARTIJ. [24 March]

Meridian altitude of Regulus [Alt. mer. Reguli]	52 1⅔
Of the bright star in the neck of ♌ [Luc. in ceruice ♌]	59
	58⅓
Of the third in the wing of ♍ [tertiæ in ala ♍]	38 54
(½ M. is lacking) [(deſideratur ½ M.)]	
Of the girdle [Cinguli]	43 45
Of Spica ♍ [Spicæ ♍]	29 6⅚
(⅙ M. is lacking) [(deſideratur ⅙ M.)]	
To test the sextant, the distance between [Pro examinando Sextante, Diſt. inter]	
Spica and Regulus, twice [Spicam & Regulum bis]	54 1
between Spica and the [inter Spicam & lancem]	
northern scale-pan, twice, most exactly [bor. bis, exactißime]	27 33
The book has [Liber habet]	27 34

DIE 25 MARTIJ. [25 March]

Meridian altitude of the northern scale-pan [Alt. mer. lancis bor.]	30 18
Of the uppermost in the forehead of ♏ [Supremæ in fronte ♏]	19 31½
Of the heart of ♏ [Cordis ♏]	12 43
Distance of the first star, that one in [Diſtantia primæ ſtellæ iſtius in]	
the point of the arrow of ♐, from the one [cuſpide teli ♐ ab illa]	
that is below the heart of ♏, twice [quæ ſub corde ♏ bis]	19 37
Repeated [Repetita]	19
	36⅔
Distance of the second of those in the hand [Diſt. ſecundæ iſtarum in manu]	
from that same little one below [ab eadem illa paruula ſub]	
the heart of ♏, twice [corde ♏ bis]	22 58
Distance repeated [Diſt. repetita]	22
	57½
These stars were then raised above the horizon [Erant hæ ſtellæ ab horizonte tunc]	
by the steel quadrant [eleuatæ per Q. Chalyb.]	6 28

DIE 26 MARTIJ. [26 March]

Meridian altitude of the northern scale-pan [Alt. mer. lancis bor.]	30 18

DIE 31 MARTIJ. [31 March]

Between the heart of ♌ and Pollux, three times [Inter cor ♌ & Pollucem ter]	37 0

Between the heart of ♌ and Procyon, twice [Inter cor ♌ & Procyonem bis]	37 19⅛

DIE 1 APRILIS. [1 April]

Between Canis Minor and the bright shoulder [Inter Can. min. & luc. hum.] of Orion, twice [Orion. bis]	26 1
Between the heart of ♌ and the tail, twice [Inter cor ♌ & caudam bis]	24 38¾

DIE 2 APRILIS. [2 April]

Distance of that little one in the head of ♌ [Diſt. paruulæ iſtius in capite ♌] from Pollux, three times [a Polluce ter]	27 18⅓
Conversely, the distance of that small one [Vice verſa, diſtantia iſtius paruæ] from the bright star of the neck of ♌, three times [a luc. ceruicis ♌ ter]	8 49

DIE 11 APRILIS. [11 April]

Meridian altitude of Spica ♍ [Alt. mer. Spicæ ♍]	29 7
Of the southern scale-pan [Lancis auſtralis]	23 50⅙
Of the northern scale-pan [Lancis borealis]	30 18½

Dense vapours around the horizon and clouds that were not sparse prevented us from observing those in Sagittarius [Denſi circa horizontem vapores nubeſque non raræ quominus illas in Sagittario obſeruaremus in cauſſa erant.].

DIE 19 APRILIS. [19 April]

Meridian altitude of the girdle of ♍ [Alt. mer. Cinguli ♍]	43 42
Of Vindemiatrix [Vindemiatricis]	51 14⅔
Of Arcturus [Arcturi]	59 24⅓
Of the southern scale-pan [Lancis auſtralis]	23 49⅛
Of the northern scale-pan [Lancis borealis]	30 17⅛

Distance of the preceding of the two stars in ♐ [Diſtantia præcedentis duarum in ♐] from the first and western [ſtellarum a prima & occidentali]	

of the two in Ophiuchus that are arranged by [duarum in Ophiucho, pro lati-]	
latitude [tudine diſpoſitarum]	46 20

And suddenly, while we were taking these, either dense vapours around the horizon or dark clouds there veiled the sky and the stars from us [Subitoque cum hæc caperemus, ſeu denſi circa horizontem vapores ſeu nubes obſcuræ ibidem cœlum ſtellaſque nobis obuelabant.].

DIE 20 APRILIS. [20 April]

Meridian altitude of Spica [Altit. Spicæ meridiana]	29 6⅝

DIE 21 APRILIS. [21 April]

Meridian altitude of Spica [Altit. Spicæ meridiana]	29 7

DIE 22 APRILIS. [22 April]

Meridian altitude of Spica [Altit. Spicæ meridiana]	29 7

DIE 16 MAIJ. [16 May]

Distance of the more eastern of the two in [Diſtantia orientalioris duarum in]	
the point of the arrow of ♐ from the one that is below [cuſpide teli ♐ ab illa quæ ſub]	
the heart of ♏, three times [corde ♏ ter]	22 58
Distance of the same from the head [Diſt. eiuſdem a cap.]	
of Ophiuchus, twice [Ophiuchi bis]	43 49
Repeated [Repetita]	43 50

DIE 19 MAIJ. [19 May]

Distance between that bright star in ♐ [Diſtantia inter lucidam illam in ♐,]	
which is placed below those three in the head [quæ ſub tribus iſtis in capite]	
and the first of the two [ponitur, & primam duarum]	
of those towards the east [iſtarum verſus ortum]	8 20½

DIE 8 JUNIJ. [8 June]

Distance between the bright star of the Chair [Diſt. inter Luc. cathedræ]	9 42½
and the Knee of Cassiopeia, twice and exactly [& genu Caßiopeæ bis & exacte]	
The book of Letters has [Liber Epiſt. habet]	9 41
Distance between the bright star of the Chair [Diſt. inter lucidam cathedræ]	
and the Bend of Cassiopeia, twice [& flexuram Caßiopeæ, bis]	6 11
The book of Letters gives [Liber Epiſt. præbet]	6 10½
Distance of those two stars in ♐, [Diſt. duarum iſtarum ſtellarum in ♐,]	
twice, exactly [bis, exacte]	3 16

DIE 10 JUNIJ. [10 June]

Between the bright star of the Chair and Schedar [Inter Luc. cathedræ & Schedir]	
of Cassiopeia, to test the [Caßiopeæ pro examinando]	
larger Radius, twice [Rad. mai. bis]	4 56
The book has [Liber habet]	4 57½
By the smaller Radius [Per minorem Radium]	4 45
Distance between the bright star of the Chair and the Bend [Diſt. inter Luc. cathedræ & flexuram]	
of Cassiopeia, to test the [Caßiopeæ pro examinando]	
larger Radius [Radio mai.]	6 9
The book has [Liber habet]	6 10½
By the smaller, the distance was [Per minorem erat diſt.]	5 58

These observations are to be trusted rather than the earlier ones [Fidendum potius his obſeruationibus quam prioribus.].

Between the bright star of the Chair and the Knee of Cass. [Inter Luc. cathedræ & genu Caß.]	
to test the larger Radius [pro exam. Radio mai.]	9 42½
The book has [Liber habet]	9 41
Repeated distance [Repetita diſtantia]	9 43
By the smaller, twice [Per minorem bis]	9 30
Distance between the northern and southern scale-pan [Diſt. inter lancem bor. & auſtral.]	
to test the larger Radius, twice [pro exam. Radio mai. bis]	9 10
The book gives [Liber dat]	9 8⅓
By the smaller, twice [Per minorem bis]	8 59
Distance of those two stars in ♐, [Diſt. duarum iſtarum ſtellarum in ♐,]	
twice [bis]	3 20
By the smaller, twice [Per minorem bis]	3 15
With Mag. Jöstel's radius [Per Mag. Jöſtelij radium]	3 21

Distance of the first of those two towards [Diſt. primæ duarum iſtarum verſus]	
the east from that bright star which is below the head [ortum a lucida illa, quæ ſub ca-]	
of ♐ and which, with four others, [pite ♐ eſt, & cum alijs quatuor]	
forms a rhombus, acute-angled towards those two, [rhombum verſus duas iſtas]	
twice [acutangulum efficit, bis]	8 19
By the smaller, twice [Per minorem bis]	8 8

DIE 11 JUNIJ. [11 June]

Distance between the bright star of the Chair and the Bend of Cass. [Diſt. inter Luc. cathedræ & flex. Caß.]	
to test the larger Radius, twice [pro exam. Radio mai. bis]	6 11
The book has [Liber habet]	6 10½
By the smaller it was, twice [Per minorem erat bis]	5 56½
Between the bright star of the Chair and the Knee of Cassiopeia [Inter Luc. cathedræ & genu Caßiopeæ]	
by the larger [per maiorem]	9 42
Repeated [Repetita]	9 42½
By the smaller, twice [Per minorem bis]	9 33

PRAGÆ BOHEMORUM. [At Prague in Bohemia]
DIE 29 JULIJ, VESPERI. [29 July, in the evening]

Meridian altitude of the head of Ophiuchus [Alt. mer. capitis Ophiuchi]	52 36
Of the bright star of the Vulture [Lucidæ Vulturis]	47 37

DIE 30 JULIJ. [30 July]

Meridian altitude of the bright star of the Vulture [Alt. mer. Lucidæ Vulturis]	47 50

DIE 2 AUGUSTI. [2 August]

Meridian altitude of the bright star of the Vulture, with the sextant [Alt. mer. Luc. Vult. Sextante]	47 45
Declination [Declinatio]	7 53
Altitude of the equator [Altit. æquatoris]	39 52
Elevation of the pole [Eleuatio poli]	50 8

DIE 5 AUGUSTI. [5 August]

Meridian altitude of Aquila, with the sextant [Alt. mer. Aquilæ, Sextante]	47 46¾
Declination [Declinatio]	7 53 5
Elevation of the pole [Eleuatio poli]	50 6 20

DIE 11 AUGUSTI. [11 August]

The sextant was set up towards the north [Disponebatur Sextans ad ſeptentrio-]	
to observe the pole star, [nem pro ſtella polari obſeruanda,]	
and at about H. 2 after midnight [& circa H. 2 P.M.N. accipiebatur]	
its greatest altitude was taken [eius altitudo maxima]	52 54
	2 51 20
	50 2 40

DIE 12 AUGUSTI. [12 August]

The greatest altitude of the pole star was observed [Obſeruabatur rurſus altit.]	
again [polaris maxima]	52 53½
Its distance from the pole [Diſt. eius a polo]	2 51
Elevation of the pole [Eleuatio poli]	50 2½
From the star of the Vulture [Ex Vulturis ſtella]	50 6
	20
Therefore the altitude of the pole, limited, comes out as [Prouenit itaque alt. poli limit.]	50 4
	30

OBSERUATIONES HABITÆ IN ARCE CÆSAREANA BENNACHIA. [Observations made in the imperial castle at Benátky]

DIE 28 AUGUSTI. [28 August]

Meridian altitude of the first in the arrow of ➶ [Alt. mer. primæ in telo ➶]	9 6⅔
Of the second there [Secundæ ibidem]	9 32
Of the one in the lower part of the bow [Illius quæ in inf. parte arcus]	5 1⅓
Of the one in the upper part [Illius quæ in ſup. parte]	13
	50⅚
Of the first and more western in the □ [Primæ & occidentalioris in □]	12 6
Of the second and eastern of the upper ones [Secundæ & oriental. ex ſuper.]	12
	43⅚
Of the lowest in the square [Infimæ in quadrato]	9 3⅚
Of the last in the □, towards the east [Poſtremæ in □ verſus ortum]	11 15
Of the first of those three in the head [Primæ trium iſtarum in cap.]	17 51⅓
Of the second [Secundæ]	17 8⅙

Of the third [Tertiæ]	17 50
Of the bright star of the Vulture [Lucidæ Vulturis]	47 27½

DIE 3 OCTOBRIS. [3 October]

Meridian altitude of the bright star of the Vulture [Alt. merid. Luc. Vulturis]	
by the revolving instrument [per Volub.]	47 34½
by the sextant [per Sextantem]	47 35
To test the smaller sextant, there was taken [Pro examinando Sext. min. ſumebatur]	
the distance between the bright star of the Vulture [Diſt. inter Luc. Vulturis]	
and the upper shoulder of ♒, twice [& ſup. hum. ♒ bis]	34 50
The book gives [Liber dat]	34 53½
Meridian altitude of the right shoulder of ♒ [Alt. mer. dext. hum. ♒]	
with the revolving quadrant [per Q. Volub.]	37 28⅓
With the sextant [Sextante]	37 27⅚
Of the second-to-last in the girdle of Orion, [Penult. in cingulo Orion.,]	
with the quadrant [Quadr.]	38 9⅔
With the sextant [Sextante]	38 10
Of the last [Vltimæ]	
with the revolving quadrant [Q. Volub.]	37 28⅔
With the sextant [Sextante]	37 28⅓
Of the bright star of Orion's shoulder [Luc. hum. Orionis]	46 57⅓
With the sextant [Sextante]	46 57⅚
Of the right foot [Dextri pedis]	29 45½

DIE 12 OCTOBRIS. [12 October]

Meridian altitude of Markab of Pegasus, [Alt. mer. Marchab Pegaſi,]	
with the revolving instrument [Volub.]	52 46⅔
With the sextant [Sextante]	52 46½
Of the head of Andromeda [Capitis Androm.]	66 35
With the sextant [Sextante]	66 34⅔
Of the extreme star of the wing of Pegasus [Extremæ alæ Pegaſi]	52 39⅓
With the sextant [Sextante]	52 39½
Of the first of ♈, with the revolving instrument [Primæ ♈, Volub.]	56 59⅚

Of the bright star of ♈ [Lucidæ ♈]	61 13⅚

Investigation of the elevation of the pole from these observations [Inquiſitio Eleuationis Poli ex hiſce obſeruatis]

	Altitude [Altit.]	Declination [Declin.]	Elevation of the pole [Eleuatio Poli]
Markab	52 48 40	13 5 4	50 16 24
The head of Andromeda [Cap. Androm.]	66 37	26 53 35	50 16 35
The end of the wing of Pegasus [Extr. alæ Peg.]	52 41 20	12 57 35	50 16 15
The first of ♈ [Primæ ♈]	57 1 50	17 18 16	50 16 26
The bright star of ♈ [Lucidæ ♈]	61 15 50	21 32 37	50 16 47

The deviation of the instrument has not been corrected in these tests [Deuiatio inſtrumenti in his examinibus non correcta.].

DIE 13 OCTOBRIS. [13 October]

Meridian altitude [Altit. Merid.]	by the revolving instrument [per Volub.]	by the sextant [per Sext.]
The bright star of the Vulture [Luc. Vultur.]	47 34 30	47 33 30 most carefully [diligentißime]
Fomalhaut [Fomahant]	8 4	8 4⅓
Markab of Pegasus [Marchab Peg.]	52 46 50	52 46 40
Scheat of Pegasus [Scheat Peg.]	65 34½	
The head of Andromeda [Cap. Androm.]	66 34	
The end of the wing of Pegasus [Extrem. alæ Peg.]	52 39 10	52 39
The southern star of the tail of Cetus [Auſtr. caudæ Ceti]	19 32	19 32 10
The first of ♈ [Primæ ♈]	56 59 50	
The bright star of ♈ [Lucidæ ♈]	61 14 0	

DIE 14 OCTOBRIS. [14 October]

Distance of the first of the wing of Pegasus and [Diſt. primæ alæ Peg. &] the bright star of the Vulture, three times [luc. Vulturis, ter]	47 46
But it ought to have been [Debebat autem eße]	47 49 30
Distance between the mouth of Pegasus and the bright star of the Vulture [Diſt. inter os Peg. & luc. Vult.]	28 1⅔
Repeated, twice [Repetita bis]	28 2⅙

Meridian altitude of Fomalhaut, with the revolving instrument [Alt. mer. Fomahant, Volub.]	8 3 50
Most carefully, by the sextant [Diligentißime per Sext.]	8 4 10
Distance between the first of the wing of Pegasus [Diſt. inter primam alæ Peg.] and the bright star of ♈ [& luc. ♈]	43 34
Repeated, twice [Repetita bis]	43 33
It ought to have been [Debebat eße]	43 37 6

DIE 15 OCTOBRIS. [15 October]

At H. 11 M. 2 the pole star will be at its greatest altitude, since the pole star will then stand in the same vertical as the girdle or Schedar of Cassiopeia [cum polaris in perpendiculo fuerit cum cingulo aut Schedir Caßiopeæ].

Meridian altitude of the lower of the preceding stars in the square of the Great Bear [Alt. merid. inferioris ex præcedentibus in □ vrſæ mai.]	18 50⅓
Of the upper of the preceding [Superioris ex præcedent.]	24 13
Of the upper of the following, in the same square [Super. ex poſterioribus in eodem quadrato]	19 35

Stars of ♐ [Stellarum ♐.]

Of the two in the northern part of the bow, distance of the more southern from the bright following star in the tail of ♑, three times [Duarum in boreali parte arcus auſtralioris diſt. a lucida ſequente in cauda ♑ ter]	47 2 30
Distance of the one in the arrow that precedes the left shoulder, from the same, twice [Illius quæ antecedit ſiniſtr. hum. in iaculo diſt. ab eadem, bis]	43 11½
The left shoulder from the same bright star, three times, exactly [Sin. hum. ab eadem luc., ter exacte]	41 0
Of the one in the left side, twice [Illius quæ in latere ſin. bis]	39 51⅔

These stars were arranged thus [Erant autem hæ ſtellæ ſic diſpoſitæ.]:

Diagram. A sketch of five stars, each drawn as an asterisk, set in the left column below the sentence above; four carry numerals.

- Upper left: an asterisk with no label.
- Upper middle, slightly higher and to the right of it: an asterisk labelled "3".
- Right: an asterisk labelled "1" (set "*. 1").
- Middle, below and to the left of "1": an asterisk labelled "2" (set "*. 2").
- Lower left: an asterisk labelled "4" (set "*4.").

At hour 9, altitude of the pole star, most exactly [Hora 9 Altit. Polaris, exactißime]	53 6 10
At H. 11 M. 2, altitude of the same pole star, taken several times, most carefully [H. 11 M. 2 Altit. eiusdem Polaris aliquoties, diligentißime]	53 9 30

	Alt. mer.	Decl.	Eleu. poli
Upper preceding star in the square of the Great Bear [Super. præced. in □ vrſæ mai.]	24 13	63 54 24	50 18 36
Lower, in the same place [Infer. ibid.]	18 50 20	58 31 24	50 18 56
Upper following star in the square [Super. ſeq. in □]	19 35	59 15 26 Diſt. a polo	50 19 34
Pole star, greatest altitude [Polaris max.]	53 9 30	2 51 10	50 18 20

With all these altitudes limited, the southern as well as the northern, the corrected elevation of the pole comes out [Limitatis hiſce omnibus altitudinibus tam meridionalibus quam ſeptentrionalibus prouenit eleuatio poli corr.] 50 18 25.

DIE 16 OCTOBRIS. [16 October]

Of the two in the northern part of the bow of ♐, distance of the more southern from the left knee of Ophiuchus [Duarum in boreali parte arcus ♐ auſtralioris diſtantia a poplite ſiniſtro Ophiuchi]	30 7½
Repeated [Repetita]	30 7½
Distance of the one in the arrow that precedes the left shoulder, from the same, twice [Illius quæ antecedit ſiniſtrum hum. in iaculo diſt. ab eadem, bis]	34 25
Of the left shoulder [Siniſtri humeri]	36 9
Repeated [Repetita]	36 7½
Repeated [Repetita]	36 7⅔
The one in the left side [Quæ in latere ſiniſtro]	38 55⅔
Repeated, twice [Repetita bis]	38 56½
Meridian altitude of the upper following star in the square of the Great Bear [Alt. mer. ſup. ſequ. in □ vrſæ mai.]	19 34 20
Lowest meridian altitude of the third-last star in the tail of the Great Bear [Alt. mer. min. antepenultimæ in cauda vrſæ maioris]	18 28 10
Greatest altitude of the pole star [Alt. max. Polaris]	53 9 20
Lowest altitude of the second-last star in the tail of the Great Bear [Alt. min. penultimæ in cauda vrſæ mai.]	17 21 30

DIE 17 OCTOBRIS. [17 October]

Distance from the left knee of Ophiuchus of the more southern of the two in the northern part of the bow of ♐, twice [Diſt. a ſin. poplite Ophiuchi duarum in boreali parte arcus ♐ auſtr. bis]	30 7½
Of the one in the arrow that precedes the left shoulder [Illius quæ antecedit ſin. hum. in iaculo]	34 25⅓
Repeated, twice [Repetita bis]	34 25½
Of the left shoulder, twice [Siniſtri humeri bis]	36 9
Twice [bis]	36 9⅓
The one in the left side, three times [Quæ in latere ſiniſtro ter]	38 56½
The one in the left forequarter [Quæ in armo ſiniſtro]	39 4½
Repeated, three times [Repetita ter]	39 4
Of the preceding one in the head, toward the west, three times [Præcedentis in cap. verſus occ. ter]	35 19⅔
Of the following one in the same place, three times [Sequentis ibidem ter]	37 1
Of the last, three times [Vltimæ ter]	38 4
Lower meridian altitude of the preceding stars in the square of the Great Bear [Alt. mer. infer. præcedentium in □ vrſæ mai.]	16 14⅓
Of the extreme star of the wing of Pegasus [Extremæ alæ Pegaſi]	52 39 20
Pole star [Polaris]	53 9 30

DIE 18 OCTOBRIS. [18 October]
To test the sextant [Pro examinando Sextante,]:

Distance between the bright star of the Vulture and Markab of Pegasus, three times [Diſt. inter Luc. Vult. & Marchab Peg. ter]	47 46
Between the bright star of the Vulture and the mouth of Pegasus [Inter Luc. Vult. & os Pegaſi]	28 2 30
Repeated [Repetita]	28 2 20
Meridian altitude of the upper preceding star in the square of the Great Bear [Alt. mer. ſuperioris præcedent. in □ vrſæ maioris]	24 11 0
Of the lower, in the same place [Inferioris ibidem]	18 50
Of the lower of the following [Inferioris ſequentium]	16 15 50
Of the upper [Superioris]	19 35 30

Greatest altitude of the pole star [Altitudo Polaris maxima]	53 9 20
Meridian altitude of the second-last star in the tail of the Great Bear [Alt. mer. penultimæ in cauda vrſæ mai.]	17 22 40

DIE 21 OCTOBRIS. [21 October]

Greatest altitude of the pole star [Altitudo Polaris maxima]	53 9⅓

To test the sextant [Pro examinando Sextante.]:

The northern head of ♊ from Aldebaran; three times, exactly, set after the value [Bor. caput ♊ ab Aldebora]	43 11 ter, exacte
The Book of Letters gives [Liber Epiſt. dat]	43 12½

This deviation, therefore, is to be added to the observations [Hæc igitur deuiatio obſeruationibus addenda.].

DIE 26 OCTOBRIS. [26 October]

To test the sextant [Pro examinando Sextante.]:

Distance between Aldebaran and the bright star of ♈, twice [Diſt. inter Aldeb. & Luc. ♈ bis]	35 10⅚

Afterwards, since that support of the sextant had broken, it was no longer possible to observe [Poſtea fracto Sextantis fulcimine illo obſeruare amplius non licebat.].

DIE 12 DECEMBRIS, GIRSITZÆ. [12 December, at Girsitzæ]

Distance between Aldebaran and the northern head of ♊ [Diſt. inter Aldeb. & bor. cap. ♊]	43 9½
Repeated, twice [Repetita bis]	43 9½
Distance between Aldebaran and the bright star of the foot of ♊ [Diſt. inter Aldeb. & luc. ped. ♊]	29 9
Repeated, twice [Repetita bis]	29 9

As it is given in the book [Vt in libro habetur.].

Between the bright star of Orion's foot and Sirius [Inter Luc. ped. Orion. & Syrium]	23 40
Repeated, twice [Repetita bis]	23 40
It ought to have been [Debebat eße]	23 41⅔

DIE 13 DECEMBRIS, MANE. [13 December, morning]

At Benátky [Benachiæ.]

Meridian altitude of the heart of Hydra, quadrant [Alt. mer. Cordis Hydræ, Quadr.]	32 43⅚
Sextant [Sext.]	32 41⅔
Of the heart of ♌ [Cordis ♌]	53 33½
Quadrant [Quadr.]	53 34¾
Of the bright star of the neck of ♌ [Luc. ceruicis ♌]	61 32⅚
Declination [Declinatio]	21 50 30
Altitude of the equator [Altit. æquatoris]	39 42 20

In the night that followed 13 December [Nocte quæ ſequebatur 13 Decemb.]. At Girsitzæ [Girſizæ.]

Distance between Aldebaran and the bright star of ♈, twice [Diſt. inter Aldeb. & luc. ♈ bis]	35 28½
It ought to have been [Debebat eße]	35 32
Between the Vulture and the bright star of Lyra [Inter Vulturem & luc. Lyræ]	34 9
Four times, exactly; the book has [quater exacte; liber habet]	34 9
Between Procyon and the bright star of Orion's foot [Inter Procyon. & luc. ped. Orion.]	38 34⅙
It ought to have been [Debebat eße]	38 37½
Meridian altitude of the heart of Hydra [Alt. mer. Cordis Hydræ]	32 20
Of the heart of ♌ [Cordis ♌]	53 40

DIE 14 DECEMBRIS. [14 December]

To test the sextant, the distance between Aldebaran and the second star of ♈ was observed [Pro examinando Sextante obſeruabatur diſtantia inter Aldeb. & ſecundam ♈]	38 20¾
It ought to have been [Debebat eße]	38 21⅔
Between Aldebaran and the bright star of ♈ [Inter Aldeb. & lucidam ♈]	35 32

The book has it so too [Liber etiam ſic habet.].

Between Aldebaran and the northern head of ♊, twice [Inter Aldeb. & bor. cap. ♊ bis]	43 12½
Exactly. The book gives the same [exacte. Liber præbet eandem.]	
When the pole star was in the same vertical as Schedar of Cassiopeia, its greatest altitude was taken with the azimuthal instrument [Cum Polaris eßet in perpendiculo cum Schedir Caßiopeæ, ſumebatur eius altit. max. per Azimuthalem]	53 7 10
Conversely, at the same azimuth the meridian altitude of the first star of ♈ was taken [Vice verſa ad idem azimuth ſumebatur altit. merid primæ ♈]	57 17 10
Meridian altitude of the bright star of ♈ [Alt. mer. lucidæ ♈]	61 15
Distance between the shoulders of Orion [Diſt. inter humeros Orionis]	7 31

Exactly. It ought to have been [exacte. Debebat eße]	7 30⅔
Between the third star of ♈ and the left shoulder of Orion [Inter tertiam ♈ & ſin. hum. Orion.]	50 26½
It ought to have been [Debebat eße]	50 31⅔
The bright star of Orion's shoulder crossed the meridian with an altitude of [Tranſibat luc. hum. Orionis per Merid. habens altit.]	46 59 10

In the night that preceded [Nocte quæ præcedebat]
DIE 30 DECEMBRIS. [30 December]
At Benátky [Benachiæ.]

Meridian altitude of the heart of ♌, quadrant [Alt. mer. cordis ♌, Quadr.]	53 34⅔
Sextant [Sext.]	53 35⅚
The bright star of the neck of ♌, revolving instrument [Luc. ceruicis ♌, Volub.]	61 31

The same evening [Eadem veſpera.]

Greatest altitude of the pole star, with the sextant [Altit. polaris maxima, Sextante]	53 9
Its distance from the pole [Diſt. eius a polo]	2 51 10
Elevation of the pole [Eleuatio poli]	50 17 50
Observed earlier with the sextant, and limited [Prius obſeru. per Sext. & limit.]	50 18 25

And so, as a suppliant, I pray to Urania and the Aonian Muses that the year may run on happily for you from here on [Sicque tibi porro felix decurrat vt annus / Vraniam ſupplex, Aonidasque precor.].

Examination of the elevation of the pole at Benátky [EXAMINATIO ELEUATIONIS POLI BENATIKÆ.]

Greatest altitude of the pole star [Altitudo polaris maxima]	53 9 10
Least [minima]	47 27 10
Distance from the pole [Diſt. a polo]	2 51
The elevation that results from this [Eleuatio hinc prouenit]	50 18 10
The heart of ♌ gives [*Cor ♌ dat*]	*50 18¾*
Therefore the limited elevation of the pole will be [Ergo eleuatio poli limitata erit]	50 18 40
Previously it was found [Antea inuenta fuit]	50 18 25

We shall therefore err imperceptibly if we put it at 50 18 30; but the following observations can also be taken into account [Inſenſibiliter igitur aberrabimus, ſi

eam 50 18 30 poſuerimus, poterint tamen & ſequentes obſeruationes in conſilium adhiberi.].

Girsitzæ [GIRSITZÆ.]

Greatest altitude of the pole star at the same place [Alt. Polaris max. ibid.]	53 7 10
Distance from the pole [Diſt. a polo]	2 51 10
Elevation from this [Eleuatio hinc]	50 16 0
Meridian altitude of the first star of ♈ [Alt. mer. primæ ♈]	57 2 10
Declination [Declinatio]	17 18 16
Elevation of the pole [Eleuatio poli]	50 16 6
Meridian altitude of Pollux [Altitudo Pollucis Merio.]	68 40 10
Declination [Declinatio]	28 56 5
Elevation of the pole [Eleuatio poli]	50 15 55

Let the elevation of the pole there therefore be taken as 50 16 0; it will not differ much from the truth [Aßumatur ergo poli eleuatio ibidem 50 16 0, & non multum a vero diſcrepabit.].

Appendix to the observations of the year 1599 [APPENDIX AD OBSERUATIONES ANNI 1599.]

Astronomical observations of the three superior planets, carefully made in the year 1599 by David Fabricius with a sextant and an iron quadrant of 3 feet.[1] [OBSERUATIONES ASTRONOMICÆ IN TRIBUS SUPERIORIBUS PLANETIS ANNO 1599 A DAUIDE FABRICIO DILIGENTER HABITÆ PER SEXTANTEM ET QUADRANTEM FERREUM 3 PED.[1]]

I. On Saturn [I. In Saturno.]

For the trine of ♄ and ☉ [Pro △ ♄ & ☉.]

On 22 January (day of ☾), at about 4 in the morning, I observed ♄ [Die 22 Januarij (die ☾) circa horam 4 matutinam obſeruaui ♄.].

Distance of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	4°59′
from the other, following star in the wing of ♍ [altera ſeq. in ala ♍]	11 44

On 23 January (day of ♂), in the morning [Die 23 Januarij (die ♂) mane]:

♄ was distant from Arcturus [♄ diſtabat ab Arcturo]	28 25
from the other, following star in the wing of ♍ [alt. ſeq. in ala ♍]	11 44

For the opposition of ♄ and the Sun [Pro oppoſitione ♄ & ☉^{lis}.]

On 16 March (day of ♀), at hour 11 p.m., altitude of ♄ 33° 34′; distance of ♄ and the tail of ♌ 28° 55′[2] [Die 16 Martij (die ♀) Hora 11 p. m. alt. ♄ 33° 34′, diſt. ♄ & caudæ ♌ 28° 55′[2].].

On 19 March (day of ☾), at about hour 11½ p.m. [Die 19 Martij (die ☾) hora 11½ p. m. circiter,]:

The meridian altitude of ♄ was [Altitudo meridiana ♄ fuit]	33°39′	Altitude of the equator [Alt. æquat.]
Meridian altitude of Spica, with the quadrant standing [Alt. Spicæ merid. ſtante quadrante]	27 21	of our place [noſtri loci]
♄ was distant from the tail of ☋ [Diſtabat ♄ a Caudæ ☋]	28 41	36°22′.
from Arcturus [arcturo]	28 39	
from the northern scale-pan [Lance boreal.]	30 46	
from the other, following star in the wing of ♍ [altera ſeq. in ala ♍]	8 47½	

From these premises, having carefully worked out the calculation by the doctrine of triangles, I investigated the right ascension, declination, longitude and latitude as follows [Ex his præſuppoſitis per △$^{\text{gulorum}}$ doctrinam diligenter ſubducto calculo Aſc. R., decl., longit. & latitud. inquiſiui vt ſequitur.].

Declination of ♄ [Declinatio ♄]	22°43′ south [Auſtr.]	Latitude [Latitudo]	2°48′26″ north [Bor.]
Right ascension, equated and corrected [Aſc. R. coæquata & correcta]	193 24 12″	Longitude [Longitudo]	13 23 12 ♎

In the same year, on 23 March (day of ♀), at hour 12 p.m. [Eodem anno 23 Martij (die ♀) hora 12 p. m.]:

Meridian altitude of ♄ [Alt. Merid. ♄]	$33^{G}47^{M}$
Altitude of Spica (the quadrant unmoved) [Alt. Spicæ (immoto quadrante)]	27 21
Distance of ♄ and the northern scale-pan [Diſt. ♄ & Lancis Borealis]	31 5½
Distance of ♄ and the other, following star in the wing of ♍ [Diſt. ♄ & alt. ſeq. in ala ♍]	8 27½
Distance of Spica ♍ and ♄ [Diſt. Spicæ ♍ & ♄]	7 5

Right ascension of ♄, corrected [Aſc. Recta ♄ correcta] and limited [& limitata]	193° 4′32″	Latitude [Latitudo]	2°48′
		Longitude [Longitudo]	13 2 27″ ♎

The motion over 4 days is 20′45″21‴; the daily motion [Motus 4 dierum eſt 20′45″21‴, diurnus] 5′11″20‴. The ☉ therefore reached the mean opposition of ♄ on day...[3] [☉ itaque ad ☍ mediam ♄ peruenit die...[3]]

For the quadrature of ♄ and ☉ [Pro □ ♄ & ☉.]

On 23 June (day of ♄), in the evening, one hour after sunset [Die 23 Junij (die ♄) veſperi vna hora poſt ☉ occaſum.]:

Distance of ♄ and Arcturus [Diſt. ♄ & arcturi]	29 36
of Spica [ſpicæ]	9 24
the tail of ☋ [cauda ☋]	25 38

[1] Written in Fabricius's hand and sent by him twice to Tycho, who inserted these leaves into codices H. and I. [Manu Fabricii conſcriptæ et bis ab eo Tychoni miſsæ, qui hæc folia codicibus H. & I inſeruit.]

[2] The minutes are uncertain because the leaf is worn at the margin [Minuta incerta ſunt ob folium ad marginem attritum.].

[3] Nothing more in the codex [Nihil amplius in codice.].

For the trine of ♃ and ☉ [Pro △ ♃ & ☉.]

On 15 February (day of ♃), at hour 8 p.m., meridian altitude of ♃ 59 55 [15 Februarij die ♃ hora 8 p.m. alt. Merid. ♃ 59 55].

Distance of ♃ and the northern horn of ♉ [Diſt. ♃ & cornu bor. ♉]	23 39	♃ and the southern head of ♊ [♃ & merid. caput ♊]	9 50 f.

On 17 February (day of ♄), in the evening, distance of ♃ and the following shoulder of Orion 23 25 [17 Februarij die ♄ veſperi, diſt. ♃ & ſeq. hum. Orion. 23 25].

For the quadrature of ♃ and ☉ [Pro □ ♃ & ☉.]

On 22 March (day of ♃), in the evening, after sunset [22 Martij die ♃ veſperi poſt ☉ occaſum.]. Distance of ♃ and the southern head of ♊ 9° 7′ p. m. [Diſt. ♃ & merid. cap. ♊ 9° 7′ p. m.]

♃ and Procyon [♃ & procyon]	18 40	♃ and the northern horn [♃ & cornu bor.]	24 33.

On 3 November, that is, on the day of ♄, one hour before sunrise [3 die Nouembris, die videlicet ♄, hora vna ante ortum ☉.]:

The exact meridian altitude of ♃ was [Alt. mer. ♃ exacta erat]	51 40
Meridian altitude of Regulus [Alt. merid. Reguli]	50 16½
Distance of ♃ from Regulus [Diſt ♃ a regulo]	3 27½
from Procyon [procyone]	34 26
from the southern head of ♊ [merid. cap. ♊]	33 32½

In due course I shall carefully observe the trine of ♃ and ♂ to the ☉, as well as the other aspects to come, and that with my new sextant, whose *directorium* I am now having made [△ ♃ & ♂ ad ☉ ſuo tempore vt & reliquos aſpectus futuros diligenter obſeruabo, idque nouo meo ſextante, cuius directorium iam fieri curo.].

For the trine of ♃ and ☉ [Pro △ ♃ & ☉.]

On 2 December (day of ☉), 1½ hours before sunrise, I observed the distance of ♃ from [2 Decembris die ☉ hora 1½ ante ortum ☉ obſeruaui diſt. ♃ a]:

Regulus [Regulo]	2 32½
the heart of ♌ [corde ♌]	8 13
the head of Hydra [hydræ capite]	23 15

My observations made of ♂ [Obſeruationes meæ in ♂ habitæ.]

On 11 August, in the morning, one hour before sunrise, I first observed ♂ in sextile with the ☉ [Die 11 Auguſti mane vna hora ante ortum ☉^{lis} obſeruaui primo ♂^{tem} in ⚹ ☉]

and its distance from the following shoulder of Orion [& diſt. a ſeq. humero Orionis]	16 37
from the preceding shoulder of Orion [a præced. hum. Orionis]	20 27
from Aldebaran [ab Aldeboran]	23 22

On 14 October (day of the ☉), in the morning, I carefully observed the meridian altitude of ♂, and it was 57 17½. The altitude of Regulus, taken shortly afterwards with the same instrument unchanged, was Gr. 50 M. 16½, which gives the due declination 13° 54½′, and the quadrant was correctly set [14 Octobris die ☉^{lis} mane diligenter obſeruaui altit. merid. ♂, & erat 57 17½. Altit. reguli paulo poſt eodem inſtrumento invariato accepta fuit Gr. 50 M. 16½, quod dat declin. debitam 13° 54½′ & Quadrans recte poſitus fuit.].

Distance of ♂ from the heart of ♌ [Diſt. ♂ a corde ♌]	21° 20′
from Procyon [procyone]	21 22 f.
from ♃ [♃]	15 45

In the same year and month, but on 19 October (namely ♀), about two hours before sunrise, the distance of ♂ was observed from Regulus as 19° 6′, from Procyon 22 51. The meridian altitude of ♂, observed in the same way as above one hour before sunrise, 56 53 [Eodem anno & menſe, die vero 19 Octobris (♀ ſcilicet) horis fere duabus ante ☉ ortum, diſt. ♂ obſeruata eſt a regulo 19° 6′, a procyone 22 51. Alt. merid. ♂ eodem quo ſupra modo obſeruata vna hora ante ☉ ortum 56 53.].

For the trine of ♂ and ⊙ [Pro △ ♂ & ⊙.]

On 2 December (day of ⊙), in the morning, 1½ hours before sunrise, ♂ was distant from [2 Decembris die ⊙ mane 1½ hora ante ortum ⊙, diſtabat ♂ a]:

Regulus [Regulo]	6 42	on 3 Dec., 1 hour before sunrise, it was 6°38′ [die 3 Dec. hora 1 ante ortum erat 6°38′.]
the neck of ♌ [ceruice ♌]	8 13½	
the southern * in the head of ♌ [merid. * in cap. ♌]	7 18	

Observations of the year 1600 [OBSERUATIONES ANNI 1600.]
Observations of the Sun [OBSERUATIONES SOLIS.]
DIE 2 JANUARIJ. [2 January]

Meridian altitude of the ⊙ [Altitudo ⊙ meridiana]	
by the revolving instrument [per Volub.]	16 45½
by the sextant [per Sextantem]	16 45

DIE 5 JANUARIJ. [5 January]

The meridian altitude of the ⊙ was taken [Altitudo ⊙ merid. ſumebatur]	
with the sextant, most carefully [Sextante diligentißime]	17 4⅓
with the solid quadrant [Quadrante ſolido]	16 57[1]
with the revolving quadrant [Quad. Volub.]	17 4⅙
Corrected altitude [Altit. correcta]	17 2 20
Parallax [Parallaxis]	2 58
Altitude without parallax [Alt. ſine par.]	17 5 18
True place of the ⊙ [Verus locus ⊙]	14 34 54[2] ♑
Its declination [Declin. eius]	22 44 30
	39 49 48
	39 41 30
Gives the refraction [Dat refractionem]	8 18
Refraction from the book [Refr. ex libro]	6 30
Difference [Differentia]	1 48

DIE 19 JANUARIJ. [19 January]

Meridian altitude of the ⊙, revolving instrument [Altitud. ⊙ merid. Volub.]	19 16¾
with the brass sextant [Sextante Orichalc.]	19 18½
with the wooden sextant [Sextante ligneo]	19 18

DIE 23 JANUARIJ. [23 January]

The ☉ was seen to rise at H. 7 M. 45 by the clock, when the clock struck the eighth hour by the clock used previously. The altitude of the ☉ observed was 1½. From this, applying refraction and parallax, correct the clock [☉ viſus oriri iuxta horologium H.7 M. 45 cum ſonuit horologium octauam horam, iuxta horologium prius vſitatum. Fuit altitudo ☉ obſeruata 1½. Hinc adhibita refractione & parallaxi emenda horologium.].

There follows an observation of the declination of the ☉ for examining the equatorial armillae [Sequitur Declinationis ☉ obſeruatio pro Armillis Æquatorijs examinandis.].

Altitude of the ☉ [Altitudo ☉]	Apparent declination of the ☉ [Declinatio ☉ viſa]
$5^{G}30^{M}$	$19^{G}23^{M}$
5 45	19 23½
7 8	19 24½
7 26	19 25
7 42	19 25
8 0	19 25½
8 32	19 26
8 49	19 26½
9 50	19 27
10 17	19 27½
10 32	19 28

[1] Codex H. has 56′ [Codex H. habet 56′.].

[2] Codex H. has 59″ [Codex H. habet 59″.].

The declination of the Sun, however, was altered by refraction, as usually happens [Mutabatur autem declinatio Solis ob refractionem vti fieri ſolet.].

By our calculation the place of the ☉ was then in 52° 52′ ♒ [Locus ☉ erat tunc ex calculo noſtro in 52° 52′ ♒,]:

True declination [Vera declinatio]	19 35
Apparent declination [Viſa declinatio]	19 37
Refraction takes away at altitude 40° [Refractio aufert in alt. 40°]	7
So that the true declination is [Vt ſit vera declinatio]	19 30
And since about the following was then observed [Cumque tunc obſeru. fere]	19 28

the armillae seem to fall short by at least 2 M., as nearly as can be judged, which is almost imperceptible [videntur armillæ ſaltem 2 M. quam proxime deficere, quod fere eſt imperceptibile.].

At noon on the following day the altitude of the ☉ was observed with various instruments, as follows [In Meridie ſequente obſeruabatur ☉ per diuerſa inſtrumenta quoad altitudinem vt ſequitur.].

Altitude of the ☉ [Altit. ☉]		
by the revolving instrument [per Volub.]	20 10	
with the brass sextant [per Sextantem Orich.]	20 8½	
with the brass azimuth [per Orichal. Azimuth.]	20 12½	doubtful [dubia]
with the smaller iron quadrant [per Q. minor. ferreum]	20 7	

Afterwards, as the Sun was going down towards its setting, its declination was taken at certain altitudes, so that the armillae — with which the declination of ☿ was afterwards taken at an almost equal altitude — could be verified from this, and the declination of ☿ limited, because the armillae were not yet set up accurately enough. It may seem strange, however, that the southern declination of ☿ increases, when it ought rather to diminish because of refraction; but this is perhaps owing to the setting-up of the armillae [Poſtea Sole ad occaſum tendente capiebatur eius declinatio in certis altitudinibus, vt armillæ, quibus declinatio ☿ poſtea in conſimili quaſi altitudine ſumebatur, inde verificari & declinatio ☿ limitari poßit, quia Armillæ nondum ſatis accurate diſpoſitæ erant. Mirum autem videri poßit, Declinationem Auſtrinam ☿ augeri, cum potius ob refractionem imminui debeat, ſed hoc forte ob diſpoſitionem Armillarum.].

Altitude of the ☉ [Altitudo ☉]	Declination of the ☉ [Declinatio ☉]
7° 7′	19° 19′
6 38	19 20
6 21	19 21
6 7	19 21
5 31	19 22
4 11	19 22½
3 40	19 23
3 35	19 23½
3 23	19 23½
2 30	19 24
2 16	19 24

These declinations are not to be trusted [Non fidendum Declinationibus hiſce.].

DIE 24 JANUARIJ. [24 January]

The altitude of the ☉ at noon was observed as follows [Obſeruabatur Altitudo ☉ in Meridie vt ſequitur.].

By the revolving instrument [Per Volubilem]	20 22⅝
By the brass sextant [Per Sext. Orichalc.]	20 21
By the medium azimuthal quadrant [Per Quad. med. Azimuth.]	20 26

But the revolving quadrant is rather to be trusted, I believe; for the other two, especially the medium azimuthal quadrant, had not yet been properly corrected.

On that day the ☉ was seen to set at H. 4½ by the mirror clock, which had also been in good order at noon [Sed fidendum potius Quadranti Volubili, vti existimo; nam reliqui duo, præsertim Quadrans mediocris Azimuthalis, non erant rite adhuc correcti. ☉ eo die occidere visus est iuxta Horologium speculare, quod in Meridie etiam bene se habuit, H. 4½.].

DIE 2 FEBRUARIJ. [2 February]

Meridian altitude of the ☉ [Altit ☉ merid.]	
by the revolving instrument [per Volub.]	22 43

DIE 3 FEBRUARIJ, STYLO NOUO. [3 February, New Style]

Meridian altitude of the ☉ [Altit. ☉ merid.]	23 5½
Parallax adds [Parallaxis addit]	2′ 45″
Refraction, which here is greater by two minutes than in Denmark, subtracts [Refractio quæ hic duobus min. maior est quam in Dania, subtrahit]	5 0
so that the true altitude is [vt sit vera altitudo]	23 3
	15
and since the altitude of the equator here is [cumque alt. æquat. hic sit]	39
	41½
the declination of the ☉ comes out [prouenit declinatio ☉]	16 38
	15
Corresponding longitude of the ☉ [Resp. Longitudo ☉]	14 10
	♒
Our calculation gives [Noster calculus dat]	14 8
	♒

DIE 4 FEBRUARIJ. [4 February]

At noon the altitude of the ☉ was observed with the three instruments I then had at hand [In meridie obseruabatur Altitudo ☉ per tria instrumenta quæ tunc ad manus habui.].

Meridian altitude of the ☉ [Altit. ☉ Meridiana]	
by the revolving quadrant [per Quadr. Volub.]	23 23⅙
The same by the brass sextant [Eadem per Sext. Orichal.]	23 23
The same also by the medium iron one [Eadem etiam per mediocrem ferreum]	23 23
Hence the declination of the ☉ comes out [Prouenit itaque decl. ☉]	16 20¾
To which corresponds the longitude of the ☉ in [Quibus respondet long. ☉ in]	15 10 ♒
Our calculation gives the place of the ☉ [Noster Calculus dat locum ☉]	15 9 ♒

Nor should it be surprising that on the preceding day and on this one the place of the ☉, according to the observation, exceeded our calculation by one or two minutes. For at this low altitude of the Sun, and with a disposition

of the air different from that in Denmark even when the air is at its clearest, the refractions, which vary from place to place, have not yet been sufficiently worked out. This is shown by the observation of the ⊙ near the winter solstice, where the refractions were found to be greater by about two minutes than formerly with us in Denmark. Nor could a very small error in the place of the ⊙, if one were present, have then altered the declination or the altitude perceptibly [Nec mirum eße debet, quod die antecedente atque hoc locus ⊙ vno vel altero minuto ſecundum obſeruationem noſtrum calculum exceßerit, ſiquidem in hac ipſius decliui Altitudine atque alia aëris etiam cum ſerenißimus eſt, quam in Dania diſpoſitione, refractiones, quæ ſecundum diuerſa loca variant, necdum ſatis enucleatæ ſint, quod obſeruatio ⊙ iuxta ſolſtitium hybernum oſtendit, vbi refractiones duobus proxime minutis maiores adinuentæ ſunt, quam prius apud nos in Dania. Neque enim error minutulus in loco ⊙ ſi quis ſubeßet, tunc declinationem aut Altitudinem ſenſibiliter variare potuit.].

DIE 5 FEBRUARIJ. [5 February]

Around sunrise parhelia were seen, that is, two other ⊙, with the genuine and true one standing in the middle, as in the figure marked here [Circa ortum ⊙ viſebantur Parelia, i. e. duo alij ⊙, genuino & vero in medio exiſtente iuxta ſignatam figurationem.].

Diagram. A drawing across the full width of the page below both columns. Three discs stand on a horizontal line, each with a long tapering hatched streak rising vertically above it: a small disc at the left, a larger disc in the centre ringed by short radiating strokes and bearing marks on its face, and a small disc at the right. The central streak is the tallest and broadest. A second horizontal line runs parallel below the first; the word HORIZON is written between the two lines under the central disc, with a flourish trailing from it. Hand-lettered italic labels:

- Left, set vertically beside the left disc and its streak: "Color erat / qualis ferè Iridum" — "The colour was nearly like that of rainbows" [the mark over the final letters of "Iridum" is uncertain [?]].
- Between the left and central discs: "Dist. / G. 22." — "Distance 22°".
- Between the central and right discs: "Dist. / G. 22." — "Distance 22°".
- Between the two lines, under the central disc: "HORIZON".

Each of the adventitious ⊙ stood 22° [Part. 22] from the true one on either side, and they lasted at its sides, accompanying the true and genuine ⊙, until it had an altitude of about 15° [Diſtabat vterque adſcititius ⊙ vtrinque a vero Part. 22 & durarunt lateraliter cum concomitando verum & genuinum ⊙ vsque dum is haberet altitudinem 15 proxime graduum.].

Altitude of the ⊙ at noon on 5 February [Altitudo ⊙ in meridie diej 5 Februarij]	
By the revolving instrument [Per Volubilem]	23 42⅔
By the old sextant [Per Sextantem veterem]	23 43

By the solid brass quadrant [Per Quadr. ſolidum Orichalc.]	23 42

DIE 14 FEBRUARIJ. [14 February]

Meridian altitude of the ☉ [Altit. ☉ merid.]	
by the revolving quadrant [per Quadr. Volub.]	26 35
The same by the old wooden sextant [Eadem per Sext. veterem / ligneum]	precisely [præciſe] / 26 34⅔

DIE 21 FEBRUARIJ. [21 February]

The meridian altitude of the ☉ was [Fuit Altit. ☉ merid.]	
by the revolving instrument [per Volub.]	29 1½
Refraction removes [Refractio aufert]	1 35
Parallax adds [Parallaxis addit]	2 43
True altitude [Alt. vera]	29 2 38
Altitude of the equator [Alt. æquatoris]	39 41 30
Declination [Declinatio]	10 38 52
The quadrant was in error by [Quadrans aberrauit]	2
	10 40 52
Corresponding place of the ☉ [Reſp. locus ☉]	2 20 5 ♓
The ephemerides give [Ephemerides præbent]	2 18 18 ♓

DIE 22 FEBRUARIJ. [22 February]

At noon the altitude of the ☉ was [In meridie fuit altitudo ☉]	
by the revolving quadrant [per Quadr. Volub.]	29 23½
by the old sextant [per Sextantem Vet.]	29 23½
Refraction removes [Refractio aufert]	1 30
Parallax adds [Parallaxis addit]	2 37
True altitude [Alt. vera]	29 24 37
Declination from this [Declinatio hinc]	10 16 53
Corresponding longitude of the ☉ [Reſp. longitudo ☉]	3 26 19 ♓
The ephemerides give [Ephemerides præbent]	3 18 40 ♓

DIE 7 MARTIJ. [7 March]

Meridian altitude of the ☉ [Altit. ☉ merid.]	35 2⅙
while the air was somewhat murky [cum aër nonnihil obſcurus erat.]	

DIE 9 MARTIJ. [9 March]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	35 28⅙

DIE 16 MARTIJ. [16 March]

Meridian altitude of the ⊙ [Altitudo ⊙ merid.]	38 10 0
Refraction removes [Refractio aufert]	20
Parallax adds [Parallaxis addit]	2 20
True altitude of the Sun [Vera alt. ⊙lis]	38 12 0
True longitude of the ⊙ [Vera long. ⊙]	26° 16′ 7″ ♓,
Declination [Declin.]	1 29 5
Altitude of the equator [Altitudo æquatoris]	39 41 5
Elevation of the pole [Eleuatio Poli]	50 18 55

This exceeds the value found earlier by at least ⅓ of a minute [Quod ⅓ saltem minuti prius inuentam excedit.].

DIE 11 APRILIS. [11 April]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	48 13⅙

DIE 12 APRILIS. [12 April]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	48 35⅓

DIE 13 APRILIS. [13 April]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	48 56⅚

DIE 14 APRILIS. [14 April]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	49 20⅓

DIE 17 APRILIS. [17 April]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	
revolving quadrant [Quadr. Volub.]	50 23⅓
brass sextant [Sext. Orichalc.]	50 23⅔

DIE 18 APRILIS. [18 April]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	
by the revolving quadrant [per Q. Volub.]	50 45
by the brass sextant [per Sext. orich.]	50 43⅙[1]

DIE 21 APRILIS. [21 April]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	51 43¾

DIE 23 APRILIS. [23 April]

Meridian altitude of the ⊙, revolving quadrant [Alt. ⊙ merid. Quadr. Volub.]	52 26⅚

DIE 3 MAIJ. [3 May]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	55 33 40

DIE 26 JUNIJ. [26 June]

Meridian altitude of the ⊙, revolving quadrant [Altit. ⊙ merid. Quadr. Volub.]	63 10⅙

DIE 27 JUNIJ. [27 June]

Meridian altitude of the ⊙, revolving quadrant [Altit. ⊙ merid. Quadr. Volub.]	63 7

DIE 28 JUNIJ. [28 June]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	63 3½

DIE 29 JUNIJ. [29 June]

Meridian altitude of the ⊙ [Altit. ⊙ merid.]	63 0⅓

DIE 30 JUNIJ. [30 June]

Meridian altitude of the ⊙ [Altitudo ⊙ merid.]	62 57⅓

DIE 3 JULIJ. [3 July]

Meridian altitude of the ⊙ [Altitudo ⊙ merid.]	62 41⅚

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

Observation of the eclipse of the ⊙, which was seen in the year 1600 at Benátky, in the castle, in Bohemia, as follows: on 30 June, Old Style; 10 July, New Style [Obſeruatio Eclipſis ⊙lis quæ viſa eſt anno 1600 Bennaticæ in arce Bohæmiæ vt ſequitur Die 30 Junij veteri ſtilo: 10 Julij nouo.]

Diagram. An outline disc standing at the left of the following paragraph, with a thin dark crescent drawn against its right-hand edge, a little below the middle. No labels.

The beginning of this eclipse first became known to us at hour 12 after M. and 46′. The altitude of the Sun's centre was then 60° 35′. It was beginning to be darkened on the side that faced west, by about half a digit; the beginning could therefore have been at about minute 43 by the clock, or thereabouts. Corresponding: H. 0 46′ 10″. The true beginning of the eclipse was therefore H. 0.43 P. M. [Innotuit nobis primo initium huius Eclipſis hora 12 poſt M. & 46′. Eratque tunc Altitudo centri Solis 60° 35′. Et incipiebat ab ea parte, quæ in occidentem vergebat, obſcurari quaſi ad dimidium digitum: propterea initium eße poterat iuxta horologium circa minutum 43, vel circiter. Reſp. H. 0 46′ 10″. Fuit igitur verum initium Eclipſis H. 0.43 P. M.]

Diagram. An outline disc at the left of the following paragraph, with a hatched segment cut off at its lower right by a curved boundary. No labels.

Next, at hour 12 56′, the upper limb of the ⊙ was observed at an altitude of 60° 1′, while the obscuration of the ⊙ was about two digits. Corresponding: $0^{H}\ 57^{M}\ 36''$. [Deinde hora 12 56′ obſeruabatur ſuperior limbus ⊙ in altitudine 60° 1′, obſcuratio ⊙ autem erat quaſi duorum digitorum. Reſp. $0^{H}\ 57^{M}\ 36''$.]

Diagram. An outline disc at the left of the following paragraph, with a larger hatched segment at its lower right bounded by a curve. No labels.

H. 1 M. 1⅔: the upper limb of the Sun at 59° 43½′. The digits of the eclipse were then almost three. [H. 1 M. 1⅔ ſuperior limbus Solis 59° 43½′. Et tunc digiti Eclipſis erant ferme tres.]

Diagram. An outline disc at the left of the following paragraph, with a hatched lens-shaped segment at its lower right bounded by a curve. No labels.

Afterwards, at H. 1 11½′, the upper limb of the Sun was elevated 58° 50′, and about 3½ digits appeared. [Poſtea H. 1 11½′ ſuperior limbus Solis eleuabatur 58° 50′ & digiti apparebant fere 3½.]

Diagram. An outline disc at the left of the following paragraph, with a hatched segment at its lower right bounded by a curve. No labels.

At H. 1 14⅙′ the altitude of the Sun's upper limb was 58° 39′, and the Sun appeared to be eclipsed by only 3⅔. [H. 1 14⅙′ ſuperioris limbi Solis Altitudo erat 58° 39′ & tantum Sol defeciße videbatur 3⅔.]

Diagram. An outline disc at the left of the following paragraph, with a hatched segment at its lower part, towards the right, bounded by a curve. No labels.

At H. 1 11′ 40″ (1^{H} 16^{M} 50^{s} corr.) the altitude of the upper limb of the ☉ was 58° 26′ 30″, and the magnitude of the eclipse was a little greater. [H. 1 11′ 40″ (1^{H} 16^{M} 50^{s} corr.) Altitudo ſuperioris limbi ☉ 58° 26′ 30″ & quantitas Eclipſis erat paulo maior.]

Diagram. An outline disc at the left of the two following paragraphs, with a hatched segment at its lower part bounded by a curve. No labels.

At H. 1 14′ 10″ (1 19 20 corr.) the altitude of the upper limb was 58° 14½′, and the eclipsed digits [digiti Ecliptici] were about 4. [H. 1 14′ 10″ (1 19 20 corr.) Altitudo ſuperioris limbi 58° 14½′ & digiti Ecliptici erant 4 fere.]

At H. 1 18 40 (1 23 38 corr.) the altitude of the upper limb of the ☉ was 57° 41′, and the eclipse was of almost the same magnitude. [H. 1 18 40 (1 23 38 corr.) Altitudo ſuperioris limbi ☉ 57° 41′ & Eclipſis fere eiuſdem quantitatis erat.]

Diagram. An outline disc at the right of the following paragraph, with a hatched segment at its lower part, towards the right, bounded by a curve. No labels.

At H. 1 22½ (1 27 27 corr.) the altitude of the upper limb of the ☉ was 57° 23′. [H. 1 22½ (1 27 27 corr.) Altitudo ſuperioris limbi ☉ 57° 23′.]

Diagram. An outline disc at the right of the following paragraph, with a hatched segment across its lower part bounded by a curve. No labels.

At H. 1 33⅙ (1 38 6 corr.) both luminaries appeared to be almost in one vertical circle, and the Sun was darkened from its lower part by 5 digits, so that we could indicate neither more nor less. [H. 1 33⅙ (1 38 6 corr.) videbantur ambo luminaria quaſi in vno verticali, & Sol ab inferiori parte obſcuratus erat per digitos 5, ita vt neque plus neque minus indicare poteramus.]

Diagram. An outline disc at the right of the following paragraph, with a hatched segment across its lower part bounded by a curve; a small dot stands inside the disc just above the left end of the hatched segment. No labels.

At H. 1 37⅓ (1 42 15 corr.) the altitude of the Sun's upper limb was 55° 51′, and the earlier magnitude of the eclipse was still seen. [H. 1 37⅓ (1 42 15 corr.) Altitudo ſuperioris limbi Solis erat 55° 51′ & quantitas Eclipſis prior adhuc ſpectabatur.]

Diagram. An outline disc at the right of the following paragraph, with a densely hatched, dark segment across its lower part bounded by a curve. No labels.

At H. 1 40⅔ (1 45 34 corr.) the altitude of the upper limb of the ☉ was 55° 30′, and the ☾ had advanced towards the east. The face of the ☉ was like this: a little less than 5 digits [digit.]. [H. 1 40⅔ (1 45 34 corr.) Altitudo ſuperioris limbi ☉ erat 55° 30′ & ☾ verſus orientem proceßerat. Erat autem facies ☉ talis, paulo minus quam 5 digit.]

Diagram. An outline disc at the right of the following paragraph, with a cross-hatched segment at its lower part, towards the left, bounded by a curve. No labels.

Afterwards, at H. 1 42⅓ (1 47 10 corr.), the ☾ appeared more plainly to lie further east, and the eclipse was much diminished, so that 4⅓ digits remained. The altitude of the upper limb of the ☉ was 55° 14′. [Poſtea H. 1 42⅓ (1 47 10 corr.) ☾ manifeſtius apparebat orientalior & Eclipſis admodum diminuta vt ſupererant digiti 4⅓. Altitudo ſuperioris limbi ☉ erat 55° 14′.]

Diagram. An outline disc at the right of the following paragraph, with a hatched segment at its lower part, towards the left, bounded by a curve; the left end of the segment is filled solid dark. No labels.

At H. 1 46⅔ (1 51 33 corr.) the altitude of the upper limb of the ☉ was 54° 45′. According to the altitude of the ☉, however, the time should have been H. 1 51½′. The obscuration was roughly like this. [H. 1 46⅔ (1 51 33 corr.) Altitudo ſuperioris limbi ☉ erat 54° 45′. Tempus autem iuxta altitudinem ☉ debuit eße H. 1 51½′. Obſcuratio fere talis erat.]

Diagram. An outline disc at the right of the following paragraph, with a hatched segment at its lower part, towards the left, bounded by a curve. No labels.

At H. 1 51⅓′ (1 56 10 corr.) the altitude of the upper limb of the ☉ was 54° 11′, and at H. 1 52⅓′ the altitude of the upper limb of the ☉ was 54° 1′. The eclipse of the ☉ was of 3½ digits. [H. 1 51⅓′ (1 56 10 corr.) Altitudo ſuperioris limbi ☉ erat 54° 11′ & H. 1 52⅓′ Altit. ſuper. limbi erat ☉ 54° 1′. ☉ Eclipſis erat 3½ digitorum.]

Diagram. An outline disc at the left of the following paragraph, with a cross-hatched segment at its lower left, bounded by a curve. No labels.

At H. 2 19½ (2 24⅓ corr.) the altitude of the upper limb of the ☉ was 50° 35′, and about 2 digits appeared. The corrected hour, from the altitude, corresponds

to H. 2 24′ 4″. [H. 2 19½ (2 24⅓ corr.) Altitudo ſuperioris limbi ⊙ erat 50° 35′ & apparuerunt digiti circiter 2. Hora corr. ex alt. reſp. H. 2 24′ 4″.]

Diagram. An outline disc at the left of the following paragraph, with a stippled dark segment at its lower left, bounded by a curve; narrower than the segment of the preceding disc. No labels.

At H. 2 27⅚ (2 32⅔ corr.) the altitude of the upper limb of the ⊙ was 49° 28′, and the digits 1½. [H. 2 27⅚ (2 32⅔ corr.) Altitudo ſuperioris limbi ⊙ 49° 28′, digiti autem 1½.]

Diagram. An outline disc at the left of the following paragraph, with a narrow dark segment at its left, towards the bottom, bounded by a curve. No labels.

At H. 2 29⅓ (2 34⅙ corr.) the altitude of the upper limb of the ⊙ was 49° 12½′, and the obscuration showed us about 1 digit. [H. 2 29⅓ (2 34⅙ corr.) Altit. ſuper. limbi ⊙ erat 49° 12½′ & obſcuratio oſtendit nobis quaſi 1 digit.]

Diagram. An outline disc at the left of the following paragraph, with a thin dark sliver along its lower left edge. No labels.

At H. 2 31 (2 35¾ corr.) the altitude of the upper limb of the ⊙ was 48° 58′, and the obscuration was of 1 small digit. [H. 2 31 (2 35¾ corr.) Altit. ſuper. limbi ⊙ erat 48° 58′ & erat obſcuratio digiti 1 parui.]

Diagram. An outline disc at the left of the following two paragraphs, with a thin dark sliver along its lower left edge. No labels.

At H. 2 32⅙ (2 36 55 corr.) the altitude of the upper limb of the ⊙ was 48° 48½′, the obscuration ⅔ digit. [H. 2 32⅙ (2 36 55 corr.) Altit. ſuper. limbi ⊙ 48° 48½′, obſcuratio ⅔ digit.]

But in all the observations, and especially at the greatest obscuration, the circle of the ☾ appeared much smaller than the disc of the ⊙. [Sed in omnibus obſeruationibus & præcipue maxima obſcuratione circulus ☾ multo minor ⊙ diſco apparebat.]

Diagram. An outline disc at the left of the following paragraph, with a very thin dark sliver along its lower left edge. No labels.

At H. 2 33⅓ (2 38 corr.) the altitude of the upper limb of the ⊙ was 48° 39′. [H. 2 33⅓(2 38 corr.) Altit. ⊙ ſuper. limbi ⊙ 48° 39′.]

At H. 2 34½ (2 39⅙ corr.) the altitude of the centre of the ⊙ was 48° 17′. The magnitude of the eclipse was ½ digit and a little less. [H. 2 34½ (2 39⅙ corr.) Altit. centri ⊙ 48° 17′. Quantitas Eclipſis ½ dig. & paulo minus.]

The end. At H. 2 39½ nothing more could be observed, and the altitude of the upper limb of the ⊙ was 47° 43½′. This corresponds to H. 2 44′ 10″, corrected from the altitude. [Finis. H. 2 39½ nihil amplius obſeruari potuit, eratque alt. ſuper. limbi ⊙ 47° 43½′. Reſp. H. 2 44′ 10″ corr. ex altitud.]

N.B. From all the altitudes, in the preceding as well as the following observations, 2′ is always to be subtracted, since the Quadrant was noticed to have given the meridian altitudes 2′ higher than is correct. [N. B. Subtrahantur de omnibus altitudinibus ſemper tam in præcedentibus quam conſequentibus 2′, quod Quadrans altitudines meridianas 2′ iuſto altiores dediße animaduerſus.]

To correct the clock, the Sun was afterwards observed as follows. [Pro corrigendo horologio obſeruabatur poſtea Sol vt ſequitur.]

When the lower clock showed hour 3, the upper one was at about H. 3 10⅓′. [Cum horologium inferius monſtraret horam 3 ſuperius erat circa H. 3 10⅓′.]

	H. 3 9⅚	altitude of the centre of the ⊙ [Altit. Centri ⊙] 42° 59⅔′	good [bona]
	3 13 0	42 32	
	3 17 0	41 58	
I.	5 30⅙	21 1	
II.	5 32⅙	20 41	
III.	5 33⅔	20 30	good [bona]
IV.	5 37⅓	19 55	good [bona]
V.	5 41⅓	19 17	
VI.	5 43⅓	19 1	
VII.	5 46	18 36	
VIII.	5 47½	18 22	
XI.	5 48⅙	18 17	

There follows, from the given altitudes of the Sun, the determination of the times for the observations of the principal eclipse, and their comparison with the clock. [Sequitur ex datis altitudinibus ⊙ⁱˢ inquiſitio temporum ad præcipui deliquij animaduerſiones & cum Horologio collatio.]

H. M.	Alt. ⊙ seen, corr. [Alt. ⊙ viſa corr.]	Corresp. [Reſp.]	Diff.
0 41	60 33	0 46 0	5′ 0″
0 51	59 46	0 57 36	6 36
1 37 20	55 34	1 42 6	4 46
2 19 30	50 18	2 24 4	4 34
2 39 30	47 29½	2 44 10	4 40
3 9 50	42 57 40	3 14 40	4 50
5 33 40	20 28	5 37 35	3 55
5 37 20	19 51 15	5 41⅓	4 0

The lower clock, which we used in observing the eclipse, showed 10′ more than was correct at noon on the following day (but it is uncertain whether the clock had been advanced by anyone in the meantime)[1]. It was found, however, by means of another meridian line, that the meridian previously assumed was 5′ of time later than the true meridian. Therefore 5′ of time are to be added everywhere to the times the clock assumes; and this also agrees with the observations made by the altitude of the Sun, from which the times are to be derived by triangles. All the times in the preceding pages, moreover, have been corrected according to this reckoning, as the note placed beside them has it. [Horologium inferius quo vſi ſumus in obſeruanda Eclipſi in meridie ſequente 10′ plus iuſto habebat (ſed incertum eſt an interea a quoquam

promotum ſit Horologium)[1], ſed deprehenſum eſt per aliam lineam Meridiej, quod Meridianus prius præſuppoſitus 5′ temporis vero Meridiano poſterior fuit, ideoque 5′ temporis vbique addenda ijs quæ Horologium præſupponit, quod et concordat cum obſeruationibus per Altitudinem ⊙$^{l}{}_{i}{}^{s}$ factis, inde tempora per triangula elicienda. Sunt autem omnia tempora in antecedentibus iuxta hanc rationem correcta, prout habet appoſita annotatio.]

Accordingly, with each item weighed and delimited, in this eclipse of the Sun at Benátky in Bohemia, where I set the longitude at 39° 0′, the times were: [*Fuit itaque expenſis & limitatis ſingulis in hac Eclipſi Solis Bennaticæ in Bohæmia, vbi Long. ſtatuo 39° 0′*]

Beginning [*Initium*]	*0^{H}43^{M}*	
Middle [*Medium*]	*1 44*	*it may be 46* [*poteſt eße 46*]
End [*Finis*]	*2 45*	
Therefore the whole duration [*Ergo tota duratio*]	*2 2*	
Ecliptic digits [*Digiti Ecliptici*]	*5 0*	

Calculation of the solar eclipse that took place in the year 1600, on the 10th day of July, in the afternoon, from the restitution and tables of Tycho Brahe, for the longitude 38° 0′, which is gathered from the geographical tables to be that of Benátky in Bohemia. [Calculus Eclipſeos Solaris Anno 1600 Julij Die 10 poſt meridiem factæ ex reſtitutione & tabulis Tychonis Brahe, ad longitudinem 38° 0′, qualis colligitur ex tabulis Geographicis eße in Bennatika Bohemiæ.]

Beginning of the eclipse [Initium Eclipſis]	0^{H}46^{M}50^{s}
Middle [Medium]	1 47 0
End [Finis]	2 47 10
Duration [Duratio]	2 0 20
Ecliptic digits [Digiti Ecliptici]	4 50

These times agree very closely with our observations. [quæ tempora quam proxime cum obſeruationibus noſtris conueniunt.]

At Prague, by the quadrant of Lord Johann Friedrich Hoffmann, the altitude of the ⊙ at the beginning of the eclipse was part. 60 Min. 43. From this, at an elevation of the pole of part. 50 Min. 4½, the time comes out 0^{H} 47⅖ P.M. [Pragæ per Quadrantem Domini Joannis Friderici Hoffmanni fuit altitudo ⊙ in principio Eclipſis part. 60 Min. 43. Hinc prouenit in eleuatione Poli part. 50 Min. 4½ Tempus 0^{H} 47⅖ P. M.]

The observed meridian altitude of the ⊙ [Altit. ⊙ Meridiana obſeruata]:

at Prague [Pragæ]	62 5
Parallax [Parallaxis]	1 22 to be added [add.]
True altitude of the Sun [Vera altitudo Solis]	62 6 22
Declination of the Sun [Declinatio Solis]	22 10 52 north [Sept.]
Our computed declination [Decl. noſtra ſupputata]	22 18 35
Difference [Differentia]	7 43
Meridian altitude of the Sun [Altitudo Solis Meridiana]	
our computed [noſtra ſupputata]	62 12 43
observed [obſeruata]	62 5 0
	7 43

So many minutes are to be added to the altitude observed at Prague. [tot ſcrupula addenda ſunt ad altitudinem obſeruatam Pragæ.]

Altitude of the Sun at the beginning of the eclipse [Alt. Solis ad Init. Eclipſis]	60 35
Minutes to be added [Scrupula addenda]	7 43
Corrected altitude of the Sun [Altitudo Solis correcta]	60 42 43
Declination of the Sun [Declinatio Solis]	22 18 18
Complement of the elevation of the pole [Complementum eleuationis poli]	39 55 30
Angle [Angulus]	11 51 24

The time: H. 0 M. 47′ 25⅔″. [Tempus H. 0 M. 47′ 25⅔″.]

	According to the calculation of King Alfonso it was [Iuxta calculum Regis Alphonſi erat]	From the calculation of Nicolaus Copernicus [Ex calculo Nicolai Copernici]
Beginning [Initium]	1 21	1 20
Middle [Medium]	2 18	2 28
End [Finis]	3 15	3 36
Ecliptic digits [Digiti Eclipt.]	7 32	6 43

[1] Written in the margin. [[1] In margine adſcriptum.]

If at Graz in Styria [Gratiæ in Styria] the azimuth of the ☉ at the beginning was part. 20⅓ from the south toward the west, as Kepler [Keplerus] has it, the time $0^{H}40⅔'$ is inferred from it, assuming an altitude of the pole of 47°.

Lord [Dominus] Johannes Maginus [Giovanni Antonio Magini], public professor there, sent me the observation of this eclipse made in Italy at Bologna [Bononiæ], in these words:

"The beginning was about ten minutes before hour 17 of the Italian clock [horologij Italici]. For because of the cloudy sky the Sun could not be seen at the beginning, but I arrived at that time by conjecture. The middle was at

about hour 17.45′. The end was a little while before hour 19, for the end was not precisely visible because of the clouds. But at hour 18¾ the eclipsing itself was at about half a point [ad dimidium punctum]. The eclipsing was somewhat smaller than my description [deſcriptione mea], but of about six digits."

From this it is inferred that at an elevation of the pole of 44° the beginning of the eclipse was at hour 0.23′ p.m., the limited middle [Medium limitatum] at hour 1.22, and the end at hour 2.23′. So the whole duration would be H. 2, which agrees well enough with the observation made here at Prague [Pragæ].

The difference of the meridians, however, roughly and short of the required limitation of the parallaxes [vtcunque citra parallaxium limitationem requiſitam], is inferred from this as about 22′ as near as may be, that is 5 gr. 30′. The longitude of Bologna would therefore be 32½, assuming the longitude of Prague as 38° 0′. And yet, according to our earlier reckonings, the difference of the meridians cannot reach half a degree.

Up to this point I had continued the observations of this year in the castle of Benátky in Bohemia [in arce Bohæmiæ Benatika]. But after His Imperial Majesty had returned to Prague from Pilsen [Pilſena], where he had been absent for three quarters of the year because of the plague, he most graciously wished me to be summoned there. There I remained for the whole rest of the year, living with my family at first in the part of the city near the Castle [Arci], where for five months it was not possible to carry out any observations, because no facility was given. My instruments, however, had been brought to Prague — both those I had had at Benátky [Benaticæ] and those which had meanwhile been brought from Magdeburg to Lismerisium[1] [Magdeburgo Liſmeriſium[1]] — and by the Emperor's order they were all first set up in his house which stands next to the Castle garden, magnificently built by the Emperor Ferdinand [a Ferdinando Cæſare], so that His Majesty could inspect them more conveniently; and this happened three times. There they rested for two months, until the Emperor should provide a more suitable place for them. Nor did clear weather shine often during this whole remaining part of the summer; for the most part the air was dark and cloudy.

MENSE DECEMBRI. [In the month of December]

In the Emperor's house near the garden, where my instruments were still being set up, the following was observed on the Sun as it approached the winter solstice.

DECEMBRIS DIE 11. [11 December]

Altitude of the Sun with the revolving quadrant [Altitudo Solis per Q. Volub.]	16 50
with the steel quadrant [per Q. Chalyb.]	16 50⅔
with the sextant [per Sextantem]	16 51

Taking, therefore, the observation made with the steel quadrant [per Quadr. Chalyb.], I shall investigate the elevation of the pole from it.

Observed altitude [Alt. obſeruata]	16° 50′ 40″	
Refraction [Refractio]	6 30	S.
Parallax [Parallaxis]	2 50	A.
True altitude [Altit. vera]	16 47 0	
True longitude of the ⊙ [Vera longit. ⊙]	19 48 31	♐
Corresponding declination [Reſp. Declinatio]	23 7 55	
Altitude of the equator [Altit. Æquat.]	39 54 55	
Elevation of the pole [Eleuatio Poli]	50 5 5	

DIE 13 DECEMBRIS. [13 December]

Altitude of the ⊙ with the revolving instrument [Altit. ⊙ per Volubilem]	16 42
with the steel instrument [per Chalybeum]	16 42½
with the sextant [per Sextantem]	16 43

[1] Leitmeritz on the river Elbe, which was navigable as far as that. [[1] Leitmeritz ad Albim fluvium, qui usque eo navigabilis erat.]

On this day, with the plumb-lines corrected, it was found that the revolving instrument had previously given altitudes 1′ smaller than correct. If, therefore, this is guarded against here, it will be:

Observed altitude [Altit. obſeruata]	16 43 0	
Refraction [Refractio]	6 40	S.
Parallax [Parallaxis]	2 53	A.
True altitude [Altitudo vera]	16 39 13	
True place of the ⊙ [Verus locus ⊙]	21 51 3	♐
Corresponding declination [Reſp. Declinatio]	23 16 20	
Hence the elevation of the pole [Hinc eleuat. Poli]	50 4 27	

DIE 14 DECEMBRIS. [14 December]

With the revolving instrument [Per Volubilem]	16 38½
With the steel instrument [Per Chalybeum]	16 39⅙
With the sextant [Per Sextantem]	16 40

Since today the ⊙ cast a very faint shadow at noon because of the misty air, it was observed by eye through the slits of the pinnules [per pinnacidiorum rimulas].

Observed altitude [Altit. obſeruata]	16 39 10	
Refraction [Refractio]	6 40	S.
Parallax [Parallaxis]	2 52	A.
True altitude [Altitudo vera]	16 35 22	
True place of the ☉ [Verus locus ☉]	22 52 19	♐
Corresponding declination [Reſp. Declinatio]	23 19 50	
Elevation of the pole [Eleuatio Poli]	50 4 48	

DIE 27 DECEMBRIS. [27 December]

Meridian altitude of the ☉ with the revolving instrument [Altit. merid. ☉ per Volub.]	16 37⅔	
with the sextant [per Sextantem]	16 38½	
with the steel instrument [per Chalyb.]	16 36⅓	
Observed altitude [Altit. obſeruata]	16 38 0	
Refraction [Refractio]	6 45	
Parallax [Parallaxis]	2 50	
True altitude [Altitudo vera]	16 34 13	
True place of the ☉ [Verus locus ☉]	5 8 7	♍
Corresponding declination [Reſp. Declinatio]	23 22 55	
Elevation of the pole [Eleuatio Poli]	50 2 52	

DIE 29 DECEMBRIS. [29 December]

Meridian altitude of the ☉ with the steel instrument [Altit. ☉ merid. Chalybeo]	16 43¼	
Refraction [Refractio]	6 45	
Parallax [Parallaxis]	2 58	
True altitude [Altitudo vera]	16 39 28	
True place of the ☉ [Verus locus ☉]	8 12 8	♍
Corresponding declination [Reſp. Declinatio]	23 16 12	
Elevation of the pole [Eleuatio Poli]	50 4 20	

DIE 30 DECEMBRIS. [30 December]

Meridian altitude of the ☉ with the steel instrument [Altit. ☉ merid. Chalybeo]	16 46⅝	
Refraction [Refractio]	6 45	
Parallax [Parallaxis]	2 58	
True altitude [Altitudo vera]	16 43 3	
True place of the ☉ [Verus locus ☉]	9 13 28	♍
Corresponding declination [Reſp. Declinatio]	23 12 12	
Elevation of the pole [Eleuatio Poli]	50 4 45	

OBSERUATIONES LUNÆ. [Observations of the Moon]

Calculation of the lunar eclipse due on Sunday morning [Die Solis mane], 30 January of the year 1600, according to the restoration of the motion of both luminaries, for the longitude of the place 38⅚, at Benátky [Benaticæ].

The true ☍ of the luminaries was found for Uraniborg [Vraniburgi] on day 29, H. 19 M. 30, with respect to mean time. This is confirmed by the following motions, taken for the same time from the restored Tychonic tables [ex reſtitutis Tychonianis Tabulis].

Simplex ☉	10ˢ	8°	43′	0″
Apogee of the ☉ [Apogæum ☉]	3	5	39	0
Anomaly of the ☉ [Anomalia ☉]	7	3	4	0
Prosthaphaeresis of the ☉ [Proſtaph. ☉]		1	9	16
True place of the ☉ [Verus Locus ☉]		9	52¼	♒
Simplex ☾ a ☉	5	26	39	58
Anomaly of the ☾ [Anomalia ☾]	9	34	39	7
Motion of latitude of the ☾ [Motus Latitudinis ☾]	6	5	43	50

For the true place of the ☾ [Pro vero Loco ☾]

Double longitude of the ☾ from the ☉ [Duplex Long. ☾ a ☉]	11ˢ	23°	39′	56″	
Corresponding equation of the centre, subtr. [Reſp. Æquatio Centri ſubt.]			5	0	
Annual variation, subtr. [Variatio annua ſubt.]			1	50	
Prosthaphaeresis of the 2nd epicycle, subtr. [Proſtaph. 2 Epicycli ſubt.]		1	34	15	
Proportional minutes [Scrupula proportionalia]				12	
Equated anomaly of the ☾ [Anomalia ☾ coæquata]	9	23	4	52	
Prosthaphaeresis of the first epicycle [Proſtaph. primi Epicycli]		4	25	10	
Excess [Exceßus]		2	15	6	
Corresponding part [Pars congruens]				25	
Corrected prosthaphaeresis, add. [Proſtaph. correcta add.]		4	25	35	
Prosthaphaeresis, finally completed [Proſtaph. vltimo abſoluta]		4	18	45	
True longitude of the ☾ from the ☉ [Vera Longitudo ☾ a ☉]	6	1	8	43	
True place of the ☾ [Verus locus ☾]		9	51	43	♌
Place of the ☉ [Locus ☉]		9	52	15	♒
Difference [Differentia]				32	

Corresponding to this [Reſp.], about one minute of time is to be added. Therefore the time of the true ☍ at Uraniborg [Vraniburgi] was H. 7 M. 31. The difference of the meridians between Uraniborg in Denmark and Benátky in Bohemia [Benaticam Bohemiæ]: 9 M., to be added. Equation of time: subtract 7 M.

Therefore the time of the true ☍, that is, of the middle of the eclipse, at Benátky [Benaticæ] on 30 January in the morning was H. 7 M. 33.

For the magnitude of the eclipse [Pro quantitate Eclipſeos].

Motion of latitude [Motus Latitudinis]	6ˢ	5°	43′	50″
Prosthaphaeresis of the nodes, subtract [Proſtaph. Nodorum ſubt.]			10	30
	6	5	33	20
		4	18	45
True motion of latitude [Verus M. Latitudinis]	6	9	52	5
Corresponding minutes of latitude [Reſp. Scrupula Latitud.]			51	8
				south [Mer.]
Semidiameter of the shadow, corrected [Semidiameter vmbræ corr.]			39	0
Semidiameter of the ☾ [Semidiameter ☾]			16	38
Sum of the semidiameters [Aggregatum ſemidiametrorum]			55	38
Therefore the minutes of the eclipse [Ergo minuta defectionis]			4	30

That is, about 1⅗ digits [Hoc eſt digit. 1⅗ fere.].

Arc of the ☾'s path from the beginning of the eclipse to the middle [Arcus viæ ☾ a principio deliquij ad medium]	22′ 5″
Corresponding in time [Reſp. in tempore]	45′ 24″
The beginning is therefore [Eſt itaque initium]	H. 6 47⅗′
Middle [Medium]	H. 7 33
End, which is not seen [Finis qui non viſitur]	H. 8 18⅖
The Prutenic Tables give the middle of the eclipse [Tabulæ Prutenicæ dant Medium Eclipſeos]	H. 6 46′
and the greatest magnitude about 3 digits [et quantitatem maxim. fere 3 digit.]	
The Sun rises, with refraction [Sol oritur refracte]	H. 7⅖.

Therefore from the beginning of the eclipse to sunrise [ad ortum ☉]: 36 M. of an hour. The transit of the ☾ through the nonagesimal degree of the ecliptic [Tranſitus ☾ᵃᵉ per Nonageſimum Gradum Eclipticæ], 29 January, H. 12 34′ at night.

Right ascension of the ☉ [Aſcenſio recta ☉ˡⁱˢ]: 311° 40′.

NOCTE SEQUENTE 4 FEBRUARIJ. [The night following 4 February]

The ☾ was observed, which on the following day at 20 hours after noon was in □ with the ☉. Around the time of these observations, moreover, the ☾ stood near the 90th degree of the ecliptic from the horizon, since it stretched its horns toward the zenith; and so it could not introduce any evident parallax of longitude [parallaxin Longitudinis].

H. M.	Distance ☾ & ♀ [Diſtantia ☾ & ♀]	Alt. ♀	Alt. of the lower limb of the ☾ [Alt. inf. limb. ☾]
7 14	69 20	17 32	11 25

H. M.	Distance ☾ & ♀ [Diſtantia ☾ & ♀]	Alt. ♀	Alt. of the lower limb of the ☾ [Alt. inf. limb. ☾]
7 16	69 19⅔	17 38	12 20
7 18	69 19⅔	17 48	12 10
7 21	69 19⅔	17 52	12 5

In the distances of the ☾ from ♀ its eastern limb was taken, which was the fuller one, and therefore about 15′ are to be added for the central distance. In the altitude, however, the limb of the lower horn was taken, with the Revolving Quadrant [per Quadrantem Volubilem]; so a quarter of a degree also had to be added to each of the altitudes. The times of these observations can be checked from the altitudes of ♀, whose places in longitude and latitude [quoad Longum & Latum] are computed from the preceding observations; but the latitude of the ☾, and its declination, must be found by our own calculation, for no stars were visible from which these could be derived.

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

I observed ♄ and the ☾ near the meridian, as follows.

$4^{H}35^{M}$	♄ passed through the meridian; its altitude was then [Tranſiuit ♄ per Meridianum, fuit tunc altitudo eius]	31 11⅛
4 40¾	The lower horn of the ☾, the one toward the west, passed the merid. [Tranſiuit merid. inferius cornu ☾ quod verſus occaſum]	21 9
4 44	The eastern limb of the ☾ passed through the merid. Altit. of the upper horn was then [Tranſiuit orient. limbus ☾ per merid. Altit. ſuper. cornu tunc fuit]	21 36
4 47⅚	Repeated alt. of the lower limb [Repetita infer. limbi alt.]	21 7
	but the ☾ had then passed slightly beyond the meridian [ſed ☾ tunc parumper prætergreßa Meridianum].	

The position and shape of the ☾ when it was on the meridian were as follows.

Diagram. A freehand sketch of the Moon's disc: a circle with an inner curved line running from the top of the disc to the lower right, the area to the left of that curve hatched and the area to the right left white. A straight vertical line passes through the disc and projects above and below it. Labels as drawn:

- MERID. (above the disc, at the top of the vertical line)
- B (upper left of the disc)
- ORI. (left of the disc)
- C (lower left of the disc)
- D (inside the white part of the disc, beside the vertical line)
- OCCID (right of the disc)
- A (lower right of the disc)

Therefore, from the transit of the western limb, that is, of the lower horn, to the middle, that is, the centre of the ☾, the difference in time is about as great as from the centre D to the western limb at C, but less by roughly a third; from this the difference of ascension of the centre of the ☾ and ♄ [Differentia

aſcenſionalis centri ☾ & ♄] will become clear as follows. The difference in time is 5′ 48″, which makes in the first and universal motion [in motu primo & vniuerſali] G. 1 M. 27; to the last, however, when the eastern limb [quando orientalis limbus], 9′ 0″ make G. 2 M. 15; difference 48′, a third part of which is 16 Min., which are to be added to the difference of asc. of the transit of the lower horn. So the diff. of asc. of ♄ and the ☾ is G. 1 M. 43, or at most 44.

By the new pinnule, adjusted on Spica and the heart of ♌ [Cor ♌] by 54° 2′ [Per pinnacidium nouum rectificatum ad Spicam & Cor ♌ per 54° 2′].

DIE 9 MARTIJ, MANE. [9 March, morning]

At about 7 in the morning [Circa 7 Mat.] the ☾, standing on the meridian near the beginning of ♍, had by the Revolving Quadrant [Quadr. Volub.] the altitude:

Of the upper horn [Superioris Cornu]	13° 14′
Of the lower horn [Inferioris Cornu]	12 42
Difference of the diameter [Differentia Diametri]	0 32
Altitude of the centre of the ☾ [Altitudo centri ☾]	12 58

According to our calculation the ☾ was then in ♍ 1° 24½′; latitude [Latitudo] 2 21 8 M.

Parallax of altitude [Parallaxis Altitudinis]	54 40

The altitude of the ☾ ought to have been:

2 21	
23 31	
25 52	25 51
39 41½	55
13 49½	24 56
54 40	39 41
14 44	14 45

DIE 21 MARTIJ, VESPERI. [21 March, evening]

The ☾ was in quadrature, at the greatest distance of both epicycles [in maxima remotione vtriuſque epicycli]. When it had already passed the meridian and the 90th degree:

Distance of the western limb of the ☾ from ♃ [Diſtantia occid. limbi ☾ a ♃]	41° 8⅓′
Alt. of the upper horn was then [Alt. ſup. cornu tunc erat]	54 28

Altitude of Aldebaran [Aldeboræ altit.]	30 2
Dist. repeated [Diſt. repetita]	41 7½
Altit. of Aldebaran [Altit. Aldeboræ]	29 23⅔
Dist. repeated [Diſt. repetita]	41 7⅓

DIE 23 MARTIJ. [23 March]

In the evening after sunset [poſt occaſum ☉], a little before ♂ crossed the meridian, the ☾, which had already passed quadrature by about two days, was on the meridian, having an altitude, as regards the uppermost horn, of 60° 24′.

8^H14^M	Dist. of the western limb of the ☾ from the bright star in the foot of ♊ [Diſt. occid. limbus ☾ a luc. pede ♊]	24 23
	Altit. of Aldebaran [Altit. Aldeboræ]	28 42½
8 18	Dist. repeated [Diſt. repetita]	24 24½
	Altit. of Aldebaran [Altit. Aldeboræ]	28 3
8 22	Dist. repeated [Diſt. repetita]	24 25
	Altit. of Aldebaran [Altit. Aldeboræ]	27 17
	Afterwards, conversely, it was taken from the heart of ☋, as follows [Poſtea vice verſa accipiebatur a Corde ☋ vt ſequitur].	
8 35	The ☾ was distant from the heart of ☋, as regards the western limb of the ☾ [Diſtabat ☾ a Corde ☋ quoad occid. limbum ☾.]	26 54
	The altit. of the tail of ☋ was then [Fuit tunc altit. Caudæ ☋]	43 31½
8 41	Repeated [Repetita]	26 53
	Altit. of the tail of ☋ [Altit. Caudæ ☋]	44 15

DIE 25 MARTIJ, VESPERI. [25 March, evening]

9^H18^M	The upper western limb of the ☾ passed through the merid., having Alt. [Tranſiuit occid. limbus ☾ ſuper. per Merid. habens Alt.]	51° 26½′
	Altitude of the lower limb of the ☾ [Altitud. infer. limbi ☾]	50 57
	The western limb was then distant from the tail[1] of ☋ [Diſtabat tunc occid. limb. a Cauda[1] ☋]	27 42
9 28⅔	Cor ☋ was crossing the merid. [Tranſibat Cor ☋ per Merid.]	53 35⅔

	Dist. of the ☾ from the bright star in the foot of ♊ [Diſt. ☾ a luc. pede ♊]	Altit. of the bright star in the foot of ♊ [Altit. luc. ped. ♊]
9 32½	49 23	34 53
9 36½	49 24½	34 28
9 39½	49 25½	34 11

	Dist. of the ☾ from the bright star in the foot of ♊ [Dist. ☾ a luc. pede ♊]	Altit. of the bright star in the foot of ♊ [Altit. luc. ped. ♊]
9 41½	49 26¼	33 48
	Conversely, the ☾ from the tail of ♍ [Vice versa ☾ a Cauda ♍.]	
9 54	27 33⅝	31 53
9 57	27 31⅝	31 27

Afterwards, as the ☾ approached 90 G., it was observed in this way.

	Dist. of the ☾ from the bright star in the foot of ♊ [Dist. ☾ a lucid. ped. ♊]	Alt. of the bright star in the foot [Alt. luc. ped.]
10 28	49 37	26 11
10 31½	49 39	26 0
10 33½	49 40	25 50
	Conversely, the ☾ from the tail of ♍ [Vice versa ☾ a Cauda ♍.]	
10 42	27 18	24 31
10 47¾	27 36	23 28

After this nothing further was observed on the ☾ this evening, since it had already passed the 90th degree from the ecliptic.

[1] The codex has: Corde [Codex habet: Corde.]

DIE 20 APRILIS, VESPERI. [20 April, evening]

$7^{H}17^{M}$	Dist. of the western limb of the ☾ from ♃ [Dist. limbi occid. ☾ a ♃]	6° 33′
7 18⅝	Repeated [Repetita]	6 32½
7 21	Repeated [Repetita]	6 31½
7 25⅓	Dist. of the western limb from the heart of ♍ [Dist. limbi occid. a Corde ♍]	18 19
7 28⅓	Repeated [Repetita]	18 16
7 30½	Repeated [Repetita]	18 15⅝

Altitude of Arcturus in the east [Altit. Arcturi orientalis] 30° 40′, corresponding to [resp.] $7^{H}32½'$.

	Dist. of the western limb of the ☾ from the lower head of ♊ [Dist. occid. limbi ☾ ab infer. cap. ♊]	Altitude of Arcturus [Altitudo Arcturi]
7 33⅔	18[1] 16 doubtful [dubia]	31 25⅙
7 36	18[1] 13	31 50⅙

	Dist. of the western limb of the ☾ from the lower head of ♊ [Diſt. occid. limbi ☾ ab infer. cap. ♊]	Altitude of Arcturus [Altitudo Arcturi]
7 38⅚	20 8⅓	32 20½
7 40½	20 10⅓	32 40
	Dist. of the western limb of the ☾ from Canis Minor [Diſt. occ. limbi ☾ a Cane minore]	
7 44⅚	21 14	33 18
7 45⅙	21 15½	33 30½
7 47⅚	21 15⅔	33 46

For the true place of the ☾ from these observations [Pro vero loco ☾ ex his obſeruationibus]. First, subtract 1½′ from all the distances for the parallax of the instrument [pro parallaxi inſtrumenti].

From Procyon [A Procyone]	Longitude of the ☾ [Longitudo ☾]	6° 23′ ♌
From the heart of ♌ [A Corde ♌]		6 20 22″
The limited longitude of the ☾ will therefore be [Erit ergo Longit. ☾ limitata]		6 21½
	Southern latitude [Latitudo Merid.]	1 33 40

DIE 28 MAIJ, MANE. [28 May, morning]

After the preceding midnight [Poſt mediam noctem antecedentem].

I myself observed the full Moon from the window of my bedchamber (for the full moon fell a little after the preceding midnight) for about an hour and a half [per ſesquialteram circiter horam]. It was not far from the heart of ♏ [Corde ♏], so that it had one and the same latitude as that star, by a line running from the star centrally through the ☾. Watching carefully, the eastern limb of the ☾ was, as far as sight goes [quoad viſum], distant from the said star Anthanor [dicta Anthanoris ſtella] by three diameters of its own body, so that the distance of the centre of the ☾ was about P. 1 M. 50, or at most two degrees [partium duarum]; you may reasonably take it as P. 1 55′. The visible conjunction was therefore about 4 hours earlier, and the ☾ could have eclipsed Anthanor. To establish the time of this observation, I watched the meridian line through the window, which I had determined beforehand, and saw that the head of Ophiuchus [Caput Ophiuchi] was then near the meridian. It was therefore about the first hour after midnight. You can examine these things more exactly at another time.

OBSERUATIONES SATURNI. [Observations of Saturn]

NOCTU QUÆ PRÆCEDEBAT 1 JANUARIJ. [In the night preceding 1 January]

Distance of ♄ from the northern scale-pan [Diſtantia ♄ a Lance Borea]	17° 30½′
Repeated [Repetita]	17 29⅔
Repeated [Repetita]	17 30½
Conversely, dist. of ♄ from Spica ♍ [Vice verſa Diſt. ♄ a Spica ♍]	10 12
Repeated twice [Repetita bis]	10 12
Meridian altitude of ♄ [Altitudo ♄ Merid.]	
by the revolving instrument [per Volub.]	31 24⅚
Right asc. of ♄ from Spica [Aſc. R. ♄ e Spica]	206 20 30
from the scale-pan [ex lance]	206 13 34
limited [limitata]	206 17 2
True place of ♄ [Verus locus ♄]	♎ 27 21 46
Latitude [Latitudo]	B. 2 28 5

NOCTE QUÆ PRÆCESSIT 20 JANUARIJ. [In the night that preceded 20 January]

As the morning twilight was coming on, the dist. of ♄ from Spica ♍ was observed [obſeruabatur Diſt. ♄ a Spica ♍]: 10 59.

No more could be observed of ♄ that night, because the sky was soon overcast with clouds and the morning dawn was coming on. ♄, however, appeared to stand on the straight line drawn from the more southern star in the hems of the garments of ♍ [ab auſtraliore in fimbrijs veſtimentorum ♍] to the uppermost and more northern star in the wing of the Crow [in ala Corui]. This star, moreover, is this year in 28° 50′ ♎, latitude 2° 57½′[2].

[1] It should be 20° [Debet eße 20°.]

[2] 98 κ Virginis [98 κ Virginis.]

NOCTE PRÆCEDENTE 22 JANUARIJ. [The night preceding 22 January]

At H. 3½ ♄ appeared, as also two days before [vti & ante biduum], in the same straight line as the lowest and southern star in the hem of ♍ [cum infima & Auſtrali in fimbria ♍], to which it was close, a line running toward the uppermost star of the wing of the Crow [ad ſupremam alæ Corui]; and ♄ was the more westerly star, distant from it with the Radius [per Radium] 0° 36½′.

Afterwards the distance of ♄ was taken [Poſtea ſumebatur diſtantia ♄]	
from the 3rd in the wing of ♍ [a 3 in ala ♍]	23 37 twice [bis]
And the dist. of ♄ from Spica ♍ [Et diſt. ♄ a Spica ♍]	11 2 three times [ter]
Of the same from the southern scale-pan of ♎ [Eiusdem a lance auſtrali ♎]	11 23 twice [bis]

And these were done before Spica had crossed the merid., at an altit. of [Atque hæc fiebant antequam Spica tranſierat Merid. in Altit.]	30 42⅓
The merid. altit. of ♄ was observed [Altit. merid. ♄ obſeruabatur]	31 12⅔
Merid. altit. of the southern scale-pan [Altit. merid. lancis auſtr.]	25 30

NOCTE PRÆCEDENTE DIEM 24 JANUARIJ. [The night preceding the day 24 January]

Dist. of ♄ from the 3rd of the wing of ♍ [Diſt. ♄ a 3 Alæ ♍]	23 45½
The same, repeated [Eadem repetita]	23 45⅚
The same, repeated a 3rd time [Eadem 3 repetita]	23 45⅚
Dist. of ♄ from the northern scale-pan of ♎ [Diſt. ♄ a lance Boreali ♎]	16 29½
The same, repeated [Eadem repetita]	16 29⅓
The same, repeated [Eadem repetita]	16 29½
Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	11 4½
The same, repeated [Eadem repetita]	11 4⅔
The same, repeated a third time [Eadem tert. repetita]	11 4½
Dist. of ♄, conversely, [Diſt. ♄ vice verſa]	
from the southern scale-pan of ♎ [a lance Auſtr. ♎]	11 3
The same, repeated [Eadem repetita]	11 3
The same, repeated a third time [Eadem tert. repetita]	11 3
Meridian altit. of Spica ♍ [Altit. Spicæ ♍ meridiana]	30 38⅚
Meridian altit. of ♄ [Altit. ♄ meridiana]	31 10⅙

This can be verified and limited according to the altitude of Spica found[1] [Quæ verificari & limitari poteſt iuxta Altitudinem Spicæ inuentam[1]].

NOCTE QUÆ PRÆCEDEBAT 3 FEBRUARIJ. [The night that preceded 3 February]

Distance of ♄ from Spica ♍ [Diſtantia ♄ a Spica ♍]	11 15
Repeated twice [Repetita bis]	11 15
Dist. of ♄ from the northern scale-pan of ♎ [Diſt. ♄ a lance boreali ♎]	16 18⅓
Repeated twice [Repetita bis]	16 18⅓
Meridian altit. of ♄ [Altit. meridiana ♄]	31 5⅔

DIE 3 FEBRUARIJ. [3 February]

♄ was observed approaching its first station [ſtationi primæ], within two or three days.

Altit. of ♄ merid. [Altit. ♄ merid.]	31° 7⅓′
Limited [Limitata]	31 6 37″

Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	11 12
Repeated twice [Repetita bis]	16 18⅔
Limited [Limitata]	16 19⅙

From these the place of ♄ can be investigated near the first station, to confirm the parallax of the orb [parallaxin orbis], as Copernicus calls it, or the annual motion of the centre according to our hypotheses [ſiue motu centri annuo iuxta noſtras Hypotheſes].

NOCTE SEQUENTE 4 FEBRUARIJ. [The night following 4 February]

$3^{H}52^{M}$	Merid. altit. of Spica ♍ [Altit. Merid. Spicæ ♍]	30 41⅓
4 39½	Merid. altit. of ♄ [Altit. Merid. ♄]	31 9⅔
	Limited [Limitata]	31 8 57
4 45	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	11 14⅔
4 53	Repeated [Repetita]	11 14⅔
	Repeated [Repetita]	11 14⅔
5 23½	Dist. from the northern scale-pan [Diſt. a lance Borea]	16 18
	Repeated [Repetita]	16 18 twice [bis]
5 38	Dist. of ♄ from the heart of ♌ [Diſt. ♄ a Corde ♌]	64 29 three times [ter]

This distance, repeated three times within 5 minutes of time and found exactly the same, was taken with the pinnule of new invention [per pinnacidium nouæ inuentionis] at the middle of the radius of the sextant. But since, as I also indicated before, the pinnule was not yet set up and adjusted precisely enough, this distance may be 3′ too large, as also happened before in taking the separation [remotionem] of Spica and the heart of ♌; so the truer distance is 64° 26′2.

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

♄ and the ☾ were observed near the meridian, as follows.

$4^{H}35^{M}$	♄ passed through the merid.; its altitude was then [Tranſiuit ♄ per Merid., fuit tunc Altitudo eius]	31 11⅓
5 37	Dist. of ♄ and the heart of ♌ [Diſt. ♄ & Cordis ♌]	64 17
5 39⅓	The same, repeated [Eadem repetita]	doubtful [dubia]
5 41⅙	The same, repeated [Eadem repetita]	64 16
	The altit. of Regulus was then [Fuit tunc Altit. Reguli]	17 50
5 45	The same, repeated [Eadem repetita]	64 15½
5 48	Dist. of ♄ from the bright star of the neck [Diſt. ♄ a luc. Ceruic.]	64 27⅓
	The alt. of the neck of ♌ was then [Fuit tunc Alt. Ceruic. ♌]	25 3
5 50	The same dist., repeated [Eadem repetita diſt.]	64 26½

5 58⅓	The same, repeated a third time [Eadem tertio repetita]	64 28

[1] You will find the observations of the distance of ♀ from ♄ below, among the observations of ♀ [Obſervationes diſtantiæ ♀ a ♄ infra inter obſervationes ♀ invenies.]

[2] Thereafter the distance of ♀ from ♄ was observed. See below [Deinceps obſervata eſt diſtantia ♀ a ♄. Vide infra.]

At the time of these observations ♄ was among rather scattered clouds, and so it could not be taken more precisely; but set the dist. from the heart of ♌ at 64° 27½′. The bright star of the neck introduced no perceptible refraction. [♄ fuit inter rariuſculas nubes tempore harum obſeruationum, ideoque præciſius accipi non potuit, ſed pone diſt. a Corde ♌ 64° 27½′. Lucida Ceruicis nullam ingeßit ſenſibilem refractionem.]

$5^{H}58^{M}$ Altitude of the bright star of the neck [Altitudo Lucid. Ceruicis] 21 35

From this the clock was corrected, and all the preceding times are sufficiently corrected. [Hinc correctum eſt horologium & tempora omnia antecedentia ſunt ſatis correcta.]

DIE 19 FEBRUARIJ MATUTINO TEMPORE. [19 February, in the morning]

Distance of ♄ from the northern scale-pan of ♎ [Diſtantia ♄ a lance ♎ Borea] 16 24⅓

Although this distance was taken only once, because of the clouds in the way, it was nevertheless quite exact, and it can be compared with the preceding and following observations once the declination or latitude of ♄ has been brought in here from elsewhere. Afterwards the whole sky clouded over, so that nothing further could be observed. [Quæ diſtantia, licet ſemel tantum accepta ſit, propter nubes impedientes, fuit tamen ſatis exacta, poteſtque cum antecedentibus & ſubſequentibus obſeruationibus conferri, Declinatione vel Latitudine ♄ aliunde huc applicata. Poſtea totum cœlum obnubilabatur, vt nihil vlterius obſeruare licuerit.]

DIE 22 FEBRUARIJ INCIPIENTE, MANE. [at the start of 22 February, morning]

Merid. altit. of the bright star in the loins of ♌ [Altit. merid. Lucidæ in lumbis ♌]	62 24⅓
Merid. altit. of the tail of ♌ [Altit. merid. Caudæ ♌]	56 30⅚
Merid. altit. of the 3rd of the wing of ♍ [Altit. merid. 3 alæ ♍]	40 28½
Merid. altit. of Spica ♍ [Altit. merid. Spicæ ♍]	30 40⅓

Afterwards ♄ was observed as follows. [Poſtea obſeruabatur ♄ vt ſequitur.]

H. 3½	♄ passed through the merid., having an altit. of [Tranſiuit ♄ per Merid. habens Altit.]	31 19 37
	A little before ♄ passed through the merid., its dist. from Spica ♍ was taken [Paulo antequam tranſiret ♄ per Merid. ſumebatur diſt. eius a Spica ♍]	I. 11 5½
	The same, repeated [Eadem repetitia]	II. 11 5⅛
	Repeated [Repetita]	III. 11 5½
	Conversely [Vice verſa].	
	Dist. of ♄ from the northern scale-pan of ♎ [Diſt. ♄ a Borea lance ♎]	I. 16 28
	Repeated [Repetita]	II. 16 28
	Repeated [Repetita]	III. 16 28

N.B. ♄ was a little past its station, at the beginning of its retrogradation. [N. B. ♄ erat paulo poſt ſtationem in principio retrogradationis.]

DIE 23 FEBRUARIJ, MANE. [23 February, morning]

Meridian altit. of Spica ♍ [Altit. Spicæ ♍ meridiana]	30 40⅙
Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	11 3⅚
The same dist., repeated [Diſt. eadem repetita]	11 3⅚
Repeated among clouds [Repetita inter nubes]	11 4⅓
Merid. altit. of ♄ [Altit. merid. ♄]	31 20⅚
Conversely [Vice verſa].	
Dist. of ♄ from the northern scale-pan of ♎ [Diſt. ♄ a lance Bor. ♎]	16 29
The same, repeated [Eadem repetita]	16 29⅙
The same, repeated [Eadem repetita]	16 29⅓

But all of these were taken among clouds. [Verum hæc omnia inter nubes capiebantur.]

We then waited a whole hour more, until ♀ rose, to see whether some clear sky might perhaps shine out, but in vain. [Præſtolabamur tunc per integram horam adhuc, vsque dum ♀ oriebatur, an forſan ſerenitas aliqua affulgeret, ſed incaßum.]

Investigation of the true place of Saturn from the preceding observations. [Inueſtigatio veri loci Saturni ex antecedentibus obſeruationibus.]

Days of February [Dies Februarij]	Angle of the ascensional difference [Ang. diff. aſcenſionalis]	Hence is gathered the limited right ascension of ♄ [Hinc colligitur Aſc. Recta ♄ limitata]	Declination of ♄ [Declinatio ♄]
4	From Spica ♍ [Ex Spica ♍] 11 19 32		
	From the northern scale-pan [Ex lance Bor.] 16 28 4	207 24 37	8 34 53 M.
5, morning, hour 4½ [5 mane Hora 4½]	From Spica [Ex Spica] 11 25 57		
	From the northern scale-pan [Ex lance Bor.] 16 27 24	207 26 5	8 32 33 —
6, at the 5th hour of the morning [6 Hora 5 matutina]	From the bright star of the neck of ♌ [Ex luc. ceruic. ♌] 58 0 54		
	From the heart of ♌ [Ex Corde ♌] 60 43 23	207 27 30	8 30 53 —
22, at the 4th hour of the morning [22 Hora 4 matutina]	From Spica [Ex Spica] 11 12 10		
	From the northern scale-pan [Ex lance Bor.] 16 37 16	207 16 11	8 21 53 —
23, morning [23 mane]	From Spica [Ex Spica] 11 10 45		
	From the northern scale-pan [Ex lance Bor.] 16 38 11	207 15 10	8 28 13 —

Summary recapitulation of the calculation of Saturn from the preceding observations. [Summaria recapitulatio calculi Saturni ex obſeruationibus præcedentibus.]

Days [Dies]	Longitude [Longitudo]: observed [Obſeruata]	Longitude: Alfonsine [Alphonſina]	Longitude: Copernican [Copernicæa]	Difference [Differentia]: Alfonsine [Alphonſina]	Difference: Copernican [Copernicæa]
4	♎ $28^{G}30^{M}44^{S}$	♎ $29^{G}11^{M}$	♎ $29^{G}13^{M}$	$40^{M}16^{S}$ plus	$42^{M}16^{S}$ plus
5	28 31 31	29 11	29 14	39 29 plus	42 29 plus
6	28 32 17	29 11	29 13	38 43 plus	40 43 plus
22	28 18 44	28 59	29 4	40 16 plus	45 16 plus
23	28 16 58	28 57	29 2	40 2 plus	45 2 plus

Days [Dies]	Latitude [Latitudo]: observed [Obſeruata]	Latitude: Alfonsine [Alphonſina]	Latitude: Copernican [Copernicæa]	Difference [Differentia]: Alfonsine [Alphonſina]	Difference: Copernican [Copernicæa]
4	$2^{G}34^{M}20^{S}$ S	$2^{G}40^{M}$ S	$2^{G}34^{M}$ S	$5^{M}40^{S}$ plus	$0^{M}20^{S}$ minus

Days [Dies]	Latitude [Latitudo]: observed [Obſeruata]	Latitude: Alfonsine [Alphonſina]	Latitude: Copernican [Copernicæa]	Difference [Differentia]: Alfonsine [Alphonſina]	Difference: Copernican [Copernicæa]
5	2 37 3 S	2 40 S	2 34½ S	2 57 plus	2 33 minus
6	2 39 6 S	2 41 S	2 35 S	1 54 plus	4 6 minus
22	2 43 36 S	2 48 S	2 41½ S	4 24 plus	2 6 minus
23	2 44 44 S	2 48 S	2 42 S	3 16 plus	2 44 minus

DIE 3 MARTIJ, MANE. [3 March, morning]

Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	10° 49′
Repeated [Repetita]	10 49
Conversely [Vice verſa].	
Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	16 48½
Repeated [Repetita]	16 50
Repeated [Repetita]	16 48½
Merid. altit. of ♄, but doubtful because of clouds [Altit. merid. ♄, ſed dubia propter nubes]	31 23½
And so, for its latitude, there was taken [Ideoque pro Latitudine eius ſumebatur]	
the dist. of ♄ from the bright star of the Crown [Diſt. ♄ a luc. Coronæ]	42 21
Repeated [Repetita]	42 21

Thick clouds then covered the sky, and they prevented ♀ from being observed. [Denſæ tum nubes obtegebant cœlum, quæ, quominus ♀ obſeruaretur, obſtaculo erant.]

DIE 16 MARTIJ, MANE. [16 March, morning]

Because rather thick clouds had covered the sky from after midnight until now, the merid. altit. of ♄, and likewise that of Spica, could not be obtained. [Quia nubes denſiuſculæ poſt mediam noctem hucuſque cœlum obduxerant, Altit. ♄ merid. veluti & Spicæ haberi non potuit.]

$4^{H}13^{M}$	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	17° 25′
4 20	The dist., repeated [Diſt. repetita]	17 25
4 22	Repeated [Repetita]	17 25
	Conversely [Vice verſa].	
4 25	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	10 14
4 28	Repeated twice [Repetita bis]	10 14
4 31	Dist. of ♄ from the bright star of the Gnosian Crown [Diſt. ♄ a lucida Coronæ Gnoſiæ]	42 27

And although this dist. was taken with great difficulty because of the almost perpendicular position of the sextant, it was nevertheless repeated twice [Et quamuis diſt. hæc difficulter admodum propter Sextantis ſitum ferme perpendicularem accipiebatur, bis tamen reiterabatur] 42 27⅓

DIE 25 MARTIJ, VESPERI. [25 March, evening]

Dist. of ♄ from Spica [Diſt. ♄ a Spica]	the same three times [ter idem]	9 43
Merid. altit. of ♄ [Altit. ♄ Merid.]		32 0⅙
Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Bor.]	the same three times [ter idem]	18 1

Southern declin. of ♄ [Declin. ♄ merid.]	7 41⅓
Diff. of asc. from Spica [Diff. aſc. ex Spica]	9 42 6
Right asc. of ♄ [Aſc. R. ♄]	205 45 28
Diff. of asc. from the scale-pan [Diff. aſc. ex lance]	18 9¾
Right asc. of ♄ [Aſc. R. ♄]	205 44⅔
Limited right asc. of ♄ [Aſc. R. ♄ limitata]	205 45 5
Longitude of ♄ [Longitudo ♄]	26 39 40 ♎
Northern latit. [Latit. ſeptent.]	2 49 9

DIE 4 APRILIS. [4 April]
In the following night [Nocte ſequente]

$12^{H}30^{M}$	Merid. altit. of ♄ [Altit. ♄ merid.]	32° 13′
12 58½	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	9 4
1 0	The dist., repeated [Diſt. repetita]	9 4
1 5	Repeated [Repetita]	9 4
	Conversely [Vice verſa].	
1 8	Dist. of ♄ from the northern scale-pan of ♎ [Diſt. ♄ a Lance ♎ Bor.]	18 50
1 10½	The dist., repeated [Diſt. repetita]	twice [bis] 18 50
	Merid. alt. of the southern scale-pan [Alt. Lancis Auſtr. Merid.]	25 24⅓

From these observations, after first subtracting from the distances the 2½′ by which the sextant exceeds, there results: [Prouenit ex his obſeruationibus, ſublatis antea a diſtantijs 2½′ quibus Sextans abundat:]

Declination [Declinatio]	7 45 south [Auſtr.]
Right asc. of ♄ [Aſc. R. ♄]	205 5 35
To these corresponds [His reſpondet]	
the true place of ♄ [verus locus ♄]	26° 5′ 6″ ♎
Latitude [Latitudo]	2 31 37 N. [B.]

DIE 7 APRILIS, VESPERI. [7 April, evening]

$9^{H}53^{M}$	Dist. of ♄ from Arcturus [Diſt. ♄ ab Arcturo]	29° 2⅔′
9 57½	Repeated [Repetita]	29 3
9 56½[1]	Repeated [Repetita]	29 3
9 58	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 55
10 2½	Repeated [Repetita]	8 55
10 4	Repeated [Repetita]	8 55
10 8	Dist. of ♄ from the 3rd of the wing of ♍ [Diſt. ♄ a 3 alæ ♍]	21 11½
10 12	Repeated [Repetita]	21 11½
10 17	The tail of ♌ was crossing the merid. [Tranſibat Cauda ♌ per Merid.]	56 31
11 15	Merid. alt. of the third of the wing of ♍ [Alt. tertiæ alæ ♍ mer.]	30 39⅓[2]
12 34	Merid. altit. of ♄ [Altit. ♄ merid.]	32 19
12 39	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a Lance Borea]	18 49⅓
12 40½	The dist., repeated [Diſt. repetita]	18 49⅓
12 43	The dist., repeated [Diſt. repetita]	18 49⅓

It could not be taken from the southern scale-pan because of clouds. [Ab auſtrali Lance propter nubes accipi non poterat.]

DIE 10 APRILIS. [10 April]

$12^{H}41^{M}$	Merid. altit. of ♄ [Altit. ♄ Meridiana]	32 24¼
12 51	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 43⅚
12 53	Repeated [Repetita]	8 43⅚
12 54½	Repeated [Repetita]	8 44
	Conversely [Vice verſa].	
12 57	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a Lance Borea]	19 1⅔
1 1	Repeated [Repetita]	19 1⅚
1 3	Repeated [Repetita]	19 1⅚
1 15	Merid. altit. of the southern scale-pan [Altit. merid. Lancis Auſtrinæ]	25 23½
1 20	Dist. of ♄ from the third of the wing of ♍ [Diſt. ♄ a tertia alæ ♍]	20 56¾
1 21½	The dist., repeated [Diſt. repetita]	20 56¾
1 24	Repeated [Repetita]	20 56¾
	Conversely [Vice verſa].	
1 26	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtr.]	14 12
1 27½	Repeated [Repetita]	14 12
1 29	Repeated [Repetita]	14 12
	Merid. altit. of the northern scale-pan [Altit. Merid. lancis Boreæ]	31 51⅔

DIE 11 APRILIS, VESPERI. [11 April, evening]

$11^{H}50^{M}$	Merid. altit. of Spica ♍ [Altit. merid. Spicæ ♍]	30 40⅔
12 29	Merid. altit. of ♄ [Altit. merid. ♄]	32 25⅚
1 14	Merid. alt. of the northern scale-pan [Alt. mer. lancis Boreæ]	31 51⅔

1 23	Dist. of ♄ from the third of the wing of ♍ [Diſt. ♄ a tertia alæ ♍]	20 48⅙
1 26	The dist., repeated [Diſt. repetita]	20 48⅙
1 29	The dist., repeated [Diſt. repetita]	20 48⅙
1 32½	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 37⅙
1 34	Repeated [Repetita]	8 37⅙
1 35	Repeated [Repetita]	8 37⅙
	Conversely [Vice verſa].	
1 41	Dist. from the northern scale-pan [Diſt. a lance Borea]	19 11
1 42½	Repeated [Repetita]	19 11
1 43	Repeated [Repetita]	19 11
1 44	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtr.]	14 19
1 47	Repeated [Repetita]	14 19
1 49	Repeated [Repetita]	14 19

DIE 12 APRILIS, VESPERI. [12 April, evening]

	Merid. altit. of the third of the wing of ♍ [Altit. merid. tertiæ alæ ♍]	40 29⅓
	Merid. altit. of Vindemiatrix [Altit. merid. Vindemiatricis]	52 50
	Merid. altit. of Spica [Altit. merid. Spicæ]	30 40⅔
$12^{H}21^{M}$	Merid. altit. of ♄ [Altit. Merid. ♄]	32 28⅙
12 32	Dist. of ♄ from the third of the wing of ♍ [Diſt. ♄ a tertia alæ ♍]	20 45½
12 37	Repeated three times [Repetita ter]	20 45½
12 39	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 35
12 41	Repeated three times [Repetita ter]	8 35
	Conversely [Vice verſa].	
12 43	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	19 14⅚
12 47	Repeated twice [Repetita bis]	19 14⅚
12 58	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtrali]	14 22
1 1	Repeated twice [Repetita bis]	14 22

DIE 13 APRILIS, VESPERI. [13 April, evening]

$11^{H}22^{M}$	Merid. altit. of the third of the wing of ♍ [Altit. Merid. tertiæ alæ ♍]	40 28⅓
12 8	Merid. altit. of Spica ♍ [Altit. Spicæ ♍ merid.]	30 40⅚
12 20	Merid. altit. of ♄ [Altit. ♄ merid.]	32 30
12 27	Dist. of ♄ from the third of the wing of ♍ [Diſt. ♄ a tertia alæ ♍]	20 41⅔

12 29½	Repeated [Repetita]	20 41⅔
12 31	Repeated [Repetita]	20 41⅔
12 35	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	19 20
12 37	Repeated [Repetita]	19 20
12 39	Repeated [Repetita]	19 20
12 42	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 31⅔
12 44	Repeated [Repetita]	8 31⅔
12 45½	Repeated [Repetita]	8 31⅔
12 49	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtr.]	14 25
12 51	Repeated [Repetita]	14 25
12 53	Repeated [Repetita]	14 25

DIE 14 APRILIS. [14 April]

$10^H 55^M$	Merid. alt. of the third of the wing of ♍ [Alt. mer. tertiæ alæ ♍]	40° 28⅓′
11 23	Dist. of ♄ from the third of the wing of ♍ [Diſt. ♄ a tertia alæ ♍]	20 35
11 25	Repeated [Repetita]	20 35
11 27	Repeated [Repetita]	20 35
11 30	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a Lance Bor.]	19 22
11 32		19 22
11 35		19 22

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

[2] This is the altitude of Spica, which nevertheless crossed the meridian $1^h\ 35^m$ after the Tail of Leo. [Hæc eſt altitudo Spicæ, quæ tamen $1^h 35^m$ poſt Caudam Leonis meridianum tranſivit.]

11 39	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 28½
11 40	Repeated [Repetita]	8 28½
11 42	Repeated [Repetita]	8 28½
11 45	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a Lance Auſtr.]	14 29⅓
11 47	Repeated [Repetita]	14 29⅓
11 49	Repeated [Repetita]	14 29½
11 50	Merid. altit. of Spica [Altit. Spicæ merid.]	30 40⅔
12 40	Merid. altit. of ♄ [Altit. ♄ merid.]	32 31⅔

On the following day, the 15th, when ♄ was in opposition to the mean place of the Sun, it was not clear. [Die ſequente 15, quo ♄ erat in ☍^{to} medij loci ☉^{lis}, non fuit ſerenum.]

DIE 16 APRILIS. [16 April]

Although it was not very clear, the following were nevertheless taken from hour 10½ until 10⅗. [Quamuis non admodum ſerenum fuit, tamen hæc capiebantur ab Hora 10½ vſque in 10⅗.]

	Distance of ♄ from Spica [Diſtantia ♄ a Spica]	8° 19⅙′ three times [ter]
	From hour 10¾ until ⅚, the dist. of ♄ from the third of the wing of ♍ [Ab hora 10¾ vſque ad ⅚ ♄ni diſt. a tertia alæ ♍]	20 24⅓ three times [ter]
$10^{H}51^{M}$	Merid. altit. of the 3rd of the wing of ♍ [Altit. merid. 3tiæ alæ ♍]	40 28⅓
11 24	Merid. altit. of Spica [Altit. merid. Spicæ]	30 40½
11 48	Merid. altit. of ♄ [Altit. merid. ♄]	32 34⅚ doubtful [dubia]

Afterwards, because the clouds grew thicker and thicker, ♄ could not be observed any further this night, nor in the reverse order. Nor should too much trust be placed in the observations noted above, because it was not clear enough; rather, the more exact observations of the preceding and following days are to be compared with them. [Poſtea propter nubes magis magisque incraßatas ♄nus vlterius & vice verſa obſeruari non potuit hac nocte, neque etiam nimium anteſignatis obſeruationibus fidendum, quia non fuit ſatis ſerenum, ſed conferendæ ſunt antecedentium & ſequentium dierum exactiores animaduerſiones.]

DIE 17 APRILIS, VESPERI. [17 April, evening]

$11^{H}13^{M}$	Dist. of ♄ from the 3rd of the wing of ♍ [Diſt. ♄ a 3tia alæ ♍]	20° 21⅓′
11 16	Repeated [Repetita]	20 21⅓
11 20	Repeated [Repetita]	20 21⅓
11 28	Merid. alt. of Spica, [Alt. merid. Spicæ,]	
	with the revolving quadrant [Quad. Volub.]	30 40⅔
	with the brass sextant [Sext. orichalc.]	30 38½
11 41	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	19 35½
11 43	Repeated [Repetita]	19 35½
11 46	Repeated [Repetita]	19 35½
11 50	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 17
11 53	Repeated [Repetita]	8 17
11 55	Repeated [Repetita]	8 17
11 58	Merid. alt. of ♄ [Alt. ♄ merid.]	
	with the revolving quadrant [Quad. Volub.]	32 36¾
	with the brass sextant [Sext. orichalc.]	32 34⅚
12 6	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtr.]	14 44
12 9	Repeated [Repetita]	14 44
12 11	Repeated [Repetita]	14 44

DIE 18 APRILIS, VESPERI. [18 April, evening]

11^{H} 5^{M}	Merid. alt. of the 3rd of the wing, [Alt. merid. 3^{tiæ} alæ,]	
	with the quadrant [Quad.]	40° 27⅓′
	with the sextant [Sextante]	40 25
11 23	Dist. of ♄ from the 3rd of the wing [Diſt. ♄ a 3^{tia} alæ]	20 18⅓
11 25	Repeated [Repetita]	20 18⅓
11 27⅓	Repeated [Repetita]	20 18⅓
11 30	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 12½
11 32	Repeated [Repetita]	8 12½
11 35½	Repeated [Repetita]	8 12½
11 48	Spica crossed the merid., having an alt. with the revolving quadrant of [Tranſiuit Spica per Merid. habens alt. per Q. Volub.]	30 40½
12 2	Merid. alt. of ♄ with the revolving quadrant [Alt. mer. ♄ per Q. Vol.]	32 38⅙
12 12⅓	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	19 39⅔
12 13⅚	Repeated [Repetita]	19 39⅔
12 15½	Repeated [Repetita]	19 39⅔

DIE 19 APRILIS. [19 April]

$10^{H}42^{M}$	Merid. altit. of the 3rd of the wing of ♍ [Altit. merid. 3^{tiæ} alæ ♍]	40° 27⅚′
11 22	Merid. altit. of Spica [Altit. Spicæ merid.]	30 40⅚
11 32	Dist. of ♄ from the 3rd of the wing of ♍ [Diſt. ♄ a 3^{tia} alæ ♍]	20 13⅙
11 33½	Repeated [Repetita]	20 13⅙
11 35⅚	Repeated [Repetita]	20 13⅙
11 37½	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	8 9⅚
11 39	Repeated [Repetita]	8 9⅚
11 42⅙	Repeated [Repetita]	8 9⅚
11 46	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	19 45
11 47½	Repeated [Repetita]	19 45
11 49	Repeated [Repetita]	19 45
11 50½	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtr.]	14 52½
11 52	Repeated [Repetita]	14 52½
11 53⅓	Repeated [Repetita]	14 52½
12 0	♄ crossed the merid., having an altit. of [Tranſiuit ♄ per Merid. habens Altit.]	32 40

DIE 20 APRILIS, VESPERI. [20 April, evening]

$10^{H}31^{M}$	Merid. altit. of the 3rd of the wing of ♍ [Altit. merid. 3^{tiæ} alæ ♍]	40 27⅔
11 14	Merid. altit. of Spica ♍ [Altit. merid. Spicæ ♍]	30 40⅔
11 46	Merid. altit. of ♄ [Altit. ♄ merid.]	32 41½
	Dist. of ♄ from the 3rd of the wing of ♍ [Dist. ♄ a 3^{tia} alæ ♍]	20 9⅚
	Repeated [Repetita]	20 9⅚
	Repeated [Repetita]	20 9⅚
	Dist. of ♄ from Spica ♍ [Dist. ♄ a Spica ♍]	8 6
	Repeated [Repetita]	8 5⅚
	Repeated [Repetita]	8 6
	Dist. of ♄ from the northern scale-pan [Dist. ♄ a lance Borea]	19 48⅚
	Repeated [Repetita]	19 49
	Repeated [Repetita]	19 49
	Dist. of ♄ from the southern scale-pan [Dist. ♄ a lance Australi]	14 55⅙
	Repeated [Repetita]	14 55⅙
	Repeated [Repetita]	14 55⅙

DIE 27 APRILIS. [27 April]

$10^{H}58^{M}$	Merid. altitude of Spica [Altitudo Spicæ merid.]	30 40⅔
11 5	Dist. of ♄ from the northern scale-pan [Dist. ♄ a lance Bor.]	20 18½
11 7	Repeated [Repetita]	20 18½
11 9	Repeated [Repetita]	20 18½
	Conversely [Vice versa].	
11 13	Dist. of ♄ from the 3rd of the wing [Dist. ♄ a 3^{tia} alæ]	19 40
11 14½	Repeated [Repetita]	19 40
11 17	Repeated [Repetita]	19 40
11 27	Merid. altit. of ♄ [Altit. merid. ♄]	32 51⅚

The calculation for ♄ follows. Subtr. 1½′ for the parallax of the instrument. [Sequitur Calculus ♄. Subtr. 1½′ pro parallaxi instrumenti.]

Day [Dies]	Hour [Hora]	Declination [Declinatio]	Ascensional difference [Differentia ascensionalis]		Right asc. of ♄ [Asc. R. ♄]	Limited R. A. [A. R. limitata]
7	12 47p.m.		from the third of the wing [ex tertia alæ]	19°36′39″	204°56′17″	
			from the northern scale-pan [e lance Bor.]	18 59 25	204 55 0	204°55′52″
10			from Spica [e Spica]	8 38 57	204 42 19	
			from the northern scale-pan [e bor. lance]	19 12 10	204 42 15	
			from the third of the wing [e tertia alæ]	19 22 42	204 42 30	

Day [Dies]	Hour [Hora]	Declination [Declinatio]	Ascensional difference [Differentia aſcenſionalis]		Right asc. of ♄ [Aſc. R. ♄]	Limited R. A. [A. R. limitata]
11	12½	7 15 40 M.	from Spica [e Spica]	8 30 21	204 33 43	
			from the northern scale-pan [e lance bor.]	19 19 3	204 35 22	204 34 32
			from the third of the wing [e tertia alæ]	19 12 16	204 31 54	
			from the southern scale-pan [e lance auſtr.]	12 40 8	204 33 37	204 34 5[1]
12	12⅓ p.m.	7 13 20	from Spica [ex Spica]	8 27 48	204 31 10	
			from the northern scale-pan [ex lance Bor.]	19 23 12	204 31 13	204 31 12
			from the third of the wing [ex tertia alæ]	19 10 25	204 30 3	
			from the southern scale-pan [e lance auſtr.]	12 41 40	204 32 5	204 31 4
13	12	7 11 30	from the northern scale-pan [ex lance bor.]	19 27 44	204 26 41	
			from Spica [ex Spica]	8 23 20	204 26 42	
			from the third of the wing [e tertia alæ]	19 7 17	204 26 55	204 26 40
			from the southern scale-pan [ex lance auſtr.]	12 45 9	204 28 36	
14	12	7 9 50	from Spica [ex Spica]	8 20 37	204 23 59	
			from the northern scale-pan [ex lance Bor.]	19 30 3	204 24 22	204 24 10
			from the third of the wing [e tertia alæ]	19 0 35	204 20 13	
			from the southern scale-pan [e lance auſtr.]	12 49 0	204 24 45	204 22 29
						204 23 20
17	11 58p.m.	7 4 45	from Spica [ex Spica]	8 6 27	204 9 49	
			from the northern scale-pan [ex lance Bor.]	19 43 26	204 10 59	204 10 24
			from the southern scale-pan [ex lance Auſtr.]	13 3 10	204 10 35	
			from the third of the wing [ex tertia alæ]		204 7 30	204 9 2
						204 9 43
18		7 3 20	from the third of the wing [ex tertia alæ]	18 45 34	204 5 12	
			from Spica [e Spica]	8 2 29	204 5 51	
			from the northern scale-pan [e lance Bor.]	19 48 26	204 5 59	204 5 55
20	11¾	7 0 0	from Spica [ex Spica]	7 54 15	203 57 37	

Day [Dies]	Hour [Hora]	Declination [Declinatio]	Ascensional difference [Differentia aſcenſionalis]		Right asc. of ♄ [Aſc. R. ♄]	Limited R. A. [A. R. limitata]
			from the northern scale-pan [ex lance Bor.]	19 56 19	203 58 6	203 57 51
			from the 3rd of the wing [ex 3 alæ]	18 37 1	203 56 39	
			from the southern scale-pan [ex lance Auſtr.]	13 12 58	204 0 47	203 58 52
						203 58 21
27	11½	6 49 40	from the 3rd of the wing [ex 3 alæ]	18 9 0	203 28 38	
			from the northern scale-pan [ex lance Bor.]	20 25 42	203 28 43	203 28 30

[1] A note is written beside it: "Although this is limited together with the limited value above, it nevertheless gives a latitude of ♄ smaller than is right. But if the R.A. coming from the northern scale-pan is retained, the result is Long. ♎ 25° 25′ 47″, Lat. 2° 48′ 5″ North." [Adſcriptum eſt: »Hæc licet limitetur cum ſuperiori limitata, latitudinem tamen ♄ iuſto minorem exhibet. Si vero A.R. ex Lance Bor. proveniens retinetur, provenit Long. ♎ 25° 25′ 47″, Lat. 2° 48′ 5″ Sept.«]

Summary recapitulation of the observations of Saturn made in April around its opposition with the Sun. [Summaria Recapitulatio Obſeruationum Saturni in Aprili habitarum circa oppoſitum cum Sole.]

April, day [Aprilis Die]	Longitude: observed [Longitudo: Obſeruata]	Alfonsine [Alphonſina]	Copernican [Coper-nicæa]	Difference: Alfonsine [Differentia: Alphonſ.]	Coperni-can [Copern.]
7	♎ 25°47′23″	26°25′	26°27′	37′37″plus	39′37″plus
10	25 32 58	26 9½	26 13½	36 32 plus	40 32 plus
11	25 25 47	26 5	26 7	39 13 plus	41 13 plus
12	25 20 52	26 0	26 2	39 8 plus	41 8 plus
13	25 16 18	25 55	25 57	38 42 plus	40 42 plus
14	25 12 50	25 50	25 52	37 10 plus	39 10 plus
17	24 58 31	25 35	25 38	36 29 plus	39 29 plus
18	24 54 8	25 30	25 33	35 52 plus	38 52 plus
20	24 45 28	25 20	25 23	34 32 plus	37 32 plus
27	24 14 32	24 45	24 49	30 28 plus	34 28 plus

	Latitude [Latitudo]			Difference [Differentia]	
7	2 49 6 S.	3 1 S.	2 55 S.	11 54 plus	5 54 plus
10	2 49 10	3 2	2 55	12 50 plus	5 50 plus
11	2 48 5	3 2	2 56	13 55 plus	7 55 plus
12	2 48 44	3 2	2 56	13 16 plus	7 16 plus
13	2 48 49	3 2	2 56	13 11 plus	7 11 plus
14	2 49 15	3 2	2 56	12 45 plus	6 45 plus

	Latitude [Latitudo]			Difference [Differentia]	
17	2 49 14	3 2	2 57	12 46 plus	7 46 plus
18	2 48 56	3 2	2 57	13 4 plus	8 4 plus
20	2 49 7	3 2	2 57	12 53 plus	7 53 plus
27	2 48 4 S.	3 1 S.	2 56 S.	12 56 plus	7 56 plus

9

Bringing the observed place of ♄ into opposition with the simple Sun, on 16 April, New Style, H. 7 M. 18, in equated time and reduced to the meridian of Uraniborg. [Diductio loci obſeruati ♄ in ☍ ſimplicis ☉^{lis} Die 16 Aprilis Styli Noui H. 7 M. 18 tempore æquato & ad Meridianum Vraniburgicum reducto.]

The true place of ♄ was found from the observations to be 25° 6′ 33″ ♎, 2° 49′ 15″ north. At the same time the simple place of the Sun was ♈ 25° 5′ 18″. Difference 1′ 15″. The diurnal motion of ♄ is taken as 4′ 50″. Therefore: 1° 3′ 58″ give 1^{D}; what does 1′ 15″ give? Corresponding: 23′. So the opposition of the true place of ♄ with the simple Sun took place on 16 April at H. 7 M. 31 after noon, at which time, according to the diurnal motion set down above, ♄ will be at 25° 6′ 27″ ♎, and the simple Sun at 25° 6′ 27″ ♈. [Inuentus eſt verus locus ♄ ex obſeruationibus 25° 6′ 33″ ♎, 2° 49′ 15″ Borea. Eodem tempore fuit locus ☉ ſimplex ♈ 25° 5′ 18″. Differentia 1′ 15″. Motus diurnus ♄ aßumitur 4′ 50″. Itaque 1° 3′ 58″ dant 1^{D}, quid 1′ 15″? Reſp. 23′. Ergo ☍ veri loci ♄ cum Simplici ☉^{lis} facta eſt Die 16 Aprilis H. 7 M. 31 poſt Meridiem, quo tempore iuxta motum diurnum prius poſitum erit ♄ in 25° 6′ 27″ ♎, ☉^{lis} Simpl. 25° 6′ 27″ ♈.]

Calculation of the longitude of ♄ at its opposition with the mean place of the Sun, in the year 1600, April, day 16, H. 7 M. 31 P.M., according to the Tychonic restoration. [Calculus Longitudinis ♄ ad eius ☍ cum loco ☉^{lis} medio A° 1600 Aprilis D. 16 H. 7 M. 31 P.M. iuxta reſtitutionem Tychonianam.]

Longitude of ♄ [Longitudo ♄]	2^{Sex}	51^{G}	10^{M}	49^{S}	
Motion of the apogee [Motus Apogæi]	3	57	48	45	
Motion of commutation [Motus Commutat.]	2	58	36	58	
Eccentric anomaly [Anom. Eccentri]	4	53	22	24	
Prosthaphaeresis of the eccentric [Proſth. Eccentri]		5	32	0	add.
Proportional minutes [Scrup. proport.]			14	0	
Equated motion of commutation [Motus comm. coæqu.]	2	58	56	20	
Prosthaphaeresis of the orb, corrected [Proſt. orbis corr.]			7	19	add.
Excess [Exceßus]			1	0	
Corresponding part [Pars congruens]				14	
Absolute prosthaphaeresis of the orb [Proſt. orb. abſoluta]			7	33	add.

9 "S." in the latitude block is printed as an abbreviation without expansion; the latitude of 11 April, 2 48 5 here, is given in note 1 on the preceding page as "Lat. 2°48′ 5″ Sept." (northern), and the paragraph below gives the latitude as "Borea".

True long. from ♈ [Vera Long. ab ♈]	2	56	50	22	
Precession of the equinoxes [Præceßio Æquin.]		28	15	10	
True place of ♄ [Verus locus ♄]	♎	25	5	32	
Latitude [Latitudo]		2	49	15	Bo.

But if the place of ♄ is brought from the ecliptic, according to which it was observed, to its own orbit, its place there will be ♎ 25° 6′ 10″, which does not differ from the computed place by ⅔ of a minute; the latitude 2° 49¼′ B., as the observation gave it, but, limited from the truer altitude of Spica and according to the parallax, 2° 49′. [Quod ſi locus ♄ ab Eccliptica ſecundum quam obſeruatus eſt ad propriam orbitam redigatur, erit eius locus inibi ♎ 25° 6′ 10″, quod non ⅔ minuti a ſupputato loco differt, Latitudo 2° 49¼′ B. prout obſeruatio dedit, ſed limitata ex Spicæ veriori Altitudine & ſecundum Parallaxin 2° 49′.]

The ephemerides give: [Ephemerides præbent]

Everhartus [?]	19′ 33″	more, and latit. [plus & Latit.]	2° 59′
Prutenic [Prutenicæ]	37 33	—	2 57
Alfonsine [Alphonſinæ]	34 33	—	3 2

But remember that the alteration of the eccentricity arising from the small circle has not yet been applied here; it can introduce one minute, or one and a half minutes, at most. This is to be looked into at another time. [Memineris vero, Eccentricitatis alterationem ex paruulo circello nondum eße hic adhibitum, quæ poteſt vnum vel ſesquialterum minutum ad ſummum inducere, de quo alias videndum.]

A more exact recapitulation of the observations of ♄ made in April around its opposition with the ☉. [Exactior recapitulatio obſeruationum ♄^{ni} in Aprili habitarum circa oppoſitum cum ☉^{le}.]

Day [Dies]	Longitude [Longitudo]				Latitude [Latitudo]			
7	♎	25°	46′	43″	2°	48′	44	B.
10		25	32	13	2	48	52	
11		25	27	23	2	48	57	
12		25	22	28	2	49	1	
13		25	17	33	2	49	6	
14		25	12	43	2	49	11	
17		24	58	13	2	49	16	
18		24	53	28	2	49	7	
20		24	43	58	2	48	50	
27		24	13	22	2	48	35	

N.B. Since ♄ is about 5° from its northern limit, its latitude can be increased by a further ½′ by estimation, so that the greatest northern latitude is 2° 49½′, which you may use without any perceptible error. But these figures must be reviewed again more exactly and compared with the acronychal observations of the preceding year. [N.B. Quia ♄ diſtat a limite Boreo quaſi 5°, poteſt eius Latitudo augeri adhuc ½′ æſtimatiue, vt ſit max. Bo. 2° 49½′ qua absque omni ſenſibili errore vti poteris. Sed reuidenda hæc denuo exactius & conferenda cum obſeruationibus Acronychijs antecedentis anni.]

N.B. Since the meridian altitude of Spica, against which the altitude of ♄ was limited, was about half a minute higher than it should have been, the latitude of ♄ could therefore be 2° 48¾′ B. The parallax adds 15″ to this, and so the true latitude comes out as 2° 49′ north. [N.B. Quia Spicæ altitudo meridiana, ad quam ♄ altitudo limitabatur, quaſi dimidio minuto iuſto altior erat, iccirco poterat latitudo ♄ eße 2° 48¾′ B., quibus Parallaxis addit 15″, euadit itaque vera latitudo 2° 49′ Borea.]

DIE 2 MAIJ, VESPERI. [2 May, evening]

	Distance of ♄ from the third of the wing of ♍ [Diſtantia ♄ a 3^{tia} alæ ♍]	19° 16′
	Repeated twice [Repetita bis]	19 16
	Dist. of ♄ from Spica ♍ [Diſt. ♄ a Spica ♍]	7 23⅔
	Repeated twice [Repetita bis]	7 23⅔
	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	20 37
	Repeated twice [Repetita bis]	20 37
	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtrali]	15 49
	Repeated twice [Repetita bis]	15 49
10^{H}29^{M}	Merid. altit. of Spica ♍ [Altit. Spicæ ♍ merid.]	30 40⅔
10 55	Merid. altit. of ♄ [Altit. ♄ merid.]	32 59⅚

DIE 3 MAIJ, VESPERI. [3 May, evening]

10^{H}18^{M}	Dist. of ♄ from the third of the wing [Diſt. ♄ a 3^{tia} alæ]	19° 13½′
10 19½	Repeated [Repetita]	19 13½
10 22	Repeated [Repetita]	19 13½
10 25	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	20 45
10 27	Repeated [Repetita]	20 45
10 28	Repeated [Repetita]	20 45
10 31	Dist. of ♄ from Spica [Diſt. ♄ a Spica]	7 21½
10 32	Repeated [Repetita]	7 21½
10 34	Repeated [Repetita]	7 21½
10 37	Dist. of ♄ from the southern scale-pan [Diſt. ♄ a lance Auſtrali]	15 52
10 39	Repeated [Repetita]	15 52
10 40	Repeated [Repetita]	15 52

The merid. altit. of Spica ♍ could not be taken because of thick clouds. [Altit. merid. Spicæ ♍ propter nubes denſas capi non poterat.]

10 51	Merid. altit. of ♄ [Altit. ♄ merid.]	33 1⅓

Afterwards clouds got in the way. [Nubes poſtea impediebant.]

DIE 21 MAIJ, VESPERI. [21 May, evening]

Distance of ♄ from the third of the wing of ♍ [Diſtantia ♄ a 3^{tia} alæ ♍]	18° 6⅓′
Repeated twice [Repetita bis]	18 6⅓
Conversely [Vice verſa].	
Dist. of ♄ from the northern scale-pan of ♎ [Diſt. ♄ a lance Borea ♎]	21 45
Repeated twice [Repetita bis]	21 45
For the latitude [Pro Latitudine]	
Dist. of ♄ from the bright star of Corona Borealis [Diſt. ♄ a lucida Coronæ Bor.]	43 25
Repeated twice [Repetita bis]	43 25

While these distances of ♄ were being observed, the clock showed hour 10¾. [Cum hæ diſtantiæ ♄ obſeruarentur, monſtrabat horologium horam 10¾.]

The merid. altitude of ♄, however, could not be taken, because the roof had not been properly made and was not yet fit to be opened; the distance was therefore taken from the bright star of Corona Borealis. [Altitudo vero ♄ merid. capi non poterat propter tectum non rite factum & apertioni adhuc idoneum, ideoque diſtantia ſumebatur a Lucida Coronæ Boreæ.]

DIE 26 MAIJ, VESPERI. [26 May, evening]

When ♄ was nearly in the meridian, its distance from the bright star of the Crown was observed [Cum ♄ eßet quaſi in Meridiano, obſeruabatur diſtantia eius a lucida Coronæ]	43° 30⅔
Repeated [Repetita]	43 30⅔
Repeated [Repetita]	43 31
Dist. of ♄ from the third of the wing of ♍ [Diſt. ♄ a 3^{tia} alæ ♍]	17 52
Repeated twice [Repetita bis]	17 52
Conversely [Vice verſa].	
Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	22 0
Repeated twice [Repetita bis]	22 0

DIE 9 JUNIJ, VESPERI. [9 June, evening]

Meridian altitude of ♄ [Altitudo meridiana ♄]	33° 36′ 10″

	The dist. of ♄ from the third of the wing of ♍ was observed [Obſeruabatur Diſt. ♄ a 3^{tia} alæ ♍]	17 24
	Repeated twice [Repetita bis]	17 24
	Conversely [Vice verſa].	
	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	22 30
	Repeated twice [Repetita bis]	22 30

The northern scale-pan was then in the merid. [Erat tum lanx Borea in merid.]

DIE 26 JUNIJ, VESPERI. [26 June, evening]

9^{H}31^{M}	Dist. of ♄ from the third of the wing of ♍ [Diſt. ♄ a 3^{tia} alæ ♍]	17° 12½′
9 32	Repeated [Repetita]	17 12½
9 37	Repeated [Repetita]	17 12½
9 40	Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	22 40⅔
9 43	Repeated [Repetita]	22 40⅔
9 45	Repeated [Repetita]	22 40⅔
10 1	Dist. of ♄ from Vindemiatrix [Diſt. ♄ a Vindemiatrice]	21 57
10 3	Repeated [Repetita]	21 57
10 5	Repeated [Repetita]	21 57

DIE 27 JUNIJ, VESPERI. [27 June, evening]

♄ was observed in this way. [Obſeruabatur ♄ hoc modo.]

10^{H} 8^{M}	Between ♄ and Spica, with the lesser Radius [Inter ♄ & Spicam per Radium minorem]	3° 35′

But this observation is not to be trusted too much. [Sed non nimium fidendum huic obſeruationi.]

10 16	Between ♄ and the third of the wing of ♍ [Inter ♄ & 3^{tiam} alæ ♍]	17 13
10 24	The same, repeated [Eadem repetita]	17 13
10 28	♄ and the northern scale-pan [♄ & lanx Borea]	22 40⅔
10 32	The same, repeated twice [Eadem bis repetita]	22 41

DIE 28 JUNIJ, VESPERI. [28 June, evening]

♄ was observed in this way. [Obſeruabatur ♄ hoc modo.]

9^{H}36½^{M}	Between ♄ and the third of the wing of ♍ [Inter ♄ & 3^{tiam} alæ ♍]	17° 13½′

9 38	The same, repeated [Eadem repetita]	17 13½
9 38½	The same, repeated a third time [Eadem tertio repetita]	17 13½
	Conversely [Vice verſa].	
9 40	Between ♄ and the northern scale-pan [Inter ♄ & lancem Boream]	22 40⅓
9 41½	The same, repeated [Repetita eadem]	22 40⅓
9 43	Repeated a third time [Tertio repetita]	22 40½
	To obtain the latitude of ♄ [Pro latitudine ♄ni habenda].	
9 45	Dist. of ♄ from Vindemiatrix [Diſt. ♄ a Vindemiatore]	21 59
9 46⅓	Repeated [Repetita]	21 59
9 47	Repeated a 3rd time [3tio repetita]	21 59

With ♄ let a trial be made to examine the parallax of the orb. For it stands between the △ and the □ of the Sun. Its latitude is in fairly good order. [In ♄no fiat experimentatio pro Parallaxi orbis examinanda. Eſt enim inter △ & □ Solis. Latitudo eius mediocriter bene ſe habet.]

OBSERUATIONES IOUIS. [Observations of Jupiter]

NOCTU QUÆ PRÆCEDEBAT 1 JANUARIJ. [In the night preceding 1 January]

Merid. altitude of ♃ [Altitudo merid. ♃]	
by the revolving instrument [per Volub.]	55° 6½′
by the sextant [per Sextantem]	55 6
Two hours after the transit through the merid., dist. of ♃ from Pollux [Duabus horis poſt tranſitum per merid., Diſt. ♃ a Polluce]	33 35⅙
Repeated [Repetita]	33 35
Repeated [Repetita]	33 35⅓
Dist. of ♃ from the tail of ♌ [Diſt. ♃ a Cauda ♌]	27 30½
Repeated [Repetita]	27 31⅓
Repeated [Repetita]	27 30½
Right asc. of ♃ from Pollux [Aſc. R. ♃ ex Polluce]	143 34 38
from the tail of ♌ [ex Cauda ♌]	143 30 45
limited [limitata]	143 32 42
Corresponding longitude [Reſp. Longitudo]	20 50 40 ♌
Latitude [Latitudo]	0 52 19 B.

NOCTE QUÆ PRÆCEDEBAT 5 JANUARIJ. [In the night preceding 5 January]

In the morning, one hour before its transit through the merid., there was taken: [Mane vna hora ante tranſitum illius per Merid. ſumebatur]

Distance of ♃ from Pollux [Diſtantia ♃ a Polluce]	33 18
Repeated twice [Repetita bis]	33 18
Dist. of ♃ from the tail of ☋ [Diſt. ♃ a Cauda ☋]	27 47
Repeated, among clouds [Repetita inter nubes]	27 46⅓
Merid. altitude of ♃ [Altitudo ♃ merid.]	55 17⅓
Right asc. of ♃ from Pollux [Aſc. R. ♃ ex Polluce]	143 19 15
from the tail of ☋ [ex Cauda ☋]	143 15 49
Corresponding true place of ♃ [Reſp. Verus locus ♃]	20 32 42 ☋
Latitude [Latitudo]	0 55 6 B.

NOCTE QUÆ PRÆCESSIT DIEM 20 JANUARIJ. [In the night that preceded 20 January]

When the bright star in the head of ☋ crossed the merid., in which it had an altit. of 65° 16′ [Quando Luc. in capite ☋ tranſiuit merid. in quo habuit altit. 65° 16′]

crossed a little before ♃ [tranſiuit paulo ante ♃]	
having alt. [habens alt.]	55 49⅔
from which the diff. of alt. of ♃ and the bright star in the head of ☋ gives the dist. [vnde diff. alt. ♃ & luc. in cap. ☋ pandit diſt.]	9 26
Dist. of ♃ from the bright star in the foot of ♊ [Diſt. ♃ a luc. pede ♊]	46 0
Dist. of ♃ from the lower head of ♊ [Diſt. ♃ ab infer. Cap. ♊]	31 43⅙ three times [ter]
Spica was then east, [Fuit tunc Spica orient,]	33 50
Dist. of ♃ from the upper head of ♊ [Diſt. ♃ a ſuper. Cap. ♊]	35 16
Dist. of ♃ from the tail of ☋ [Diſt. ♃ a Cauda ☋]	29 5⅙ three times [ter]
Spica ♍ was then east, when the tail of ☋ was on the merid., having altit. [Fuit tunc Spica ♍ orient. cum Cauda ☋ eſſet in merid. habens altit.]	56 31

NOCTE PRÆCEDENTE DIEM 22 JANUARIJ. [In the night preceding 22 January]

At about hour 1½ by our observatory clock, ♃ crossed the merid., having altit. 55° 49⅔′. [Circa horam 1½ iuxta horologium noſtrum ſpeculare, tranſiuit ♃ per merid. habens altit. 55° 49⅔′]

Hour 2½: dist. between ♃ and the lower [star] of ♊ [Hora 2½ Diſt. inter ♃ & infer. ♊]	39 28 three times [ter]
Hour 3: between ♃ and the third of the wing of ♍ [Hora 3 Inter ♃ & 3^{tiam} alæ ♍]	45 45⅚

NOCTE PRÆCEDENTE DIEM 24 JANUARIJ. [In the night preceding 24 January]

Dist. of ♃ from the bright star in the foot of ♊ [Diſt. ♃ a lucido pede ♊]	40°35⅙′
The same, repeated [Eadem repetita]	40 35⅙
Dist. of ♃ from the tail of ♌ [Diſt. ♃ a Cauda ♌]	29 32½
Repeated [Repetita]	29 32⅓
Repeated a 3rd time [Repetita 3^{tio}]	29 32½
The tail of ♌ was then east [Erat tunc Cauda ♌ or.]	39 56
Afterwards, dist. of ♃ from the lower head of ♊ [Poſtea diſt. ♃ ab inf. Cap. ♊]	31 17
The same, repeated [Eadem repetita]	31 17⅙
The same, repeated a 3rd time [Eadem 3^{tio} repetita]	31 17⅙
Merid. altit. of ♃ by the revolving instrument [Altit. ♃ merid. per Volub.]	55 58⅓
The tail of ♌ was then east [Fuit tunc Cauda ♌ orient.]	30 50
Dist. of ♃ from the third of the wing of ♍ [Diſt. ♃ a 3^{tia} alæ ♍]	46 3⅙
The same, repeated [Eadem repetita]	46 3
Repeated a 3rd time [Repetita 3^{tio}]	46 3

NOCTE QUÆ PRÆCEDEBAT 3 FEBRUARIJ. [In the night preceding 3 February]

Merid. altitude of ♃ [Altitudo merid. ♃]	56 21½
Dist. of ♃ from Pollux [Diſt. ♃ a Polluce]	29 58⅓
Repeated three times [Repetita ter]	29 58½
It should have been [Debuit eſſe]	29 57⅚
Dist. of ♃ from the tail of ♌ [Diſt. ♃ a Cauda ♌]	30 41½
Repeated twice [Repetita bis]	30 41⅓

NOCTE SEQUENTE 3 FEBRUARIJ. [In the night following 3 February]

♃, which within three days will become acronychal in opposition to the simple ☉, was observed as follows. [♃ qui intra triduum fiet Achronychius in ☍^{to} ſimplicis ☉^{lis} ſic obſeruabatur vt ſequitur.]

♃ was distant from the bright star in the foot of ♊ [Diſtabat ♃ a luc. pede ♊]	44 11⅓
Repeated twice [Repetita bis]	44 11⅓
Limited [Limitata]	44 11⅚

The head of Hydra had then passed the meridian by almost a whole hour. [Præterierat tunc caput Hydræ meridianum quaſi integram horam.]

Afterwards, dist. of ♃ from the lower head of ♊ [Poſtea diſt. ♃ ab infer. Cap. ♊]	29 51⅔
Repeated twice [Repetita bis]	29 51⅚

Limited [Limitata]	29 52⅓

The bright star of Hydra was then about one degree from the meridian, toward the east. [Aberat tunc lucida Hydræ a meridiano verſus ortum ferme vno gradu.]

Next the dist. of ♃ from the tail of ♌ was taken [Mox ſumebatur diſt. ♃ a Cauda ♌]	30 50
Repeated twice [Repetita bis]	30 50
Limited [Limitata]	30 50½
The bright star of Hydra was then on the meridian; altit. [Lucida Hydræ tunc fuit in meridiano. altit.]	32 47⅓
Merid. altitude of ♃ [Altitudo ♃ merid.]	56 26⅚
Limited [Limitata]	56 26⅙
At the same moment the brighter star in the head of ♌ was crossing the meridian, and had altitude [Tranſibat eodem momento per meridianum lucidior in capite ♌ habuitque altitud.]	65 17
Dist. of ♃ from the third of the wing of ♍ [Diſt. ♃ a 3^{tia} alæ ♍]	47 30 three times [ter]
Limited [Limitata]	47 30½
Spica then crossed the merid., having alt. [Spica tunc tranſiuit merid. habens alt.]	30 41⅓

NOCTE QUÆ SEQUEBATUR 4 FEBRUARIJ. [In the night that followed 4 February]

Merid. altit. of ♃ [Altit. merid. ♃]	56° 29⅔′
Merid. altit. of the preceding, more southern [star] in the head of ♌ [Altit. merid. antecedentis auſtralioris in Capite ♌]	51 21⅔
Merid. altit. of the following [star], in the other foot of ♌ [Altit. merid. ſequentis in altero pede ♌]	65 15¾

These three altitudes, of ♃ and of the two [stars] in ♌, were taken at almost the same moment of time, except in so far as the counting had to be done in the meantime. And ♃ stood on the straight line drawn through those two stars, except that it had passed beyond those stars toward the west by the diameter of its own body. The difference of the altitudes therefore gives their distances from one another, from which the longitude and latitude of ♃ can also be established. [Capiebantur autem hæ tres altitudines ♃ & duarum in ♌ ferme eodem temporis momento, niſi quatenus numeratio interea facienda erat, & erat ♃ in linea recta, quæ per duas illas ſtellas ducitur, niſi quod diametro ſui corporis ſtellas illas verſus occidentem erat prætergreſſus. Differentia igitur altitudinum pandit diſtantias ab inuicem, vnde etiam longitudo & latitudo ♃ conſtare poterit.]

	Dist. of ♃ from the lower head of ♊ [Diſt. ♃ ab infer. cap. ♊]	29 45⅙
	The same, repeated [Eadem repetita]	29 45⅙
	Repeated a 3rd time [Repetita 3^{tio}]	29 45⅙
	Merid. altit. of the heart of ♌ [Altit. merid. Cordis ♌]	53 36⅔
	Dist. of ♃ from Pollux [Diſt. ♃ a Polluce]	44 3⅙
	Repeated twice [Repetita bis]	44 3⅙
	Altit. of the bright star of the neck of ♌ [Altit. lucidæ Ceruicis ♌]	61 32½
12^{H}53⅔^{M}	Dist. of ♃ from the tail of ♌ [Diſt. ♃ a Cauda ♌]	30 57⅔
12 54½	Repeated [Repetita]	30 57⅚
12 57	Repeated [Repetita]	30 57⅚
12 59	Repeated [Repetita]	30 57⅚
1 10	Dist. of ♃ from the third of the wing of ♍ [Diſt. ♃ a 3^{tia} alæ ♍]	47 39
1 13½		47 38
1 16		47 38
1 17½		47 38
1 40⅔	Merid. alt. of the bright star of the loin of ♌ [Alt. merid. lucid. lumb. ♌]	62 24⅔
2 16	Merid. altit. of the tail of ♌ [Altit. merid. Caudæ ♌]	56 30⅔

DIE 6 FEBRUARIJ. [6 February]

Spica crossed the meridian, and the clock was set at H. 3 M. 48. [Spica tranſijt per meridianum & ponebatur Horologium in H. 3 M. 48.]

	Merid. altit. of Spica by the revolving instrument [Altit. Spicæ merid. per Volub.]	30°41⅓′
	By the old sextant [Per Sextantem veterem]	30 41½
By the great clock [Per horolog. mag.]		
3^{H}58^{M}	Dist. of ♃ from the lower head of ♊ [Diſt. ♃ ab infer. Cap. ♊]	29 35⅔
4 1	The same, repeated [Eadem repetita]	29 35⅔
4 2½	The same, repeated, as before [Eadem repetita vt pr.]	29 35⅔
4 7	Dist. of ♃, conversely, [Diſt. ♃ vice verſa]	47 48
4 8½	from the third of the wing of ♍ [a tertia alæ ♍]	47 48
4 10⅓	The same, repeated [Eadem repetita]	47 48
4 18⅙		47 48

4 19½	47 48

☿ was acronychal, near the opposition of the simple ☉. Its declination can be obtained from yesterday's observation. [☿ erat iuxta ☍ ſimplicis ☉lis Acronychius. Declinatio eius peti poteſt ex heſterna obſeruatione.]

DIE 9 NOCTE SEQUENTE. [On the 9th, in the following night]

Merid. altit. of ☿ [Altit. ☿ Merid.]	56° 43′

DIE 20 FEBRUARIJ. [20 February]

Dist. of ☿ from the heart of ♌ [Diſt. ☿ a Corde ♌]	9° 21⅚′
The same dist., repeated [Repetita eadem diſt.]	9 21⅚
Repeated a third time, exactly [Tertio repetita præciſe]	9 21⅚
At about H. 10 M. 10 ☿ was distant, conversely, from the bright star in the foot of ♊ [Iuxta H. 10 M. 10 diſtabat ☿ vice verſa a Luc. pede ♊]	42 2⅙
The same dist., repeated a second time [Secundo eadem diſt. rep.]	42 2⅙
The same dist., repeated a third time [Tertio eadem diſt. repet.]	42 2½
A fourth time [Quarto]	42 2⅙
At H. 11 ☿ crossed the merid., having altit. [H. 11 Tranſiuit ☿ per Merid. habens altit.]	56 51⅓
At H. 11½ the heart of ♌ crossed the merid., having altit. [H. 11½ Tranſiuit Cor ♌ Merid. habens altit.]	53 37
At H. 11¾ the bright star of the neck crossed the merid. [H. 11¾ Tranſiuit Luc. Ceruicis Merid.]	61 34⅙

From these two altitudes of fixed stars, the merid. altitudes of ♂ and ☿ observed earlier can be limited, if they had any error on account of the plumb-line. [Ex his duabus fixarum altitudinibus poſſunt limitari altitudines Merid. ♂ & ☿ prius obſeruatæ, ſi quid ratione perpendiculi vitij habuerint.]

The rest of the night was not clear: immediately after the setting of the ☾ the sky clouded over. [Reliqua nocte non fuit ſerenum, ſed ſtatim poſt ☾ occaſum cœlum obnubilabatur.]

NOCTE QUÆ PRÆCEDEBAT 22 FEBRUARIJ. [In the night preceding 22 February]

At about the middle of H. 11 [H. fere med. 11]

I. Dist. between ♃ and the bright star in the foot of ♊ [I. Diſt. inter ♃ & Lucidum pedem ♊]	41 55½
II. The same, repeated [II. Eadem repetita]	41 55½
III. Next, the same, repeated, exactly [III. Mox eadem repetita præciſe]	41 55½
A little after the middle of H. 11 [H. paulo poſt med. 11]	
I. Dist. of ♃ from the heart of ♌, exactly [I. Diſt. ♃ a Corde ♌ præciſe]	9 30
II. The same, repeated [II. Eadem repetita]	9 29⅚
III. The same, repeated, precisely [III. Eadem repetita exacte]	9 30
At H. 11 ♃ crossed the meridian and had in altitude [H. 11 Tranſiuit ♃ per meridianum habuitque in altitudine]	57 8⅓
At the same instant the greatest altit. of the heart of Hydra was taken [Eodem inſtanti Cordis Hydræ ſumebatur altit. maxima]	32 45

The difference of these two, namely 24 23⅓, therefore gives their distance from each other. [Differentia igitur harum duarum, nempe 24 23⅓ diſtantiam earundem pandit.]

At H. 11⅔ the merid. altit. of the heart of ♌ was taken [H. 11⅔ ſumebatur Altit. merid. Cordis ♌]	53 35⅙
At H. 11⅚ the merid. altit. of the bright star of the neck of ♌ was taken [H. 11⅚ capiebatur Altit. merid. luc. Ceruicis ♌]	61 32

Diductio loci obſeruati ♃ die 4 Febr. in oppoſito ſimplicis ☉^{lis}. [Derivation of the place of ♃ observed on 4 Feb., at the opposition of the simple ☉]

On 25 January at hour 12.33′ P.M., the time being equated and reduced to the meridian of Uraniborg, there was found from the observations: [Die 25 Januarij hora 12.33′ P.M. tempore æquato & ad Meridianum Vraniburgicum reducto, ex obſeruationibus deprehenſa eſt]

♃ Longitude [♃ Longitudo]	16 56′48″ ♌
Latitude [Latitudo]	1 1 47 Sept.

At the same time the simple place of the ☉ was 14° 20′ 14″ ♒, the difference 2° 36′ 34″, the diurnal motion of ♃ 8′ 0″. [Eodem tempore fuit Locus ☉^{lis} ſimplex 14° 20′ 14″♒, differentia 2° 36′ 34″, Motus diurnus ♃ 8′ 0″.]

Hence this interval corresponds to D. 2 H. 7 M. 57, so that ♃ was in opposition to the simple ☉ on 27 January at hour 20½ P.M., and the true place of ♃ was then 16° 38′ 9″ ♌. [Hinc conuenit huic interuallo D. 2 H. 7 M. 57, vt ♃ in ☍

ſimplicis ☉[is] fuerit Die 27 Januarii hora 20½ P.M. & verus locus ♃ tunc fuit 16° 38′ 9″ ♌.]

Calculation of ♃ from the observations made before its opposition to the ☉ in February, at about the 13th hour after noon. [Calculus ♃ ex obſeruationibus habitis ante oppoſitum eius cum ☉[le] in Februario circa horam 13[tiam] poſt meridiem.]

Day [Dies]	Declination [Declinatio]	Right asc. [Aſc. R.]	Longitude: observed [Longitudo: Obſeruata]	Longitude: Alfonsine [Alphonſ.]	Longitude: Copernican [Copern.]	Difference: Alfonsine [Differentia: Alphonſin.]	Difference: Copernican [Copern.]
3	16°44′40″S	139°52′2″	♌17° 4′29″	16° 4′	17° 0′	60′29″minus	4′29″minus
4	16 47 37	139 44 32	16 56 48	15 56	16 52	60 48 minus	4 48 minus
5	16 50 34	139 36 20	16 48 29	15 48	16 44	60 29 minus	4 29 minus
			Northern latitude [Latitudo Sept.]			**Difference [Differentia]**	
3			1 1 9	1 4	0 40½	2 51 plus	20 39 minus
4			1 1 47	1 4	0 40¾	2 13 plus	21 2 minus
5			1 2 13	1 4	0 41	1 47 plus	21 13 minus

DIE 2 MARTIJ, VESPERI. [2 March, in the evening]

H. 10½: between ♃ and the bright star in the foot of ♊ [H. 10½ Inter ♃ & luc. pedem ♊]	40 50½
Repeated [Repetita]	40 50½
Conversely, between ♃ and the heart of ♌ [Vice verſa, inter ♃ & Cor ♌]	10 38
Repeated [Repetita]	10 38
Merid. altit. of ♃ [Altit. ♃ meridiana]	57 29⅝

Scattered clouds were then rising, which prevented further observation. [Oriebantur tum rariuſculæ nubes, quæ vlteriorem obſeruationem impediebant.]

DIE 9 MARTIJ, NOCTE SEQUENTE. [9 March, in the following night]

♃ was observed about the 4th hour before it had reached the meridian, from the bright star in the foot of ♊ [♃ obſeruabatur quaſi hora 4[ta] antequam Meridianum attigerat a lucido pede ♊]	40 41½
♊	40 41½

III	40 41½
Conversely, ♃ from the heart of ☋ [Vice verſa ♃ a Corde ☋]	11 17⅔
II repeated [II repetita]	11 17⅔
III repeated [III repetita]	11 17⅔
Merid. altit. of ♃ [Altit. ♃ meridiana]	57 36½

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

$9^{H}54^{M}$	Dist. of ♃ from the heart of ☋ [Diſt. ♃ a Corde ☋]	11°44′
9 55½	Repeated [Repetita]	11 44
	Repeated [Repetita]	11 44
10 1	Merid. altitude of ♃ [Altitudo ♃ merid.]	57 52½
	Conversely. [Vice verſa.]	
10 5	Dist. of ♃ from the bright star in the foot of ♊ [Diſt. ♃ a lucido pede ♊]	39 47⅓
10 8	Dist. repeated [Diſt. repetita]	39 47
	Repeated [Repetita]	39 47
	Merid. altit. of the heart of ☋ [Altit. merid. Cordis ☋]	53 35½
	Merid. altit. of the bright star of the neck of ☋ [Altit. merid. luc. Ceruicis ☋]	61 32

Calculation of Jupiter from the observation of 15 March, H. 10 P.M. [Calculus Iouis ex obſeruatione diej 15 Martij H. 10 P. M.]

Declination of ♃ [Declinatio ♃]	18°10′ 0″ S.
Ang. diff. from the heart of ☋ [Ang. diff. e corde ☋]	11 22 35 min.
from the bright star in the foot of ♊ [e luc. pede ♊]	41 45 14 add.
Right ascension, limited [Aſc. Recta limitata]	135 21 56
Longit.	12 33 21 ☋
Latitude [Latitudo]	1 6 46 S.

	Alph.	Copern.	Difference [Differentia]	
Long.	11 35	12 30 ☋	58′21″ min.	3′21″ min.
Lat.	1 3S.	0 44S.	3 46 min.	22 46 min.

DIE 21 MARTIJ, VESPERI. [21 March, in the evening]

Dist. of ♃ from the upper head of ♊ [Diſt. ♃ a ſuper. Cap. ♊]	28 51⅓
Repeated twice [Repetita bis]	28 51⅓
Conversely. [Vice verſa.]	
Dist. of ♃ from the heart of ☋ [Diſt. ♃ a Corde ☋]	12 5½
Repeated twice [Repetita bis]	12 5½
Merid. altit. of ♃ [Altit. merid. ♃]	57 53½

Diff. of right asc. from the heart of ☋ [Diff. Aſc. R. ex Corde ☋]	11 44 16
from Caſtor [ex Caſtore]	27 48 21
Hence right asc., limited [Hinc Aſc. R. limitata]	134 58 8
Longitude [Longitudo]	12 10 45☋
Latitude [Latitudo]	1 2 15S.

DIE 23 MARTIJ, VESPERI. [23 March, in the evening]

Merid. altit. of ♃, among clouds [Altit. ♃ merid. inter nubes]	57°57′
Dist. of ♃ from the heart of ☋ [Diſt. ♃ a Corde ☋]	12 13½
The altit. of Arcturus was then [Altit. Arcturi tunc erat]	39 43
Dist. repeated [Diſt. repetita]	12 13½
Altit. of Arcturus [Altit. Arcturi]	40 19

Afterwards clouds got in the way. [Nubes poſtea impediuerunt.]

DIE 25 MARTIJ, VESPERI. [25 March, in the evening]

8^{H} 6^{M}	Dist. of ♃ from the bright star of the neck of ☋ [Diſt. ♃ a luc. Ceruicis ☋]	14 14
	Altitude of Aldebaran [Altitudo Aldeboræ]	29 4
8 10	Dist. repeated [Diſt. repetita]	14 14½
	Altit. of Aldeb. [Altit. Aldeb.]	28 10
8 15	Dist. repeated [Diſt. repetita]	14 14½
	Altit. of Aldeb. [Altit. Aldeb.]	27 16
	Conversely. [Vice verſa.]	
8 22½	Dist. of ♃ from the bright star in the foot of ♊ [Diſt. ♃ a luc. pede ♊]	39°14′ twice [bis]
	Altit. of Arcturus [Altit. Arcturi]	24 55
8 42	Repeated a second time [Secundo repetita]	39 13⅚
8 52	Repeated a 3rd time [3^{tio} repetita]	39 14
9 0	Merid. altit. of ♃ [Altit. ♃ Merid.]	57 57½

DIE 26 MARTIJ. [26 March]

Merid. altit. of ♃ [Altit. ♃ meridiana]		57 55

DIE 4 APRILIS, VESPERI. [4 April, in the evening]

$7^{H}57^{M}$	Merid. altit. of ♃ [Altit. ♃ Merid.]	57°59′

Afterwards, at the transit of the heart of ♌ across the meridian, the clock was corrected and set at $8^{H}52^{M}$. [Poſtea ad tranſitum Cordis ♌ per Meridianum corrigebatur horologium & ponebatur in $8^{H}52^{M}$.]

	And its altitude was [Erat autem eius altitudo]	53 35
9 24	Dist. of ♃ from the bright star in the foot of ♊ [Diſt. ♃ a lucido pede ♊]	39 0½
9 25½	Dist. repeated [Diſt. repetita]	39 1⅔
9 27	Dist. repeated [Diſt. repetita]	39 1⅔
	Conversely. [Vice verſa.]	
9 30½	Dist. of ♃ from the heart of ♌ [Diſt. ♃ a Corde ♌]	12 32⅓
9 34	Dist. repeated [Diſt. repetita]	12 32
9 46	Repeated [Repetita]	12 32
	Declination of ♃ [Declinatio ♃]	18°17′30″ Bor.
	Right ascension [Aſc. Recta]	134 32 47
	True place of ♃ [Verus locus ♃]	11 46 15 ♌
	Latitude [Latitudo]	1 0 52 Bor.

DIE 6 APRILIS, VESPERI. [6 April, in the evening]

$8^{H}\ 5^{M}$	♃ crossed the merid. [Tranſiuit ♃ per Merid.]	58° 2′
8 11½	Dist. of ♃ from Pollux [Diſt. ♃ a Polluce]	24 44½
8 14	Repeated [Repetita]	24 42
8 17	Repeated [Repetita]	24 42
8 40	Dist. of ♃ from the heart of ♌ [Diſt. ♃ a Corde ♌]	12 32½
8 42	Repeated [Repetita]	12 32
8 44	Repeated [Repetita]	12 32
8 46	Dist. of ♃ from the bright star in the foot of ♊ [Diſt. ♃ a luc. pede ♊]	39 0
8 47	Repeated [Repetita]	39 0
8 48½	Repeated [Repetita]	39 0
8 51	Dist. of ♃ from the bright star in the neck of ♌ [Diſt. ♃ a luc. Ceruice ♌]	14 28½
8 53	Repeated [Repetita]	14 28
8 54	Merid. altit. of the heart of ♌ [Altit. Merid. Cordis ♌]	53 36⅙
8 56	Dist. repeated [Diſt. repetita]	14 28
9 0	Altit. of the bright star of the neck of ♌ [Altit. luc. Ceruicis ♌]	61 33

DIE 7 APRILIS, VESPERI. [7 April, in the evening]

	Merid. altit. of ♃ [Altit. ♃ merid.]	58 0⅝
9^{H} 9^{M}	Dist. of ♃ from the bright star in the foot of ♊ [Dist. ♃ a luc. pede ♊]	39 0½
9 10½	Repeated [Repetita]	39 0½
9 11⅓	Repeated [Repetita]	39 0
	Conversely. [Vice versa.]	
9 13	Dist. of ♃ from the heart of ♌ [Dist. ♃ a Corde ♌]	12 33
9 15	Repeated [Repetita]	12 33⅓
9 17	Repeated [Repetita]	12 33⅓

For the true place of ♃ at H. 9⅓ P.M. [Pro vero loco ♃ H. 9⅓ P.M.]

Diff. of right asc. from the bright star in the foot [Diff. Asc. R. a luc. pede]	40 54 12
from the heart of ♌ [a corde ♌]	12 11 30
Right ascension from the bright star in the foot [Asc. Recta ex luc. pede]	134 31 12
from the heart of ♌ [ex corde ♌]	134 32 43
limited [limitata]	134 32 7
Corresponding longitude [Resp. Longitudo]	♌ 11 45 6
Latitude B. [Latitudo B.]	1 2 22

DIE 11 APRILIS. [11 April]

	Merid. altit. of ♃ [Altit. merid. ♃]	57 59½
	Merid. altit. of the heart of ♌ [Altit. merid. Cordis ♌]	53 35½
$9^{H}17^{M}$	Dist. of ♃ from the bright star in the foot of ♊ [Dist. ♃ a luc. pede ♊]	39 0½
9 18½	Repeated [Repetita]	39 0½
9 20	Repeated [Repetita]	39 0½
	Conversely. [Vice versa.]	
9 23	Dist. of ♃ from the heart of ♌ [Dist. ♃ a Corde ♌]	12 29⅙
9 24	Repeated [Repetita]	12 29⅙
9 26½	Repeated [Repetita]	12 29⅙

DIE 12 APRILIS, VESPERI. [12 April, in the evening]

	Merid. altit. of ♃ [Altit. merid. ♃]	57°59′
$9^{H}46^{M}$	Dist. of ♃ from the bright star in the foot of ♊ [Dist. ♃ a luc. pede ♊]	39 0½
	Repeated twice [Repetita bis]	39 0½
	Conversely. [Vice versa.]	
9 56	Dist. of ♃ from the heart of ♌ [Dist. ♃ a Corde ♌]	12 30
	Repeated twice [Repetita bis]	12 30

DIE 13 APRILIS, VESPERI. [13 April, in the evening]

$7^{H}50^{M}$	Merid. altit. of ♃ [Altit. ♃ merid.]	58° 0′
9 13	Dist. of ♃ from the bright star in the foot of ♊ [Dist. ♃ a luc. pede ♊]	39 4⅙
9 15	Repeated [Repetita]	39 4⅙
9 18	Repeated [Repetita]	39 4⅙
9 24	Dist. of ♃ from the heart of ♌ [Dist. ♃ a Corde ♌]	12 27⅔
9 26	Repeated [Repetita]	12 27 3/3 [recte: 12 27⅔]
9 29	Repeated [Repetita]	12 27⅔

DIE 27 APRILIS, VESPERI. [27 April, in the evening]

$9^{H}51^{M}$	Dist. of ♃ from Pollux [Dist. ♃ a Polluce]	25 19⅓ [?]
9 53	Repeated [Repetita]	25 19⅓
9 54	Repeated [Repetita]	25 19⅓

	Conversely. [Vice versa.]	
10 6	Dist. of ♃ from the tail of ♌ [Dist. ♃ a Cauda ♌]	35 15½
10 8½	Repeated [Repetita]	35 15½
10 11	Repeated [Repetita]	35 15½
10 23	Dist. of ♃ from the heart of Hydra [Dist. ♃ a Corde Hydræ]	25 7½
10 25	Repeated [Repetita]	25 7½
10 26⅔	Repeated [Repetita]	25 7½

DIE 2 MAIJ, VESPERI. [2 May, in the evening]

Dist. of ♃ from the tail of ♌ [Dist. ♃ a Cauda ♌]	34 55½
Repeated twice [Repetita bis]	34 55½
Dist. of ♃ from Pollux [Dist. ♃ a Polluce]	25 38½
Repeated twice [Repetita bis]	25 38½
Dist. of ♃ from the heart of Hydra [Dist. ♃ a Corde Hydræ]	25 0
Repeated twice [Repetita bis]	25 0

DIE 3 MAIJ, VESPERI. [3 May, in the evening]

$9^{H}47^{M}$	Dist. of ♃ from Castor [Dist. ♃ a Castore]	29 26⅙
9 48	Repeated [Repetita]	29 26⅙
9 49½	Repeated [Repetita]	29 26⅙
	Conversely. [Vice versa.]	
9 53	Dist. of ♃ from the tail of ♌ [Dist. ♃ a Cauda ♌]	34 52½
9 55	Repeated [Repetita]	34 52½
9 56½	Repeated [Repetita]	34 52½
10 5	Dist. of ♃ from the heart of Hydra [Dist. ♃ a Corde Hydræ]	24 59
10 7	Repeated [Repetita]	24 59
10 12	Repeated [Repetita]	24 59

Calculation of ♃ from the observations made on 27 April and on 2 and 3 May. [Calculus ♃ ex obseruationibus 27 Aprilis & 2 & 3 Maij habitis.]

Die 27 Aprilis. [27 April]

True place of ♃ from Pollux [Verus locus ♃ ex Polluce]	12°25′52″ ♌
from the tail of ♌ [ex Cauda ♌]	12 22 55
Difference of the longitudes [Differ. longitudinum]	2 57
Longitude of ♃, limited [Longitudo ♃ limitata]	12 24 52
Latitude from Pollux [Latitudo ex Polluce]	1 0 0 S.
from the tail of ♌ [ex Cauda ♌]	0 58 55
Latitude, limited [Latitudo limitata]	0 59 15 S.

Die 2 Maij H. 9½ P.M. [2 May, 9½ hours P.M.]

True place of ♃ from the tail of ♌ [Verus locus ♃ ex Cauda ♌]	12°44′20″ ♌
from Pollux [ex Polluce]	12 45 30
Place of ♃, limited [Locus ♃ limitatus]	12 45 0 ♌
Latitude from the tail of ♌ [Latitudo ex Cauda ♌]	0 58 50 S.
from Pollux [ex Polluce]	0 59 13
Latitude, limited [Latitudo limitata]	0 59 0 S.

Die 3 Maij. [3 May]

True place of ♃ from Castor [Verus locus ♃ ex Castore]	12 48 55 ♌
from the tail of ♌ [ex Cauda ♌]	12 47 26

Place of ♃, limited [Locus ♃ limitatus]	12 48 40 ♌
Latitude from Castor [Latitudo ex Caſtore]	0 59 34 S.
from the tail of ♌ [ex Cauda ♌]	0 58 55
Latitude, limited [Latitudo limitata]	0 59 0 S.

DIE 21 MAIJ, VESPERI. [21 May, in the evening]

H. 9½	Dist. of ♃ from Pollux [Diſt. ♃ a Polluce]	27 29½
	Repeated twice [Repetita bis]	27 29½
	Conversely. [Vice verſa.]	
	Dist. of ♃ from the tail of ♌ [Diſt. ♃ a Cauda ♌]	33 11⅙
	Repeated three times [Repetita ter]	33 11⅛ [?]
	For the latitude. [Pro Latitudine.]	
	Dist. of ♃ from the upper star of the □ of Ursa Major, Dubhe [Diſt. ♃ a ſuperiori □ Vrſæ mai. Dubhe]	48 55 0
	Repeated twice [Repetita bis]	48 55 0

DIE 9 JUNIJ, VESPERI. [9 June, in the evening]

♃ was observed from the tail of ♌ [Obſeruabatur ♃ a Cauda ♌]	30 44⅓
Repeated [Repetita]	30 44⅓
Repeated [Repetita]	30 44
Dist. of ♃ from the lower[1] of the preceding stars in the □ of Ursa Major, called Dubhe [Diſt. ♃ ab inferiori[1] præcedentium in □ Vrſæ maioris Dubhe vocata]	49 9⅔
Repeated twice [Repetita bis]	49 9⅔

DIE 27 JUNIJ. [27 June]

In the evening, after sunset, in the garden that adjoins the new, larger house, we set up the instrument, adjusted the clock there as well, and observed the following in my presence. [Veſperi poſt occaſum ☉[lis] in horto, qui adiacet nouæ domui maiori, dispoſito inſtrumento & ibidem adaptato horologio ſequentia obſeruauimus in mea præſentia.]

♃ was observed from the upper of the preceding stars in the □ of Ursa Major, the star the Arabs call Dubhe, whose long. is 9° 34′ ♌ and latit. 49° 40′ B. [Obſeruabatur ♃ a ſuperiore præcedentium in □ Vrſæ maioris quam Dubhe Arabes vocant, cuius long. 9° 34′ ♌, latit. 49° 40′ B.]

$9^{H}12^{M}$	Dist. of ♃ from the said star [Diſt. ♃ a dicta ſtella]	49 32½
9 15	The same repeated [Eadem repetita]	49 31½
9 20	Repeated a third time [tertio repetita]	49 31

This variation, however, could have arisen from refraction, since ♃ was drawing nearer and nearer to the horizon. At the last time it has an altitude of about 9°. You can also see what the recorded times do to the altitude. [Poterat autem hæc varietas incidere propter refractionem, quod ♃ magis magisque applicaret Horizonti. Habet autem altitudinem in vltimo tempore quaſi 9 partium. Potes etiam videre, quid tempora annotata faciant in altitudine.]

[1] It should be "superior" [upper]. [Debet eße ſuperior.]

$9^{H}30^{M}$	Between ♃ and the third of the wing, twice [Inter ♃ & tertiam alæ bis]	44 15
9 32	The same, as I said, repeated [Eadem, vti dixi, repetita]	44 15

From this the longitude of ♃ can be gathered on one side; on the other side, towards the west, it could not be obtained. [Atque ex hac colligi poteſt Longitudo ♃ ab vna parte. Ab altera haberi verſus occaſum non potuit.]

The latitude is to be taken from the star in Ursa Major, Dubhe, since that star lay towards the pole. In both cases, however, account must be taken of refraction. [Latitudo capienda ab ea, quæ in Vrſa maiore Dubhe, ſiquidem illa verſus polum tendebat. Habenda vero vtrobique ratio refractionis.]

About these times the dist. of ♃ from the heart of ♌ was also taken with the smaller Radius, at 9⅔ parts; the Radius had 255, transversal 17½, which make gr. 3 Min. 55. But it is not to be trusted too much. [Accipiebatur etiam per Radium minorem diſt. ♃ a Corde ♌ circa hæc tempora partium 9⅔, & habuit Radius 255, Transverſ. 17½; faciunt gr. 3 Min. 55. Sed non nimium fidendum.]

DIE 28 JUNIJ. [28 June]

In the evening, after sunset. [Veſperi poſt occaſum ☉^{lis}]

$9^{H}11^{M}$	Between ♃ and Dubhe in Ursa Major [Intei ♃ & Dubhe in Vrſa maiore]	49 34½
9 13	The same repeated [Eadem repetita]	49 34⅓
9 14½	The same repeated a 3rd time [Eadem 3^{tio} repetita]	49 34
	About these times the alt. of ♃ was 9⅔. [Fuit circa hæc tempora alt. ♃ 9⅔.]	
9 17	♃ from the third of the wing of ♍ [♃ a tertia alæ ♍]	44 4½
9 18⅓	Repeated most exactly [Repetita exactißime]	44 4½
	The altitude of ♃ was then about 9°. [Fuit tunc altitudo ♃ quaſi 9 partium.]	

At 9 31 the dist. of ♃ and Regulus was taken several times with the smaller Radius: 16⅓/255, which gives p. 3 M. 40; but this is not to be trusted too much. Still, the observation by the Radius may be better than yesterday's. [9 31 Capiebatur Diſt. ♃ & Reguli aliquoties per Radium minorem 16⅓/255, facit p. 3 M. 40, ſed huic non nimium fidendum. Poteſt tamen eße melior obſeruatio per Radium quam heſterna.]

N.B. From these observations of ♃ and ♂, made on the two preceding days, not only their longitude, on account of the parallax of the annual orb, but also their latitude can be verified, since they were approaching the Sun — especially for ♃, which stood not much more than a sign and a half from the Sun. [N.B. Ex his obſeruationibus in ♃ & ♂ duobus antecedentibus diebus factis poteſt non ſaltem eorum Longitudo ob Parallaxin orbis annui, ſed & Latitudo, ſiquidem Soli appropinquabant, verificari, præſertim in ♃, qui non diſtitit a Sole multum vltra ſeſquialterum ſignum.]

OBSERUATIONES MARTIS. [Observations of Mars]

NOCTU QUÆ PRÆCEDEBAT 1 JANUARIJ. [In the night preceding 1 January]

Meridian altitude of ♂ [Altitudo meridiana ♂]	
by the revolving instrument [per Volub.]	58 54½
by the sextant [per Sextantem]	58 54
Two hours after its transit through the meridian there was taken [Duabus horis poſt tranſitum illius per meridianum ſumebatur]	
Dist. of ♂ from Pollux [Diſt. ♂ a Polluce]	29 45
Repeated twice [Repetita bis]	29 45
Conversely. [Vice verſa.]	
Dist. of ♂ from the tail of ☋ [Diſt. ♂ a Cauda ☋]	29 26
Repeated [Repetita]	29 26½
Repeated [Repetita]	29 26
Right asc. from Pollux [Aſc. Recta ex Polluce]	141° 6′32″
from the tail of ☋ [ex Cauda ☋]	141 14 39
limited [limitata]	141 10 35
True place of ♂ [Verus locus ♂]	17 29 47 ☋
Latitude [Latitudo]	3 45 43 B.

N.B. From 28 August, the day on which the instruments were first set up at Benátky for observing, both the sextant and the revolving quadrant always increased the altitudes by 2′; this has been corrected in every instance that could be found. [N. B. A 28 Auguſti die, quo primum inſtrumenta Benachiæ pro obſeruationibus diſpoſita fuerunt, cum Sextans tum Volubilis Quadrans duobus ſemper minutis altitudines adauxerunt, quod in omnibus quotquot reperire licuit correctum eſt.]

NOCTE QUÆ PRÆCEDEBAT 5 JANUARIJ. [In the night preceding 5 January]

In the morning, one hour before its transit through the meridian, there was taken: [Mane vna hora ante tranſitum illius per meridianum ſumebatur]

Dist. of ♂ from Pollux [Diſt. ♂ a Polluce]	29 3
Repeated [Repetita]	29 3
Conversely, dist. of ♂ from the tail of ♌ [Vice verſa diſt. ♂ a Cauda ♌]	30 13
Repeated twice [Repetita bis]	30 13
Meridian altit. of ♂ [Altit. ♂ meridiana]	59 22
Right asc. from Pollux [Aſc. Recta ex Polluce]	140° 29′ 56″
from the tail of ♌ [ex Cauda ♌]	140 24 43
limited [limitata]	140 27 20
True place of ♂ [Verus locus ♂]	16 43 3 ♌
Latitude [Latitudo]	3 56 54 B.

EA NOCTE QUÆ PRÆCESSIT DIEM 20 JANUARIJ. [In the night that preceded 20 January]

♂ on the meridian had an altit. [♂ in meridiano habuit altit.]	
by the revolving instrument [per Volub.]	61° 8′
limited [limitata]	61 8 10″

And shortly afterwards the bright star of Hydra transited, having nearly the same right asc. as ♂; its altitude was found, as also before, [Et paulo poſt tranſiuit lucida Hydræ, habens ferme eandem cum ♂ Aſc. R., cuius altitudo inuenta vt etiam prius]	32 45⅙
The difference therefore gives approximately the distance of the two [Ergo differentia dat vtriusque fere diſtantiam]	28 22
To test the sextant, the distance between the heart of ♌ and Canis Minor was then taken [Pro examine Sextantis tunc capiebatur diſtantia inter Cor ♌ & Canem minorem]	37 18, twice [bis]
It should, however, have been [Debuit autem eße]	37 19½
Between the heart of ♌ and the lower head of ♊ [Inter Cor ♌ & inf. Cap. ♊]	36 58
It should have been, according to the earlier observations, [Debuit eße iuxta prius obſeruata]	36 59⅔
Therefore in both cases the sext. falls short of the true value by [Quare vtrobique deficit Sext. a vero]	0 1½
☿ transited the merid. At about the same time the dist. of ♂ from the lower head of ♊ was observed [Tranſiuit ☿ per merid. Eodem quaſi tempore obſeruabatur Diſt. ♂ ab inf. Cap. ♊]	24 27⅚, three times [ter]
limited [limitata]	24 29 20
Dist. of ♂ from the upper head of ♊ [Diſt. ♂ a ſup. Cap. ♊]	27 47

Then, conversely, ♂ from the heart of ♃ [Mox vice verſa ♂ a Corde ♃]	12 43, twice [bis]
limited [limitata]	12 44 30
The tail of ♃ was then east, by the armill. [Fuit tunc Cauda ♃ orient. per Armill.]	26 30
Between ♂ and the bright star in the foot of ♊ [Inter ♂ & luc. pedem ♊]	40 6½
limited [limitata]	40 7 30
Immediately afterwards the neck of ♃ transited the merid., having the altit. indicated before as well [Tranſiuit ſtatim poſt Ceruix ♃ per Merid. habens Altit. prout etiam prius indicatum]	61 32⅙
When the belly of ♃ was on the merid., ♂ was distant from the tail of ♃ [Quando in Merid. erat venter ♃ diſtabat ♂ a Cauda ♃]	34 23, three times [ter]
Spica ♍ was then east [Fuit tunc Spica ♍ or.]	38 10
Shortly after the transit of the tail of ♃ through the merid., ♂ was observed from the third of the wing of ♍ [Paulo poſt tranſitum Caudæ ♃ per Merid. obſeruabatur ♂ a tertia alæ ♍]	52 19, twice [bis]
limited [limitata]	52 23 30

NOCTE PRÆCEDENTE DIEM 22 JANUARIJ. [The night preceding 22 January]

At about hour 1½ by our specular clock, the dist. between ♂ and the lower head of ♊ was taken with the sextant [Circa horam 1½ iuxta Horologium noſtrum ſpeculare inter ♂ & infer. cap. ♊ diſt. per Sextantem capiebatur]	23 41⅚, three times [ter]
At hour 1¾ ♂ was distant from the heart of ♃ [Hora 1¾ ♂ diſtabat a Corde ♃]	13 29½, three times [ter]
At hour 2 by the same clock the heart of ♃ transited the merid., having an alt. of [Hora 2 in Horologio eodem tranſiuit Cor ♃ per Merid. habens alt.]	53 33, doubtful [dubia]
At H. 2¼ ♂ was distant from Canis Minor [H. 2¼ diſtabat ♂ a Cane min.]	29 11, three times [ter]

NOCTE PRÆCEDENTE DIEM 24 JANUARIJ. [The night preceding 24 January]

Dist. of ♂ from the bright star in the foot of ♊ [Diſt. ♂ a luc. pede ♊]	38 48
The same repeated [Eadem repetita]	38 48
Limited [Limitata]	38 45
Dist. of ♂ from the heart of ♃ [Diſt. ♂ a Corde ♃]	14 12½
The same repeated [Eadem repetita]	14 12⅓

The same repeated a third time [Eadem tertio repetita]	14 12½
Limited [Limitata]	14 10½
Dist. of ♂ from the lower head of ♊ [Diſt. ♂ ab infer. cap. ♊]	22 57⅓
The same repeated [Eadem repetita]	22 57
The same repeated a 3rd time [Eadem 3^{tio} repetita]	22 57
Limited [Limitata]	22 54
When these observations were being taken, the tail of ☋ was east in the armillae [Erat tunc Cauda ☋, cum hæ obſeruationes ſumebantur, in Armillis orientalis]	48⅓

From this the time can be inferred. Corresponding: H. 11 M. 50. [Hinc tempus colligi poteſt. Reſp. H. 11 M. 50.]

Afterwards the distance of ♂ was taken from the third of the wing of ♍ [Poſtea diſtantia ♂ ſumebatur a tertia alæ ♍]	53 49⅚
The same repeated [Eadem repetita]	53 50
The same repeated a 3rd time [Eadem 3^{tio} repetita]	53 50
Limited [Limitata]	53 46
About this time the tail of ☋ was east, by the equatorial armill. [Erat circa hoc tempus Cauda ☋ orient. per Armill. æq.]	41 37
When ♂ was crossing the meridian, it had an altitude by the revolving quadr. [Cum ♂ tranſiret Meridianum, habuit Altitudinem per. Quadr. Volub.]	61 37⅙
Limited [Limitata]	61 37 40
The tail of ☋ was then east [Erat tunc Cauda ☋ orient.]	38 20

Corresponding: H. 12½. [Reſp. H. 12½.]
For the place of ♂. [Pro loco ♂.]
Nocte quæ præceßit 20 Januarij. [The night that preceded 20 January]

Declination of ♂ [Declinatio ♂]	21°26′ 40″B.
Declin. of the lower head of ♊ [Declin. infer. Cap. ♊]	28 56 4 B
Declin. of the heart of ☋ [Declin. Cordis ☋]	13 53 46 B
Dist. of ♂ from the lower head of ♊ [Diſt. ♂ ab infer. Cap. ♊]	24 29 20
Dist. of ♂ from the heart of ☋ [Diſt. ♂ a Corde ☋]	12 44 30
Right asc. from Pollux [Aſc. R. ex Polluce]	136 1 32
from the heart of ☋ [ex Corde ☋]	135 57 26
Limited [Limitata]	135 59 29
from the bright star in the foot of ♊ [ex luc. pede ♊]	135 53 18
from the third of the wing of ♍ [ex tertia alæ ♍]	135 53 48
Right asc., limited [Aſc. R. limitata]	135 53 33

And this was the value retained in computing the true place of ♂. [Et hæc retenta eſt in ſupputatione veri loci ♂.]

Corresponding true place of ♂ [Reſp. Verus locus ♂]	12 5 25 ♌
Latitude [Latitudo]	4 23 43 B.

Nocte quæ præceßit 22 Januarij. [The night that preceded 22 January]

Declination of ♂ [Declinatio ♂]	21°41′23″B.
Dist. of ♂ from the lower head of ♊ [Diſt. ♂ ab infer. Cap. ♊]	23 43 20
Dist. of ♂ from the heart of ♌ [Diſt. ♂ a Corde ♌]	13 31 0
Right asc. from Pollux [Aſc. R. ex Polluce]	135 14 15
from the heart of ♌ [ex Corde ♌]	135 7 53
Limited [Limitata]	135 11 4
True place of ♂ from the heart of ♌ [Verus locus ♂ ex Corde ♌]	11 22 4 ♌
from the lower head [ex infer. Cap.]	11 26 57 ♌
Difference [Differentia]	4 53
Place of ♂, limited [Locus ♂ limitatus]	11 24 30 ♌

Nocte quæ præceßit 24 Januarij. [The night that preceded 24 January]

Declination of ♂ [Declinatio ♂]	21°56′10″B.
Dist. of ♂ from the bright star in the foot of ♊ [Diſt. ♂ a luc. pede ♊]	38 45 0
Dist. from the 3rd of the wing of ♍ [Diſt. a 3^{tia} alæ ♍]	53 46 0
Right asc. from the bright star in the foot [Aſc. R. ex luc. pede]	134 23 39
from the 3rd of the wing [ex 3^{tia} alæ]	134 29 48
limited [limitata]	134 26 43
from Pollux [ex Polluce]	134 23 18
from the heart of ♌ [ex Corde ♌]	134 27 37
limited [limitata]	134 25 28
limited a 2nd time [2do limitata]	134 24 33
True place of Mars [Verus locus ♂^{tis}]	10 38 46 ♌
Latitude [Latitudo]	4 28 40 B.

Carrying the observed place of ♂ on 23 January forward to the opposition with the simple Sun. [Diductio loci obſeruati ♂ Die 23 Januarij in oppoſitum ſimplici Solis.]

On 13^{1} January at H. 11⅔ P.M., in equated time and reduced to the meridian of Uraniborg, there was found from the observations: [Die 13^{1} Januarij H. 11⅔ P.M. tempore æquato & ad Meridianum Vraniburgicum reducto ex obſeruationibus deprehenſa eſt]

♂	Longitude [Longitudo]	10°38′46″♌
	Latitude [Latitudo]	4 28 40 B.

At the same time the simple place of the Sun was 2° 28′ 48″ ♒, the difference about 8° 10′. The daily motion of ♂ was assumed to be 23′45″; accordingly 1° 22′ 53″ give $1^{D}\ 8^{H}\ 10^{M}$, corresponding to $5^{D}\ 21^{H}\ 52^{M}$. This interval, added to the earlier time, which agrees with the observations, shows that the opposition of ♂ with the simple Sun took place on 19 January at H. 9 M. 32. [Eodem tempore fuit Locus Solis ſimplex 2° 28′ 48″ ♒, differentia 8° 10′ fere. Motus diurnus ♂ aßumptus eſt 23′45″, itaque 1° 22′ 53″ dant $1^{D}\ 8^{H}10^{M}$, reſp. $5^{D}21^{H}52^{M}$ quod intervallum additum priori obſeruationibus congruenti oſtendit ☍ ♂ cum ſimplici ☉^{lis} factum eße Die 19 Januarij H. 9 M. 32.]

	23 11 40
	29 9 32

For that time we infer, according to the daily motion presupposed earlier for both the true ♂ and the simple Sun, that Mars would stand at 8°18⅖′ ♌, and the Sun, as to its simple motion, in opposition to ♂, namely at 8°18⅖′ ♒. [Quo tempore colligimus iuxta prius præſuppoſitum motum diurnum tam ♂ verum quam ☉^{lis} ſimpl. Martem hæſurum in 8°18⅖′ ♌, ☉^{lem} vero quo ad ſimpl. motum in ♂ ☍, nempe in 8°18⅖′ ♒.]

[1] That is, of the old style. [[1] Scilicet ſtyli veteris.]

A test of the place of Mars from our restitution. [Experimentatio pro loco ♂^{tis} ex reſtitutione noſtra.]

19 January, H. 9 H. 32. [Die 19 Januarij H. 9 H. 32.]

Simple long. of ♂, corrected [Simplex Long. ♂ correcta]	3^{s} 6°46′ 4″
Apogee of ♂, corrected [Apogæum ♂ correctum]	3 25 30 14
Anomaly of Mars [Anomalia ♂^{tis}]	11 11 16 0
Corresponding prosthaphaeresis of long., add [Reſp. Long. proſtaph. add.]	3 18 39
Precession of the equinoxes, add [Præceßio Æquinoct. add.]	28 15 5
Therefore the true place of ♂ [Ergo verus locus ♂]	♌ 8 19 48

Difference between the place observed and reduced and the place found from the tables: 1′24″. [Differ. inter locum obſeruatum & reduct. atque ex tabulis inuentum 1′24″.]

The parallax and the equation of longitude of ♂ for its latitude cancel each other out. [Parallaxis & Æquatio Longitudinis ♂ pro Latitudine eius ſe inuicem elidunt.]

If the time of the opposition is set at D. 19 January, H. 9 M. 40 P.M., and ♂ at 8° 19′ ♌, everything agrees well enough with the earlier restitution. This can be recognised and limited more correctly from observations to be had later and compared with the preceding ones. The Copernican calculation exceeds in the true place of ♂ near the opposition by 2¼°, while the Alfonsine falls short by 3½°. Hence the difference between them is 5¾°. [Si ponatur tempus ☍ D. 19 Januarij H. 9 M. 40 P.M. & ♂ in 8° 19′ ♌, omnia ſatis conueniunt cum priori reſtitutione. Quod ex obſeruationibus poſtmodum habendis & cum antecedentibus conferendis rectius dignoſci poteſt atque limitari. Abundat calculus Copernici in vero loco ♂ circa ☍ 2¼°, Alphonſinus vero deficit 3½°. Vnde differentia inter ſeſe 5¾°.]

N.B. ♂ is very nearly at the limit of greatest northern latitude. [N.B. Verſatur ♂ circa limitem maximæ Latitudinis Boreæ quam proxime.]

A more exact reduction of the motion of ♂ to the opposition of the simple Sun, from comparing the following observations with the preceding ones. [Exactior reductio motus ♂ in ☍ ſimplicis ☉^{lis} ex collatione ſequentium obſeruationum cum antecedentibus.]

Jan.	D. 23	H. 11	M. 40	Long. 10 39 0	
Feb.	D. 3	H. 11	M. 40	6 18 0	corr.
Differ.	11	0	0	4 21 0	

For the daily motion of ♂. [Pro motu diurno ♂.]

D. 11 — 4° 21′ 0 ——— D. 1 (23′44″ approximately [D. 11—4° 21′ 0———D. 1 (23′44″ fere]

Simple place of the Sun at the earlier time [Locus Solis ſimplex ad prius tempus]	2°28′48″♒
Difference between the place of ♂ and of the Sun [Differentia inter locum ♂ & ☉^{is}]	8 10 12
Daily motion of both the Sun and ♂ [Motus diurnus vtriusque ☉^{is} & ♂^{is}]	1 22 52

1° 22′ 52″ — 14′40″ ——— 8° 10′ 12″

(85′20″, approximately D. 5 H. 22, to be added. [(85′20″ fere D. 5 H. 22 addenda.]

Therefore the time of the opposition was D. 19 Jan. H. 9 M. 40. If the appearance of Mars and of the Sun is reduced to that time according to each one's proper motion, ♂ is found to have been in opposition to the Sun at 8° 18¾′ ♌. [Ergo tempus ☍ fuit D. 19 Jan. H. 9 M. 40. Ad quod tempus ſi reductum fuerit phænomenon ♂^{is} & ☉^{is} iuxta cuiusque motum proprium, inuenitur ♂ in ☍ ☉^{is} fuiße in 8° 18¾′ ♌.]

From our restitution the place of ♂ is found to be precisely 8° 19′ 57″, diff. 1⅕′. [Locus ♂ ex reſtitutione noſtra præciſe inuenitur in 8° 19′ 57″, diff. 1⅕′.]

For the latitude of Mars at the time of opposition. [Pro Latitudine ♂ tempore oppoſitionis.]

On 23 Jan., latitude [Die 23 Jan. Latitudo]	4°28′40″
	1 50
True latitude [Vera Latitudo]	4 30 30
On 24 Jan., observed [Die 24 Jan. obſeruata]	4 29 0
corr.	1 50
	4 30 50

If, therefore, you set the true latitude at the time of opposition at 4° 30⅔′, you are bound to commit an imperceptible error. [Si itaque poſueris Latitudinem veram tempore ☍ 4° 30⅔′, inſenſibilis aberratio committi debet.]

From this, the examination for the greatest northern latitude is carried out in this way. [Hinc examinatio pro maxima latitudine Borea hoc modo inſtituitur.]

Greatest northern limit in [Maximus limes B. in]	17°30′ ♌
Place of Mars [♂tis locus]	8 19 ♌
Difference [Differentia]	9 11

Diagram. A hand-drawn figure reproduced in facsimile in the left column: a long, narrow triangle whose apex lies at the left, with a small rectangle drawn against its short right-hand side. Readable labels:

- a (left apex): a
- upper right corner of the triangle: y
- below the lower right corner of the triangle: ß.
- below the lower side of the triangle: 80 49.
- inside the rectangle, at its top: M/n [?]
- inside the rectangle, written vertically: 4.30 [?]
- against the right side of the rectangle: a looped sign [?]

Corresponding angle βαγ: 4 34⅙, the greatest northern latitude of Mars. This agrees with what was found before. [Reſp. Angulus βαγ 4 34⅙ Max. Latit. Bor. ♂. Quæ cum antea inuenta conuenit.]

NOCTE QUÆ PRÆCEDEBAT 2 FEBRUARIJ. [The night preceding 2 February]

With the sextant corrected, when Spica ♍ was approaching the meridian, the distance of Mars from the heart of ♌ was 17° 42⅓′, four times. When Arcturus was on the merid., the dist. of Mars from the bright star of the neck of ♌ was 17 29, twice. Nothing could be taken toward the west because of clouds. [Sextante emendato, cum Spica ♍ appropinquaret meridiano, erat diſtantia ♂ a Corde ♌ 17° 42⅓′ quater Cum Arcturus eßet in merid. erat diſt. ♂ a lucida Ceruicis ♌ 17 29 bis. Nihil potuit accipi verſus occaſum propter nubes.]

NOCTE QUÆ PRÆCEDEBAT 3 FEBRUARIJ. [The night preceding 3 February]

Meridian altit. of Mars [Altit. ♂ meridiana]	62° 42⅔′
Limited [Limitata]	62 40 50
Dist. of Mars from the bright foot of ♊ [Diſt. ♂ a lucido pede ♊]	34 57
Repeated three times [Repetita ter]	34 57
Dist. of Mars from the heart of ♌ [Diſt. ♂ a Corde ♌]	18 2
Repeated twice [Repetita bis]	18 2⅙
Dist. of Mars from the lower head of ♊ [Diſt. ♂ ab infer. Cap. ♊]	19 3⅓
Repeated twice [Repetita bis]	19 3⅓
Dist. of Mars from the bright star of the neck of ♌ [Diſt. ♂ a lucida Ceruicis ♌]	17 42
Repeated twice [Repetita bis]	17 41⅚

NOCTE SEQUENTE 3 FEBRUARIJ. [The night following 3 February]

Mars was observed; it had passed its acronychal position by about 5 days. [Obſeruabatur ♂, qui Acronychium ſitum per 5 proxime dies exceßerat.]

Between Mars and the bright foot of ♊ [Inter ♂ & lucidum pedem ♊]	34° 38½′
Repeated [Repetita]	34 38½
The same repeated a third time [Repetita eadem 3^{tio}]	34 38½
Limited [Limitata]	34 39 0

About that time the first star in the head of Hydra was near the meridian; from this the hour and minute will be gathered. [Erat circa id tempus prima in Capite Hydræ iuxta Meridianum: hinc hora & minutum colligetur.]

Afterwards Mars was distant, conversely, [Poſtea diſtabat ♂ vice verſa]

from the lower head of ♊ [ab inferiori Capite ♊]	18 39
Repeated [Repetita]	18 39
Repeated — precisely [Repetita præciſe]	18 39
Limited [Limitata]	18 39 30

These observations were made about a quarter of an hour after the preceding ones. [Factæ ſunt hæ obſeruationes quaſi quarta parte horæ poſt antecedentes.]

Then the dist. of Mars was taken [Deinde capiebatur diſt. ♂]

from the heart of ♌ [a Corde ♌]	18 23⅙
Repeated twice [Repetita bis]	18 23⅓
Limited [Limitata]	18 24 0

This was about half an hour after the head of Hydra had crossed the merid. [Erat hoc quaſi dimidia hora, poſtquam Caput Hydræ Merid. tranſierat.]

And soon Mars crossed the meridian, having an altitude [Moxque tranſiuit ♂ Meridianum habens altitud.]

with the revolving quadrant [per Quadr. Volub.]	62 49⅚
Limited [Limitata]	62 49⅙

Again, the dist. of Mars [Rurſus diſt. ♂]

from the bright star of the neck of ♌ [a Luc. Ceruicis ♌]	18 3½
Repeated twice [Repetita bis]	18 3⅓
Limited [Limitata]	18 4 0

It was about ¾ of an hour after the head of Hydra had been on the meridian. [Erant quaſi ¾ vnius horæ poſtquam Caput Hydræ fuit in Meridiano.]

NOCTE QUÆ SEQUEBATUR DIEM 4 FEBRUARIJ. [The night following 4 February]

Between Mars and the bright foot of ♊ [Inter ♂ & lucidum pedem ♊]	34 18½
The same, repeated twice [Eadem bis repetita]	34 18⅙
Dist. of Mars from Pollux [Diſt. ♂ a Polluce]	18 17
Repeated [Repetita]	18 17
Dist. of Mars from the heart of ♌ [Diſt. ♂ a Corde ♌]	18 46⅚
Repeated twice [Repetita bis]	18 46⅙
Dist. of Mars from the bright star of the neck of ♌ [Diſt. ♂ a lucida Ceruicis ♌]	18 26⅓
Repeated [Repetita]	18 26⅓
Meridian altit. of Mars by the revolving instrument [Altit. merid. ♂ per Volub.]	62 54⅚
Limited [Limitata]	62 54 10

DIE 18 FEBRUARIJ, VESPERI. [18 February, in the evening]

The clocks were corrected by the transit of the upper head of ♊ across the meridian, setting them then at H. 9 M. 2. [Corrigebantur horologia ad tranſitum ſuperioris Capitis ♊ per Meridianum, ponendo ea tum in H. 9 M. 2.]

Merid. altit. of the upper head of ♊ [Altit. merid. ſuper. Cap. ♊]	72 23⅙
Merid. altit. of the lower head of ♊ [Altit. merid. infer. Cap. ♊]	68 37¾

Mars was then in a straight line with both Aselli of ♋; conversely, with the heart of ♌ and the lower head of ♊. [Erat tum ♂ in linea recta cum vtroque aſello ♋. Vice verſa cum Corde ♌ & inferiori Capite ♊.]

The distance of Mars, as far as sight goes, from the upper Asellus toward the north was ¼ of the interval lying between those two Aselli. [Diſtantia autem ♂ quoad viſum a ſuperiori aſello verſus Boream erat ¼ interualli inter duos iſtos aſellos intercepti.]

H. 9⅔: the distance of Mars was taken [H. 9⅔ Sumebatur diſtantia ♂]

from the bright foot of ♊ [a lucido pede ♊]	29 59⅙
The same dist. repeated twice [Diſt. eadem repetita bis]	29 59⅙

Conversely. [Vice verſa.]

H. 9⅝ Dist. of Mars from the heart of ♌ [H. 9⅝ Diſt. ♂ a Corde ♌]	23 8⅝
The same repeated twice [Eadem repetita bis]	23 8⅝

To test the sextant, between [Pro examinando Sextante, inter]

Aldebaran and the bright foot of ♊, three times [Aldeb. & luc. pedem ♊]	29 10½ ter
It should have been [Debuit eße]	29 9

H. 10: Mars was crossing the merid., having an altit. of 63 41¼. [H. 10 Tranſibat ♂ per Merid. habens altit. 63 41¼]

Dense clouds were then approaching from the north, and they covered the whole sky. [Adventabant tum denſæ a Borea nubes, quæ totum cœlum obtegebant.]

DIE 20 FEBRUARIJ, VESPERI. [20 February, in the evening]

At about hour 9 Procyon crossed the merid., having an altitude, with the revolving quadrant, of 45° 53′. [Hora 9 circiter tranſiuit Procyon per Merid. habens Altitud. per Quad. Volub. 45° 53′]

H. 9 M. 10 Dist. of Mars from the bright foot of ♊ [H. 9 M. 10 Diſt. ♂ a luc. pede ♊]	39 30
The same dist. repeated a second time [Secundo eadem diſt. repetita]	39 30
Repeated a third time [Tertio repetita]	39 30

Afterwards, near hour 9½, its distance was taken conversely [Poſtea iuxta horam 9^{nam} ½ capiebatur vice verſa eius diſtantia]

from the heart of ♌ [a Corde ♌]	23 35½

The same repeated — precisely [Eadem repetita præciſe]	23 35½
The same repeated a third time [Eadem tertio repetita]	23 35⅓

About hour 10 Mars crossed the merid., having an altitude of 63 50. [Circa horam 10 tranſiuit ♂ Merid. habens altitud. 63 50]

NOCTE QUÆ PRÆCEDEBAT DIEM 22 FEBRUARIJ. [The night preceding 22 February]

Merid. altit. of the bright foot of ♊ [Altit. merid. lucidi pedis ♊]	56 22⅓
Merid. altit. of the upper head of ♊ [Altit. merid. ſup. Capitis ♊]	72 24⅓

$9^{H}29^{M}$ I. Dist. of Mars from the bright foot of ♊ [$9^{H}29^{M}$ I. Diſt. ♂ a luc. pede ♊]	29 17⅚
II. The same repeated [II. Repetita eadem]	29 17⅚
III. The same repeated [III. Eadem repetita]	29 17⅚
H. 9½ I. Conversely, the dist. of Mars from the heart of ♌ was taken [H. 9½ I. Vice verſa capiebatur diſt. ♂ a Corde ♌]	23 48
II. The same repeated [II. Eadem repetita]	23 48⅓

Shortly after med. 10, [Paulo poſt med. 10,]

III. Repeated [III. Repetita]	23 48⅓
IV. Repeated [IV. Repetita]	23 48⅓
At about H. 10, I. The dist. between Aldebaran and the bright foot of ♊ was taken [H. fere 10 I. Capiebatur diſt. inter Aldeboran & luc. ped. ♊]	29 9⅚
About H. 10, II. The same dist. repeated [Circa H. 10 II. Eadem diſt. repet.]	29 9⅚
H. 10, III. The same repeated — precisely [H. 10 III. Eadem repetita præciſe]	29 9⅚

At hour 10 Mars crossed the merid., having an altitude of precisely 63 49. [Hora 10. Tranſiuit ♂ per Merid. habens altitudinem præciſe 63 49]

DIE 2 MARTIJ, VESPERI. [2 March, in the evening]

Merid. altit. of the lower head of ♊ [Altit. merid. infer. Cap. ♊]	68° 37⅔′
Dist. of Mars from the bright star of ♈, with the new pinnule [Dist. ♂ a luc. ♈, nouo pinn.]	86 32⅔
Repeated [Repetita]	86 32⅔
Dist. of Mars from Aldebaran, with the new pinnule [Dist. ♂ ab Aldeb., nouo pinn.]	55 46⅔
Repeated [Repetita]	55 46⅔

Conversely. [Vice verſa.]

Dist. of Mars from the heart of ♌, with the old [Dist. ♂ a Corde ♌, veteri]	25 15
Repeated [Repetita]	25 15
H. 10 Merid. altit. of Mars [H. 10 Altit. ♂ merid.]	63 50½

DIE 9 MARTIJ, NOCTE SEQUENTE. [9 March, the following night]

N.B. Mars approaching its first station, near the greatest parallax of the orb. [N.B. ♂ appropinquans ſtationi primæ iuxta maximam Parallaxin orbis.]

Shortly before the star Mars crossed the meridian, its distance was taken in this way. [Paulo antequam ♂ ſtella tranſiret Meridianum, ſumebatur eius diſtantia in hunc modum.]

I. From the bright foot of ♊ [I. A Lucido pede ♊]	27 28½
II. The same repeated [II. Eadem repetita]	27 29
III. Repeated [III. Repetita]	27 28
IV. Repeated [IV. Repetita]	27 28½
Merid. altit. of Mars [Altit. ♂ Merid.]	63 39½

Shortly after it had crossed the meridian, this was taken again [Paulo poſtquam Meridianum tranſißet, hæc iterum accepta]

between Mars and the heart of ♌ [inter ♂ & Cor ♌]	25 29½
The same again [Iterum eadem]	25 29

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

	Merid. altit. of Mars [Altit. ♂ merid.]	63° 25⅙′
$9^{H}17^{M}$	Dist. of Mars from Aldebaran, with the new pinnule [Dist. ♂ ab Aldeb. nouo pinn.]	56 1

9 23	Dist. repeated [Dist. repetita]	56 1
9 25	Repeated [Repetita]	56 1
9 28	Dist. of Mars from the bright foot of ♊ [Dist. ♂ a lucido pede ♊]	27 39½
9 31	Repeated [Repetita]	27 39½
9 32	Repeated [Repetita]	27 39

Conversely. [Vice versa.]

9 37	Dist. of Mars from the heart of ♌ [Dist. ♂ a Corde ♌]	25 14⅓
9 38½	Repeated [Repetita]	25 14⅓
9 41	Repeated [Repetita]	25 14⅓

DIE 16 MARTIJ, VESPERI. [16 March, in the evening]
Observed among rather sparse clouds: [Inter rariusculas nubes obseruabatur]

	Meridian altit. of Mars [Altit. ♂ meridiana]	63°19′
$9^{H}25^{M}$	Dist. of Mars from Aldebaran [Dist. ♂ ab Aldebora]	56 6⅓
9 28	Repeated [Repetita]	56 6⅓
9 30	Repeated [Repetita]	56 6⅓

Conversely. [Vice versa.]

9 31	Dist. of Mars from the tail of ♌, with the new pinnule [Dist. ♂ a Cauda ♌, nouo pinn.]	47 28 20
9 35	Repeated [Repetita]	47 29
9 37	Repeated [Repetita]	47 28⅓

With the old pinnule. [Veteri pinnacidio.]

9 40	Dist. of Mars from the bright foot of ♊ [Dist. ♂ a luc. pede ♊]	27 42½
9 41	Dist. repeated [Dist. repetita]	27 42½
9 43	Repeated [Repetita]	27 42½

Conversely. [Vice versa.]

9 46	Dist. of Mars from the heart of ♌ [Dist. ♂ a Corde ♌]	25 8½
9 47	Repeated [Repetita]	25 9

9 50	Repeated [Repetita]	25 8½

Because of clouds nothing more could be taken this night. [Propter nubes nihil amplius hac nocte accipi potuit.]

Calculation of Mars from the preceding observations. [Calculus Martis ex antecedentibus obſeruationibus.]

Die 2 Martij H. 10 P. M. [2 March, 10 p.m.]

Declination of Mars [Declinatio ♂]	24° 8′ 0″B.
Angle of the ascensional difference, from the bright star of ♈ [Ang. diff. aſcenſ. a luc. ♈]	96 9 37
from Aldebaran [ab Aldeb.]	59 2 30
from the heart of ♌ [a Corde ♌]	24 28 46
Right ascension of Mars, limited [Aſc. recta ♂ limitata]	122 16 54
Corresponding longitude [Reſp. Longitudo]	29 14 46♋
Latitude [Latitudo]	3 50 51 S.

Die 9 Martij, H. 9½ P. M. [9 March, 9½ h p.m.]

Declination of Mars [Declinatio ♂]	23°59′ 0″
Angle of the ascensional difference [Ang. diff. aſcenſ.]	
from the bright foot of ♊ [a luc. pede ♊]	28 18 21 add.
from the heart of ♌ [a Corde ♌]	24 48 51 min.
Right ascension of Mars, limited [Aſc. recta ♂ limitata]	121 55 22
Corresponding longitude [Reſp. Longitudo]	28 57 4♋
Latitude [Latitudo]	3 37 15 S.

Die 15 Martij H. 9⅓. [15 March, 9⅓ h]

Declination of Mars [Declinatio ♂]	23°41′40″
Angle of the ascensional difference [Ang. diff. aſcenſ.]	
from Aldebaran [ab Aldeb.]	59 16 4 add.
from the bright foot of ♊ [a luc. pede ♊]	28 33 48 min.
from the heart of ♌ [a Corde ♌]	24 37 42 min.
Right ascension of Mars, limited [Aſc. recta ♂ limitata]	122 8 39
Corresponding longitude [Reſp. Longitudo]	29 12 30♋
Latitude [Latitudo]	3 22 53 S.

Die 16 Martij H. 9¼. [16 March, 9¼ h]

Declination of Mars [Declinatio ♂]	23 37 30
Angle of the ascensional difference [Ang. diff. aſcenſ.]	
from the bright foot of ♊ [a luc. pede ♊]	28 38 22 add.
from the heart of ♌ [a Corde ♌]	24 32 43 min.
Right ascension of Mars, limited [Aſc. recta ♂ limitata]	122 13 25
Corresponding longitude [Reſp. Longitudo]	29 17 53♋
Latitude [Latitudo]	3 19 45 S.

Summary recapitulation of the calculation of Mars. [Summaria Recapitulatio Calculi Martis.]

March, day [Martij Die]	Longitude: observed [Longitudo: Obſeruata]	Longitude: Alfonsine [Longitudo: Alphonſina]	Longitude: Copernican [Longitudo: Copernicæa]	Difference: Alfonso. [Differentia: Alphonſ.]	Difference: Copern. [Differentia: Copern.]
2	♋ 29° 14′ 46″	♋ 26° 15′	♌ 0° 40′	2° 59′ 46 min.	1° 25′ 14″ plus
9	28 57 4	26 6	0 10	2 51 4 min.	1 12 56 plus
15	29 12 30	26 23	0 10	2 49 30 min.	0 57 30 plus
16	29 17 53	26 30	0 14	2 47 53 min.	0 56 7 plus
	Latitude [Latitudo]			**Difference** [Differentia]	
2	3 50 51 S.	3 29 S.	3 48 S.	21 51 min.	2 51 min.
9	3 37 15	3 15	3 35	22 15 min.	2 15 min.
15	3 22 53	3 4	3 12	18 53 min.	10 53 min.
16	3 19 45	3 1	3 10	18 45 min.	9 45 min.

DIE 23 MARTIJ, VESPERI. [23 March, in the evening]

At 8^{H} 2^{M} Mars crossed the meridian, having an altitude of 62° 55′. [8^{H} 2^{M} Tranſiuit ♂ Meridianum habens Alt. 62° 55′]

	Dist. of Mars from the bright foot of ♊ [Diſt. ♂ a lucido pede ♊]	Altit. of Arcturus [Altit. Arcturi]
9 35	28 30½	33 42
9 39	28 30	33 54
9 42½	28 30	34 24
	Conversely, dist. of Mars from the heart of ♌. [Vice verſa Diſt. ♂ a Corde ♌.]	
9 47½	24 13½	35 20
9 50½	24 13½	35 49
9 53	24 13½	36 19
9 54	24 13½	36 50

From this there results the longitude of Mars [Prouenit hinc Long. ♂tis]	0°10′37″♌
Latit.	3 7 22 B.

Mars, moreover, was near the trine of the Sun and near the greatest parallax of the annual orb. [Erat autem ♂ iuxta △ ☉lis & prope Parallaxin Orbis annui maximam.]

DIE 25 MARTIJ, VESPERI. [25 March, in the evening]

	Dist. of Mars from the bright foot of ♊ [Diſt. ♂ a luc. pede ♊]	Altit. of Aldebaran [Altit. Aldeboræ]
$7^{H}39^{M}$	28 43⅓	33 24
7 40½	28 43⅓	32 50
7 50	28 43⅓	31 56
	Conversely, dist. of Mars from the bright star of the neck of ♌ [Vice verſa Diſt. ♂ a luc. ceru. ♌]	
7 52	24 4¾	30 22
	24 4¾	
7 56	Merid. altit. of Mars 62 46 [Altit. ♂ merid. 62 46]	
	The dist. already mentioned, repeated [Prædicta diſt. repet.]	
8 2	24 4⅓	29 36

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

	Dist. of Mars from the bright foot of ♊ [Diſt. ♂ a luc. pede ♊]	28°53′
	Dist. repeated [Diſt. repetita]	28 53
	Dist. repeated [Diſt. repetita]	28 53
$10^{H}31^{M}$	The last altitude of the bright foot was [Fuit vltima altitudo luc. ped.]	25 45

Conversely. [Vice verſa.]

Mars from the heart of ♌ [♂ a Corde ♌]	23 44
Dist. repeated [Diſt. repetita]	23 44
Dist. repeated [Diſt. repetita]	23 44

The meridian altitude of Mars was not taken this evening, but it can be gathered from the preceding and following observations. [Altit. merid. ♂ hac veſpera non ſumebatur, ſed poteſt colligi ex antecedentibus & ſequentibus.]

DIE 6 APRILIS. [6 April]

	Meridian altit. of Mars [Altit. ♂ meridiana]	61°46⅚′
8^{H} 0^{M}	Dist. of Mars from the bright foot of ♊ [Diſt. ♂ a luc. pede ♊]	31 12
8 2½	Repeated [Repetita]	31 12
8 4	Repeated [Repetita]	31 12
8 5½	Dist. of Mars from Pollux [Diſt. ♂ a Polluce]	16 5
8 7	Repeated [Repetita]	16 5⅔
8 8	Repeated [Repetita]	16 5⅔
8 31	Dist. of Mars from the heart of ♌ [Diſt. ♂ a Corde ♌]	21 7
8 33	Repeated [Repetita]	21 7
8 36	Repeated [Repetita]	21 7⅔
8 37½	Dist. of Mars from the bright star of the neck of ♌ [Diſt. ♂ a luc. Ceruicis ♌]	21 32
8 38½	Repeated [Repetita]	21 32
	Repeated [Repetita]	21 32

DIE 7 APRILIS, VESPERI. [7 April, in the evening]

	Meridian altit. of Mars [Altit. ♂ meridiana]	61°38⅚′
9^{H} 0^{M}	Dist. of Mars from the bright foot of ♊ [Diſt. ♂ a luc. pede ♊]	31 29
9 1½	Repeated [Repetita]	31 29⅓
9 2	Repeated [Repetita]	31 29⅓

Conversely. [Vice verſa.]

9 4½	Dist. of Mars from the heart of ♌ [Diſt. ♂ a Corde ♌]	20 50⅓
9 6	Repeated [Repetita]	20 50⅓
9 8⅓	Repeated [Repetita]	20 50⅓

Pro vero loco ♂ D. 7 Apr. H. 9⅓ P. M. [For the true place of Mars, 7 April, 9⅓ h p.m.]

Ascensional difference, from the bright foot of ♊ [Diff. aſcenſ. ex luc. pede ♊]	32°49′48″
from the heart of ♌ [ex Corde ♌]	20 12 44
Right ascension of Mars, limited [Aſc. Recta ♂ limitata]	126 29 3
Corresponding longitude of Mars [Reſp. Longitudo ♂]	♌3 30 47
Latitude, north [Latitudo B.]	2 33 56

DIE 11 APRILIS. [11 April]

	Meridian altit. of Mars [Altit. ♂ meridiana]	61°14½′
9^{H}	Dist. of Mars from the bright foot of ♊ [Dist. ♂ a luc. pede ♊]	32 33
$9½^{M}$		
9 10	Repeated [Repetita]	32 33
9 11	Repeated [Repetita]	32 33

Conversely. [Vice versa.]

9 12	Dist. of Mars from the heart of ♌ [Dist. ♂ a Corde ♌]	19 38⅙
9 12⅔	Repeated [Repetita]	19 38⅙
9 14	Repeated [Repetita]	19 38⅙

DIE 12 APRILIS, VESPERI. [12 April, in the evening]

	Meridian altit. of Mars [Altit. ♂ meridiana]	61°10′
$9^{H}37^{M}$	Dist. of Mars from the bright foot of ♊ [Dist. ♂ a luc. pede ♊]	32 50
	Repeated [Repetita]	32 50
	Repeated [Repetita]	32 50

Conversely. [Vice versa.]

9 51	Dist. of Mars from the heart of ♌ [Dist. ♂ a Corde ♌]	19 20⅓
9 53	Repeated twice [Repetita bis]	19 20⅓

DIE 27 APRILIS. [27 April]

$9^{H}58^{M}$	Dist. of ♂ from Pollux [Dist. ♂ a Polluce]	23 10½
9 59	Repeated [Repetita]	23 10½
10 1	Repeated [Repetita]	23 10½
	Conversely [Vice versa.]	
10 15	Dist. of ♂ from the tail of ♌ [Dist. ♂ a Cauda ♌]	36 42¾
10 17	Repeated [Repetita]	36 42¾
10 19	Repeated [Repetita]	36 42¾
10 31	Dist. of ♂ from the heart of Hydra [Dist. ♂ a Corde Hydræ]	26 50
10 32½	Repeated [Repetita]	26 50
10 35	Repeated, exactly [Repetita præcise]	26 50

DIE 2 MAIJ, VESPERI. [2 May, in the evening]

Dist. of ♂ from the tail of ♌ [Diſt. ♂ a Cauda ♌]	34 48½
Repeated [Repetita]	34 48½
Repeated [Repetita]	34 48½
Dist. of ♂ from Pollux [Diſt. ♂ a Polluce]	25 13
Repeated [Repetita]	25 13
Repeated [Repetita]	25 13
Dist. of ♂ from the heart of Hydra [Diſt. ♂ a Corde Hydræ]	25 59
Repeated [Repetita]	25 59
Repeated [Repetita]	25 59

DIE 3 MAIJ, VESPERI. [3 May, in the evening]

$9^{H}33^{M}$	Dist. of ♂ from Castor [Diſt. ♂ a Caſtore]	29° 15′
9 35	Repeated [Repetita]	29 15
9 38	Repeated [Repetita]	29 15
	Conversely [Vice verſa.]	
9 40	Dist. of ♂ from the tail of ♌ [Diſt. ♂ a Cauda ♌]	34 26
9 42	Repeated [Repetita]	34 26
9 43	Repeated [Repetita]	34 26
9 59	Dist. of ♂ from the heart of Hydra [Diſt. ♂ a Corde Hydræ]	25 47
10 1	Repeated [Repetita]	25 47
10 3	Repeated [Repetita]	25 47

Calculation of ♂ from the observations made on 27 April and on 2 and 3 May [Calculus ♂ ex obſeruationibus 27 Aprilis & 2 & 3 Maij habitis.]

Die 27 Aprilis. [27 April]

True place of ♂ [Verus locus ♂]	
from Pollux [ex Polluce]	10° 28′ 29″ ♌
from the tail of ♌ [ex Cauda ♌]	10 28 30
Latitude from Pollux [Latitudo ex Polluce]	2 4 31 Sept.
from the tail of ♌ [ex Cauda ♌]	2 2 55
Latitude, limited [Latitudo limitata]	2 3 30 Sept.

Die 2 Maij. [2 May]

True place of ♂ [Verus locus ♂]	
from the tail of ♌ [ex Cauda ♌]	12° 30′ 11″ ♌
from Pollux [ex Polluce]	12 33 58
Place of ♂, limited [Locus ♂ limitatus]	12 32 40 ♌
Latitude from the tail of ♌ [Latitudo ex Cauda ♌]	1 58 27 Sept.

from Pollux [ex Polluce]	2 2 21
Latitude, limited [Latitudo limitata]	1 59 45 Sept.

Die 3 Maij. [3 May]

True place of ♂ from Castor [Verus locus ♂ ex Caſtore]	12° 55′ 7″ ♌
from the tail of ♌ [ex Cauda ♌]	12 56 24
Place of ♂, limited [Locus ♂ limitatus]	12 55 40 ♌
Latitude from Castor [Latitudo ex Caſtore]	1 52 57 S.
from the tail of ♌ [ex Cauda ♌]	1 52 27
Latitude, limited [Latitudo limitata]	1 52 30 S.

According to these observations of ours, therefore, the conjunction of ♃ and ♂ took place on 2 May at 23^{h} 56^{m}, when they stood at 12° 47′ 42″ ♌. [Coniunctio itaque ♃ & ♂ iuxta has noſtras obſeruationes fuit Maij Die 2 H. 23 M. 56, exiſtentibus illis in 12° 47′ 42″ ♌.]

DIE 21 MAIJ, VESPERI. [21 May, in the evening]

Dist. of ♂ from Pollux [Diſt. ♂ a Polluce]	33 49⅓
Repeated [Repetita]	33 49⅓
Repeated [Repetita]	33 49⅓
Conversely [Vice verſa.]	
Dist. of ♂ from the tail of ♌ [Diſt. ♂ a Cauda ♌]	26 55⅔
Repeated [Repetita]	26 55⅔
Repeated [Repetita]	26 55⅔
For the latitude [Pro Latitudine.]	
Dist. of ♂ from the upper star of the □ of Ursa Major, Dubhe [Diſt. ♂ a ſuper. □ Vrſæ mai. Dubhe]	49 8
Repeated [Repetita]	49 8
Repeated [Repetita]	49 8

For the latitude of ♃ and ♂, [distances] from the heart of Hydra were not taken, because its altitude was then only 14°, and it was therefore subject to refractions; and ♄ was on the meridian when these distances were taken. [Pro latitudine ♃ & ♂ a Corde Hydræ non capiebantur, quia eius altitudo tum erat 14 graduum tantum, ideoque refractionibus obnoxia; eratque ♄ in Meridiano cum hæ diſtantiæ caperentur.]

DIE 9 JUNIJ, VESPERI. [9 June, in the evening]

	Dist. of ♂ from the tail of ♃ [Diſt. ♂ a Cauda ♃]	18 46
	Repeated [Repetita]	18 46
	Repeated [Repetita]	18 46
	The southern scale-pan was then on the meridian. [Erat tum Lanx auſtrina in meridiano.]	
	Dist. of ♂ from Dubhe [Diſt. ♂ a Dubhe]	51 46
	Repeated [Repetita]	51 46
	Repeated [Repetita]	51 46

DIE 27 JUNIJ, VESPERI. [27 June, in the evening]
♂ was observed in this way. [Obſeruabatur ♂ hoc modo.]

9^H35^M	Between ♂ and the third of the wing of ♍ [Inter ♂ & 3^{tiam} alæ ♍]	23 54½
9 40	The same, repeated [Eadem repetita]	23 54½
	The altitude of ♂ was then about [Fuit tunc altitudo ♂ quaſi]	16 0

9 45	Between ♂ and the bright star in the neck of ♃, twice [Inter ♂ & Lucidam quæ eſt in ceruice ♃ bis]	18 32
9 48	Between ♂ and the lower of the following stars in the □ of Ursa Major, which has Long. 25 45 ♃, Latit. 47 6½; the distance observed three times [Inter ♂ & inferiorem ſequentium in □ Vrſæ maioris, quæ habet Long. 25 45 ♃, Latit. 47 6½, Diſtantia ter obſeruata]	48 15

♂ could then have had an altitude of about 14°. [Poterat tunc ♂ habere altitudinem quaſi 14 partium.]

DIE 28 JUNIJ, VESPERI. [28 June, in the evening]
♂ was observed in this way. [Obſeruabatur ♂ hoc modo.]

9^H19^M	♂ from the lower of the following stars in the □ of Ursa Major, from which [it was observed] yesterday too [♂ ab inferiore ſequentium in □ Vrſæ maioris, a qua etiam heri]	48 25
9 20	The same, repeated [Eadem repetita]	48 25
9 20½	Repeated again [Iterum repetita]	48 24⅔
9 21	Dist. of ♂ from the third of the wing of ♍ [Diſt. ♂ a 3^{tia} alæ ♍]	23 19
9 22	The same, repeated [Eadem repetita]	23 19⅔
9 23½	Repeated a third time [Tertio repetita]	23 19
9 25	♂ from the bright star of the neck of ♃ [♂ a lucida Ceruicis ♃]	19 5
9 26½	Repeated [Repetita]	19 5

9 27	The same, repeated a third time [Eadem tertio repetita]	19 5
9 29½	The altitude of ♂ was, by the iron quadrant [Fuit altitudo ♂ per Quadr. ferreum]	21 5

From these observations, made on the two preceding days, not only the longitude of ♂ can be verified, on account of the parallax of the annual orb, but also its latitude, since it was approaching ☉. With ♂ a test can be made later, when it comes nearer to the Sun. [Ex his obſeruationibus duobus antecedentibus diebus factis poteſt non ſaltem ♂ Longitudo ob parallaxin orbis annui, ſed & Latitudo, ſiquidem ☉^{li} appropinquabat, verificari. In ♂ poteſt poſtmodum fieri periculum cum Soli magis appropinquet.]

OBSERUATIONES VENERIS. [Observations of Venus]

DIE 23 JANUARIJ. [23 January]

The sky was exceptionally clear, and ♀ appeared very bright; she was therefore observed before the rising of ☉, in this way. [Fuit apprime ſerenum, & ♀ valde clara apparuit, quare ante ortum ☉ obſeruata in hunc modum.]

At hour 6 by our smaller clock, which strikes the hours, ♀ was observed to be distant from the heart of ♏, by the sextant [Hora 6 in horologio noſtro minori quod pulſat horas, obſeruabatur ♀ diſtare a Corde ♏ per Sext.]	20 41
The altitude of ♀ was then [Fuit tunc altitudo ♀]	16 0

No further distance of ♀ from any fixed star could be taken because of the dawn. To the eye, ♀ was then roughly midway between the place of her rising and the meridian; from this the time is known more correctly — or rather from the altitude of ♀, using her declination and right ascension, which can be established from today's observations. [Nec poterat vlterius capi diſt. ♀ ab vlla fixa propter diluculum. Fuit autem iuxta intuitum ♀ tunc inter locum ſui ortus & Meridianum quaſi intermedia, hinc tempus rectius ſcitur, vel potius ex altitudine ♀, adhibita eius Declinatione & Aſcenſione recta, quæ conſtare poterit ex hodiernis obſeruatis.]

Afterwards the distance of ♀ from ♄ was taken in this way. ♄, however, had already passed the meridian. [Poſtea capiebatur diſt. ♀ a ♄ hoc modo. Præterierat autem ♄ meridianum.]

H. 7	Distance between ♀ and ♄, three times [Diſtantia inter ♀ & ♄]	53 49 ter
	The altitude of ♀ was then [Fuit tunc altitudo ♀]	16 25
	Dist. of ♀ and ♄, repeated [Repetita diſt. ♀ & ♄]	53 49
	Altitude of ♀ [Altitudo ♀]	16 30

You can apply the place of ♄ derived from the earlier and the later observations, and from it go on to find the place of ♀. [Potes applicare locum ♄ ex

prioribus & ſequentibus obſeruationibus deriuatum, & hinc inquirendo locum ☿.]

Afterwards the declination of ☿ was observed with the brass equatorial armillae in this way. [Poſtea per armillas æquatorias orichalcicas obſeruabatur Declinatio ☿ hoc modo.]

		Declination of ☿ [Declin. ☿]	Altitude of ☿ [Altitudo ☿]
At hour 7¼ [Hora 7¼]	I.	17 50	16 53½
by the [in]	II.	17 50	17 12
clock [horologio]	III.	17 49	17 31

At H. 7¾ the Sun rose clear, the time being taken from the clock as before. [H. 7¾ Sol clarus oriebatur, tempore ex horologio vt prius accepto.]

Afterwards the meridian altitude of ☿ was observed, the planet itself appearing quite distinctly: [Poſtea ☿ altit. merid. ipſa ſatis diſcrete apparente obſeruabatur]

by the revolving instrument [per Volub.]	21 46½
by the sextant [per Sextantem]	21 48

But trust the Revolving Quadrant rather, for the sextant here, as always, tends to give one and a half or two minutes more than is right. [Sed fide potius Quadranti Volubili, nam Sextans ſesquialtero vel duobus minutis plus iuſto hic vt ſemper habere ſolitus.]

Altitude of the Equator [Altitudo Æquatoris]	39° 41′ 30″
Altitude of ☿ [Altitudo ☿]	21 46 30
True declination of ☿ on the meridian itself [Declin. vera ☿ in ipſo Mer.]	17 55 0

Earlier, however, it may have had a smaller one, because of refraction. [Potuit autem prius habere minorem ob refractionem.]

Earlier the distance of ☿ from the Sun was observed in this way. [Obſeruabatur prius diſtantia ☿ a Sole hoc pacto.]

	Dist. of ☿ from ☉ [Diſt. ☿ a ☉]	Altit. of ☉ [Altit. ☉]
H. 8½	40 35½	3 25
Repeated II. [Repetita II.]	40 36	4 0
Repeated III. [Repetita III.]	40 36	4 16

Afterwards ☿ could not be observed distinctly enough from the Sun, but the apparent declination of the Sun was taken in order to check the armillae. [*Poſtea*

☿ *non potuit ſatis diſcrete obſeruari a Sole, ſed Declinatio Solis viſa capiebatur pro Armillis examinandis.*]

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

☿ was observed in this way. [Obſeruabatur ☿ in hunc modum.]

Dist. of ☿ and the head of Ophiuchus, with the sextant [Diſt. ☿ & Capitis Ophiuchi per Sextantem]	30 56½
The altitude of ☿ was then, with the revolving quadrant [Fuit tunc altitudo ☿ per Q. Volub.]	11 2
The former dist. repeated, twice [Repetita prior diſt., bis]	30 56
Altit. of ☿ [Altit. ☿]	11 30
Dist. of ☿ from the northern scale-pan of ♎ [Diſt. ☿ a Lance Borea ♎]	38 53½
The altit. of ☿ was then [Fuit tunc altit. ☿]	12 10
Dist. of ☿ from the heart of ♏ [Diſt. ☿ a Corde ♏]	21 7⅓
Altit. of ☿ then [Altit. ☿ tunc]	12 40
Dist. from the heart of ♏ repeated, twice [Repetita diſt. a Corde ♏ bis]	21 7⅓

Then, since the fixed stars were not visible enough, the observation of the distance of ☿ from ♄ was continued, as follows. [Deinde non apparentibus ſatis fixis ſtellis, continuabatur obſeruatio diſtantiæ ☿ a ♄ vt ſequitur.]

Dist. between ☿ and ♄ with the sextant [Inter ☿ & ♄ diſt. per Sextant.]	54 22½
The altit. of ☿ was then [Fuit tunc altit. ☿]	13 58
Dist. of ☿ from ♄ repeated [Repetita diſt. ☿ a ♄]	54 22⅓

To test the sextant, the distance between Spica ♍ and the northern scale-pan of ♎ was taken first: 27 33⅓; repeated, 27 33⅓; it should have been 27 34. When the observations of ☿ from ♄ written above were being taken, it was about 7 in the morning by our observatory clock. [Pro explorando Sextante capta eſt prius diſt. inter Spicam ♍ & Bor. lancem ♎ 27 33⅓, repetita 27 33⅓, debebat eße 27 34. Quando prius ſcriptæ obſeruationes ☿ a ♄ capiebantur, fuit in horologio noſtro ſpeculari Hora quaſi 7 matutina.]

By the same clock, ☉ was seen to rise at 7^{H} 30^{M}. [☉ autem iuxta idem horologium viſus eſt oriri 7^{H} 30^{M}.]

Afterwards the star ☿ was observed on the meridian itself, and had the altitude [Poſtea ☿ ſtella obſeruata in ipſo Meridiano, habuitque Altitud.]

with the revolving quadrant [per Quadr. Volub.]	21 49⅓
And so its declination comes out [Ideoque eius Declin. euadet]	17 52
The altit. of ☉ observed at the same time was [Fuit tunc Altit. ☉ ſimul obſeruata]	11 22

A little later the distance of ♀ from ☉ was taken together with the altitude, as follows. [Paulo poſt ſumebatur Diſt. ♀ a ☉ vna cum Altitudine vt ſequitur.]

Hour on the clock [Hora in Horologio]	Dist. of ☉ from ♀ [Diſt. ☉^{lis} a ♀]	Altit. of ☉ [Altit. ☉^{lis}]
9⅓	41 11	13 40
9½	41 10	15 approximately [15 circiter]
9⅔	41 11	16 0
9¾	41 10	16 12
10	41 11	16 25
10⅙	41 11	16 34
Equatorial dist. of ☉ from the meridian [Diſt. æquat. ☉ a merid.]		
26 10	41 11½	17 11½
24 27	41 11	17 42

N.B. Around the last observations of the distance between ☉ and ♀, ♀ may have had almost the same altitude as ☉, so that the two stood together in balance with respect to the horizon. This helps to derive the place of ♀ from ☉ all the more exactly, since the refraction is nearly the same in both. As far as refraction goes, therefore, the observed distance does not differ perceptibly from the true one, except in so far as the difference of the parallaxes may suggest some discrepancy. These observations, moreover, were accurate enough that from the given observed place of ☉ the apparent place of ♀ can be found. When that place has been carried back against the order of the signs to the time at which the distance of ♀ from the fixed stars and from ♄ was being taken, and the same place has been limited slightly for the different refraction and parallax, the places of those same fixed stars, and from them of others too, could be examined afresh, as we have often done before; our *Progymnasmata*, Volume 1, chapter 2, contains several examples of this procedure. It is better, however, to compare some similar observation made of ♀ as an evening star, when it stood at the same distance from ☉, at nearly the same remoteness from the Earth as well, and at as nearly equal an altitude as possible of both ☉ and ♀, so that the complications of refractions and parallaxes may the more readily be guarded against and eliminated. Here, though, it is preferable to use the morning distances taken from ♀ to ♄, because ♀ was then higher and less subject to refraction. [N.B. Circa vltimas obſeruationes diſtantiæ inter ☉ & ♀ poterat ♀ habere eandem quaſi Altitudinem cum ☉^{le}, ita vt fuerint ſimul in æquilibrio Horizontis, quod conducit ad locum ♀ eo exactius a ☉^{le} deriuandum, ſiquidem refractio vtrobique fere eadem. Igitur quoad hanc, diſtantia obſeruata non differt ſenſibiliter a vera, niſi quatenus diuerſitas Parallaxium aliquale ſuggerere poterit diſcrimen. Fuerunt autem hæ obſeruationes ſatis accuratæ, ita vt ex dato loco ☉^{lis} viſo ♀^{ris} apparens locus inquiri poßit, & eo in antecedentia reducto ad tempus, quo ♀^{ris} diſtantia capiebatur a fixis ſtellis atque

♄, eodemque loco ob aliam refractionem atque Parallaxin paululum limitato, poterint earundem Fixarum loca atque exinde aliarum quoque denuo examinari, quemadmodum antea a nobis factitatum eſt, cuius Pragmatiæ exempla aliquot habent Progymnaſmata noſtra Tomo primo cap. 2. Præſtat autem conferre ſimilem aliquam obſeruationem in ♀ veſpertina habitam, quando pariter a ☉ diſtitit, in conſimili etiam ferme a Terra remotione, atque pari quam proxime tam ☉[lis] quam ♀ Altitudine, vt Refractionum & Parallaxium implicationes eo promptius præcaueri atque elidi poßint. Satius autem eſt hoc loco vti ijs diſtantijs matutinis, quæ a ♀ in ♄ captæ ſunt, eo quod ♀ tunc altior eßet & Refractioni minus obnoxia.]

The place of ♄, however, can be determined quite precisely from the observations made of ♄ itself earlier the same night, and from these the places of the fixed stars from which it was being measured can be tested. [Poteſt vero ♄ locus ſatis præciſe inueſtigari ex obſeruationibus eadem nocte præcedente in ipſo habitis, atque hinc Fixarum loca, a quibus capiebatur, explorari.]

DIE 4 FEBRUARIJ. [4 February]

Morning observation of ♀, since it was at the beginning of ♍ and its latitude coincided with the arc of declination, and so was the more readily evident. [Obſeruatio ♀ matutina cum eßet in initio ♍ & Latitudo in arcum Declinationis coincideret eoque promptius pateret.]

Between ♀ and the heart of ♏ [Inter ♀ & Cor ♏]	27 45
The distance repeated [Repetita diſtantia]	27 44
About the time of these observations the altit. of ♀, taken as nearly as possible, was [Fuit circa tempus harum obſeruationum Altit. ♀ proxime ſumpta]	10 0
Dist. of ♀ from the middle star of the forehead of ♏, again [Iterata diſt. ♀ a media frontis ♏]	27 32
The altitude of ♀ was then [Fuit tunc Altitudo ♀]	10 40
The same dist. repeated [Eadem diſt. repetita]	27 33

Since these two distances do not agree exactly enough, we must see from what follows which of them is rather to be trusted. [Quia hæ duæ diſtantiæ non ſatis exacte concordent, videndum ex ſequentibus, vtri potius fidendum ſit.]

Dist. of ♀ from the uppermost star of the forehead of ♏ [Diſt. ♀ a ſuprema frontis ♏]	33 59⅓
The altitude of ♀ was then [Fuit tunc Altitudo ♀]	11 1
The same dist. repeated [Diſt. eadem repetita]	33 59⅓
The altitude of ♀ was then [Fuit tunc Altitudo ♀]	11 13
Dist. of ♀ from the northern scale-pan of ♎ [Diſt. ♀ a Lance Borea ♎]	46 18⅚
The altit. of ♀ was then [Fuit tunc Altit. ♀]	11 31

The former dist. repeated [Prior diſt. repetita]	46 18⅚
Corresponding altitude of ♀ [Altitudo ♀ correſpondens]	11 37

Next, so that the latitude or declination of ♀ could be established from some fixed star, its distance from the bright star of the Flying Vulture was taken, as follows. [Deinde, vt Latitudo vel Declinatio ♀ ab aliqua Fixa ſtella conſtare poßet, ſumpta eſt eius diſtantia a Lucida Vulturis volantis vt ſequitur.]

Dist. of ♀ from the bright star of Aquila [Diſt. ♀ a Lucida Aquilæ]	34 36
The altitude of ♀ was then [Fuit tunc Altitudo ♀]	12 50
The same distance repeated [Eadem diſtantia repetita]	34 35
The altit. of ♀ was then [Altit. ♀ tunc fuit]	13 12
The same distance repeated [Eadem diſtantia repetita]	34 35

Afterwards, from the rising of ☉, its distance from ♀ was taken, ♀ being visible in daylight, as it had also been before; for the air was clear and serene. [Poſtea ex ortu ☉^{is} capiebatur eius diſtantia a ♀ interdiu, vti & antea, apparente, erat enim purus & ſerenus aër.]

	Dist. of ♀ and ☉ [Diſt. ♀ & ☉^{lis}]	Altit. of ☉ [Altit. ☉^{is}]
Between ♀ and the risen ☉ [Inter ♀ & ☉^{lem} exortum]	44 33	2 6
The same distance repeated [Eadem diſtantia repetita]	44 35	2 30
The same, repeated as before [Eadem vt prius repetita]	44 33	3 26
Repeated as before [Repetita vt prius]	44 34	3 40
Dist. of ♀ and ☉ repeated [Repetita diſt. ♀ & ☉^{is}]	44 34½	3 50
Repeated again [Iterum repetita]	44 34	5 26
Dist. of ☉ from ♀ repeated [Diſt. ☉ a ♀ repetita]	44 34½	5 30
The same repeated anew [Eadem denuo repetita]	44 35	5 49
Repeated as before [Repetita vt prius]	44 36	6 5
The same distance [Eadem diſtantia]	44 36	6 23
Repeated [Repetita]	44 36⅙	7 0½
The same dist. as before [Eadem vt prius diſt.]	44 36⅔	8 31½
Dist. repeated [Diſt. repetita]	44 39	9 34
The same dist. repeated [Eadem diſt. repet.]	44 39½	10 0
Dist. repeated further [Diſt. adhuc repet.]	44 39½	10 36
Dist. repeated further [Diſt. adhuc repet.]	44 39¾	11 50
Distance [Diſtantia]	44 39⅚	12 20
Dist. repeated again [Iterum repet. diſt.]	44 40¼	12 36

After that ♀ was no longer measured from ☉, since it did not show well enough to be seen together with ☉; instead we attended to its meridian altitude, which was found by such investigation as was possible, though without using the slits of the pinnules. [Poſtea non capiebatur ♀ amplius a ☉^{le}, ſiquidem non bene apparuit, vt ſimul cum ☉^{le} videri poßet, ſed ad altitudinem eius meridianam attendimus, quæ, qua fieri potuit, inquiſitione, inuenta eſt, citra tamen rimulas pinnacidiorum.]

Meridian altitude of ♀ [Altitudo ♀ meridiana]	21 7

It may, however, have been a little smaller, as the next day's observation will show. [Poterat autem eße paulo minor, quod ſequentis diej obſeruatio probabit.]

Since ♀ was then in the first degree of ♍, and the altitude of the equator is 39° 41′ 30″, [Cumque ♀ tunc fuerit in primo gradu ♍, & Altitudo Æquat. ſit 39° 41′ 30″]

the declination of ♀ comes out [prouenit Declinatio ♀]	18 34 30
the declination of the ecliptic at its place being [Decl. Eclipt. eius loci exiſtente]	23 31
the northern latitude of ♀ comes out [prouenit Lat. Borea ♀]	4 56½

Refraction and parallax, however, very nearly cancel each other out here, except that the parallax is a little greater than the refraction, so that the latitude of ♀ comes out very nearly 4° 58′. [Refractio autem & Parallaxis ſe hoc loco pariter ferme illidunt, niſi quod Parallaxis paulo maior ſit Refractione, ita vt Latitudo ♀ proueniat 4° 58′ quam proxime.]

DIE 5 FEBRUARIJ, MANE. [5 February, morning]

H. M.		Dist. of ♀ [Diſt. ♀]	Alt. of ♀ [Alt. ♀]
5 52	From the heart of ♏ [A Corde ♏]	28 30⅓	10 29½
5 55	Repeated [Repetita]	28 30½	10 57
5 57	From the middle star in the forehead of ♏ [A med. in fronte ♏]	34 43⅚	11 5
5 54[1]	The same repeated [Repet. eadem]	34 43½	11 43
6 4⅔	The same repeated [Repet. eadem]	34 45	12 0
6 10	From the heart of ♏ [A Corde ♏]	28 28	13 2
6 16	Repeated anew [Denuo repetita]	28 27½	13 18
	The same, repeated a 5th time [Eadem 5to repetita]	28 28	13 30

When these distances between ♀ and the heart of ♏ were being taken, both stars had almost the same altitude, so that for that reason refraction could introduce little discrepancy as regards the differences of longitude. Moreover, when

these altitu- [Quando hæ diſtantiæ capiebantur inter ♀ & Cor ♏, habuerunt vtræque ſtellæ eandem quaſi altitudinem, vt ob id refractio parum diſcriminis ingerere potuerit quoad differentias Longitudinis. Erant autem circa Meridianum, quando hæ capiebantur Altitu-]

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

-des were being taken, the stars in the forehead of ♏ were near the meridian, so that the northernmost, or uppermost, of the three crossed the meridian at about the last observation. [dines, ſtellæ in fronte ♏, ita vt maxime borea ſive ſuprema trium iuxta vltimam obſeruationem pertranſierit meridianum.]

Afterwards the distance of ♀ and Aquila was taken, to test its latitude and then also its declination, as follows. [Poſtea ſumebatur diſtantia ♀ & Aquilæ pro Latitudine, tum quoque Declinatione eius experimentanda vt ſequitur.]

H. M.			Alt. ♀
6 27	Dist. of ♀ and the bright star of Aquila [Diſt. ♀ & luc. Aq.]	34 8	14 9
6 31	The same repeated [Eadem repetita]	34 7½	14 21
6 33	The same, repeated a 3rd time [Eadem 3^{tio} repetita]	34 7⅔	14 30

Next the distance of ♀ from ♄ was observed with the lateral pinnule, a new invention. [Deinceps obſeruabatur diſtantia ♀ a ♄ per pinnacidium laterale inuentum nouum]

6 43	Dist. of ♀ and ♄ [Diſt. ♀ & ♄]	62 32	15 24
6 44½	Repeated [Repetita]	62 32	15 31
6 45	Repeated [Repetita]	62 32	15 36

About this time the heart of ♏ crossed the meridian. [Tranſiuit circa hæc tempora Cor ♏ per Meridianum.]

But since these distances were taken with the pinnule recently fitted, which earlier, in the distance between the heart of ♌ and Spica, gave 3 M. more than was correct, those minutes should be subtracted here too, approximately, so that the truer distance between ♄ and ♀ is 62 29, Alt. 15 30. [Quia vero hæ diſtantiæ acceptæ ſunt per pinnacidium illud recenter impoſitum, quod prius in diſtantia inter Cor ♌ & Spicam plus iuſto habuit 3 M., idcirco & hic ferme illa minuta auferenda ſunt, vt ſit verior diſtantia inter ♄ & ♀ 62 29, Alt. 15 30.]

♄, moreover, stood a little higher above the horizon than ♀, namely by 4 or 5°. This can be determined more exactly from its altitude computed for the time of the transit of the heart of ♏ across the meridian, once the place of ♄ has been found from the earlier observations. ♄ was, moreover, very nearly stationary, near the limit of its greatest northern latitude, and so it could have changed its place imperceptibly.[1] [Erat autem ♄ paulo altior ♀ ſupra Horizontem vtpote 4 vel 5 gradibus, cuius inquiſitio exactior fieri poteſt ex altitudine eius ſupputata ad tempus tranſitus Cordis ♏ per Meridianum, inquiſito loco ♄ ex prioribus

obſeruatis. Erat autem proxime ſtationarius iuxta limitem maximæ Latitudinis Boreæ; ideoque locum ſuum inſenſibiliter variare potuit[1].]

DIE 5 FEBRUARIJ. [5 February]

The distance of ♀ and ☉ was observed as follows. [Obſeruabatur diſtantia ♀ & ☉ vt ſequitur.]

H. M.	Dist. of ♀ from ☉ [Diſt. ♀ a ☉]	Altit. of ☉ [Altit. ☉]
7 53½	44 49⅔	4 17
7 55½	44 50⅓	5 56
7 58	44 53⅓	8 24
8 8½	44 54	9 0

Afterwards ♀ crossed the meridian, having an altitude, with the revolving instrument, of 21 0⅙. [Poſtea tranſiuit ♀ merid. habens altit. per Volub. 21 0⅙]

This altitude of ♀ is, moreover, more certain and more exact than yesterday's, since today at that time it was somewhat clearer, so that the star ♀ could be seen through both pinnules, which was denied yesterday. And so it was then observed without the slits of the pinnule. [Eſt autem hæc ♀ altitudo certior & exactior quam heſterna, ſiquidem hodie tunc temporis paulo ſerenius fuit, ita vt ♀ ſtella per vtraque pinnacidia conſpici potuerit, quod heri denegabatur. Ideoque tunc ſine rimulis pinnacidij obſeruata eſt.]

N. B. There could not be a large difference, since ♀ changed its latitude by 52′ within the following 9 days. [N. B. Non poterat eße magna differentia, quia ♀ mutauit Latitudinem intra 9 dies ſequentes per 52′.]

Then, after ♀ had crossed the meridian, its distance from ☉ was observed again, five times. [Deinde, poſtquam ♀ Meridianum tranſierat, denuo quinquies obſeruabatur eius a ☉[le] diſtantia.]

	Dist. of ♀ and ☉ [Diſt. ♀ & ☉]	Altit. of ☉ [Altit. ☉[lis]]
1	44 55	12 53
2	44 55½	13 3
3	44 55½	13 17
4	44 55½	13 40
5	44 56	13 50

DIE 12 FEBRUARIJ, MANE, [12 February, morning,]

which was the day of ♄. [qui erat dies ♄.]

♀ was observed in this way, with the brass sextant. [Obſeruabatur ♀ in hunc modum per Sextantem Orichalcicum.]

	Distance of ♀ [Diſtantia ♀]	Altit. of ♀ [Altit. ♀]
From the heart of ♏ [A Corde ♏]	33 55½	8 51
The same repeated [Eadem repetita]	33 56	9 11

	Distance of ♀ [Diſtantia ♀]	Altit. of ♀ [Altit. ♀]
Repeated [Repetita]	33 56⅓	9 40
Repeated [Repetita]	33 57	9 55
Repeated [Repetita]	33 57	10 5

The heart of ♏ and ♀ were then at almost the same altit. [Erant tum Cor ♏ & ♀ in eadem ferme altit.]

From the uppermost in the forehead of ♏ [A ſuprema in fronte ♏]	39 30	10 20
Repeated [Repetita]	39 30⅓	10 35
Repeated [Repetita]	39 30½	10 55
Repeated [Repetita]	39 30½	11 10

The upper horn of the ☾ was then rising above the horizon, very red. [Oriebatur tum ſupremum ☾^{æ} cornu ſupra Horizontem admodum rubicundum.]

From Aquila, among clouds [Ab Aquila inter nubes]	30 57	11 35
Repeated [Repetita]	30 57½	11 40
Repeated [Repetita]	30 58	12 10
Repeated [Repetita]	30 57⅚	12 25½

Clouds then got in the way; otherwise it would have been observed from ♄ and Spica as well. [Nubes tum præpediebant, alias a ♄ & Spica etiam obſeruata fuißet.]

[1] Then the distance of ☾ and ♀ was observed, as you will find noted among the observations of the Moon (above, p. 202). [[1] Deinde obſervata eſt diſtantia ☾ et ♀ vt inter obſervationes lunæ annotatum reperies (ſupra p. 202).]

DIE 14 FEBRUARIJ. [14 February]

Since around sunrise the air became exceptionally clear, a little later the dist. of ☉ from ♀ was observed as follows. [Cum circa ortum ☉^{lis} apprime ſerenus redderetur aër, obſeruabatur paulo poſt diſt. ☉ a ♀ vt ſequitur.]

H. M.		Dist. of ☉ and ♀ [Diſt. ☉ & ♀]	Altit. of ☉ [Altit. ☉^{lis}]
8 6	I.	46 14½	6 22
8 11	II.	46 15	6 45
8 16	III.	46 15¼	7 36
8 24	IIII.	46 15⅓	8 5
8 45½	V.	46 15⅓	8 34
9 32	♀ crossed the merid., having alt. 20 31¼ [Tranſiuit ♀ Merid. habens Alt. 20 31¼]		

H. M.		Dist. of ☉ and ♀ [Diſt. ☉ & ♀]	Altit. of ☉ [Altit. ☉lis]
9 40	VI.	46 15⅓	17 49
9 46	VII.	46 15½	18 14
9 51	VIII.	46 15½	18 8[1]
10 12	IX.	46 15½	21 19

N.B. Around the last three observations ♀ could have been at almost the same altitude as ☉, and on the same parallel of the horizon. So the refraction, whatever it was, could have introduced little discrepancy into the distance itself; but the parallax, which was also almost the same as that of ☉, or rather a little greater, has to be taken into account as well. [N.B. Poterat circa vltimas tres obſeruationes ♀ eße vna cum ☉le quaſi in eadem altitudine, atque in eodem Horizontis parallelo: ideoque refractio, qualiscunque erat, parum diſcriminis ſuggerere potuit in ipſa diſtantia, ſed parallaxis, quæ etiam ferme eadem erat cum ☉le, vel potius paulo maior, vna conſideranda venit.]

It should be noted, besides, that from 5 Febr., when ♀ was in the middle of the 2nd degree of ♑ near the winter tropic, up to this day, the 14th, when it was in the middle of the 10th degree of ♑, it should have changed its declination by 20′, decreasing it. But since the observed merid. altit. decreased from the day already mentioned up to this one by 29′, ♀ must in the meantime have reduced its northern latitude by about 49′, whereas the Alfonsine reckoning gives no more than 25′; the Copernican numbers come closer to this. [Notandum inſuper, quod a Die 5 Febr., quando ♀ erat in medietate 2di gradus ♑ prope Tropicum Hybernum, vſque in hunc diem 14, quando eadem fuit in medietate 10 gradus ♑, mutare deberet Declin. ſuam per 20 minuta eam minuendo. At quoniam Altit. merid. obſeruata a prædicto die vſque in hunc decreuit per 29 minuta, oportebit ♀rem interea Latitudinem ſuam Boream minuiße 49 proxime minutis, cum Alphonſina ratio non niſi 25 minuta ſuggerat, Coperniceis numeris propius huc facientibus.]

DIE 15 FEBRUARIJ [15 February]

which was called ♂, ♀ was observed as follows. [qui vocabatur ♂, obſeruabatur ♀ vt ſequitur.]

	Dist. of ♀ from Aquila [Diſt. ♀ ab Aquila]	Altitude of ♀ [Altitudo ♀]
I.	29 48	12 50
II.	29 48½	13 6
III.	29 48½	13 17
IIII.	29 48½	13 31

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

		Dist. of ♀ from the heart of ♏ [Diſt. ♀ a Corde ♏]	
	I.	36 31½	13 41
	II.	36 31½	13 52
$6^{H}29^{M}$	III.	36 31½	14 1½
	IIII.	36 31½	14 15½

The heart of ♏ and ♀, moreover, had almost the same altitude around the last observations, so refraction introduced almost no discrepancy. [Habuerunt autem Cor ♏ & ♀ circa vltimas obſeruationes eandem quaſi altitudinem, vnde Refractio nihil ferme diſcriminis ingeßit.]

Afterwards the clock was corrected to the rising ☉, H. 7 M. 3, and next the following distances from ☉ to ♀ were taken. [Poſtea corrigebatur Horologium ad ☉lem orientem H. 7 M. 3 & deinceps ſequentes diſtantiæ a ☉le in ♀ ſumebantur.]

H. M.		Dist. of ♀ from ☉ [Diſt. ♀ a ☉le]	Altitude of ☉ [Altitudo ☉]
7 26	I.	46 16	3 47
7 31	II.	46 16⅔	4 34
7 35	III.	46 17	5 7
7 38	IIII.	46 17½	6 4
7 58	V.	46 17⅔	8 18
8 4	VI.	46 17⅔	9 4
8 16	VII.	46 17⅔	11 2
8 20	VIII.	46 18	11 19 good [bona]
8 53	IX.	46 18	15 14
8 57	♀ crossed the meridian, having altit. 20 30¾ [Tranſiuit ♀ per Meridianum habens Altit. 20 30¾]		
		Dist. of ♀ from ☉ repeated [Repetita diſt. ♀ a ☉]	Altit. of ☉ [Altit. ☉]
9 11	X.	46 18	17 12
9 15	XI.	46 18	17 37
9 18	XII.	46 18½	18 0
9 20	XIII.	46 18½	18 10
9 25	XIV.	46 18½	18 34

The preceding times are sufficiently corrected. [*Tempora antecedentia ſunt ſatis correcta.*]

From these observations, especially the last ones, it is clear that the separation of ☉ and ♀ increased by only three minutes from one similar situation to the other, when the preceding day is compared with this one. According to the Alfonsine calculation, however, they ought to have drawn apart in the meantime by 4½′; according to the Copernican, by almost twice as much again, namely 8½ M. The northern latitude of ♀, moreover, seems to have decreased from yesterday up to today by 5′, account being taken of the change

of declination in the meantime according to that place of ♀ in the first decuria of Capricorn com- [Ex his præſertim vltimis obſeruationibus liquet, remotionem ☉ & ♀ auctam fuiße ſolummodo tribus minutis, a conſimili ſitu in alterum, collatione antecedentis diej cum hoc facta. At iuxta Alphonſinum calculum debebant interea diſiungi 4 minutis ½; iuxta Coperniceum duplo ferme adhuc plus, vtpote 8½ M. Decreuiße autem videtur Latitudo ♀ Borea a die heſterno vſque in hunc per 5 minuta, habita ratione mutatæ interea Declinationis iuxta eum locum ♀^{is} in prima decuria Capricorni com-]

pleted, the same account being applied to the difference between the two meridian altitudes, the altitude decreasing, which was ½ minute. [pleta, eadem adhibita ad differentiam vtriusque Altitudinis meridianæ decreſcentis, quæ erat ½ Minuti.]

DIE 19 FEBRUARIJ matutino tempore. [19 February, in the morning.]

When some clear sky had shone out again, the clouds having dispersed for a while, the following were observed, chiefly on account of the star ♀, which was then approaching its greatest morning departure from ☉. [Cum denuo nonnulla ſerenitas, diſperſis aliquantiſper nubibus, affulſiſſet, ſequentia obſeruata ſunt præſertim propter ♀ ſtellam, quæ tunc appropinquabat maximæ digreßioni a ☉^{le} matutinæ.]

About H. 5⅓ the Dist. of the heart of ♏ from Spica was taken [Circa H. 5⅓ ſumebatur Diſt. Cordis ♏ a Spica]	45 54⅔	
The same repeated [Eadem repetita]	54 54⅔	
And later too, when the heart of ♏ was approaching the meridian, it was the same [Quin & poſtea, cum Cor ♏ appropinquaret Meridiano, eadem fuit]	45 54⅔	
H. 5½ Dist. of ♀ from the heart of ♏ [H. 5½ Diſt. ♀ a Corde ♏]	40 4⅙	Alt. of ♀ [Alt. ♀] 7 44
Soon the same repeated [Mox eadem repet.]	40 4⅙	
And the same repeated a 3rd time [Ademque 3^{tio} repet.]	40 4⅙	

About the time of these observations the middle star of the forehead of ♏ was near the meridian. [Fuit circa tempus harum obſeruationum media frontis ♏ iuxta Meridianum.]

H. 5¾ The Dist. of ♀ from the middle star in the forehead of ♏ was 46 43½, Alt. of ♀ 8 17. [H. 5¾ Fuit Diſt. ♀ a media in fronte ♏ 46 43½, Alt. ♀ 8 17]

Soon clouds came between and did not allow this observation to be repeated. [Mox nubes intervenientes non permiſerunt hanc obſeruationem reiterare.]

DIE 21 FEBRUARIJ. [21 February]

After the rising of ☉, the clear weather having returned, the following were observed from ☉ to ♀. [Poſt exortum ☉ reſtituta ſerenitate ſequentia a ☉^{le} in ♀^{rem} obſeruabantur.]

The star ♀ crossed the meridian and had an altitude, with the revolving instrument, of [Tranſiuit ſtella ♀ per Meridianum, habuitque altitudinem per Volub.]	20 27
with both slits of the pinnule [vtraque pinnacidij rimula]	
A little later the Dist. of ☉ and ♀, three times [Paulo poſt Diſt. ☉^{lis} & ♀ ter]	46 40½
And this from the altitude of it, of ☉,[1] [Idque ab altitud. eius ☉^{lis} 1]	21 8
up to an altitude in degrees of [vſque ad altitudinem partium]	21 38

So about this time both ☉ and ♀ were at almost the same altitude as each other, in respect of their equal distance from the horizon. Hence the refraction, being almost alike in both, alters the true distance imperceptibly; and since almost the same parallax is presupposed in both, this distance needs no correction. Instead, from the given apparent place of ☉ as to right ascension and declination, with the apparent declination of ♀ also applied, it reveals the apparent place of ♀ quite precisely; and that place can be reduced to the true place by the parallax alone, since the refraction at such an altitude was imperceptible. [Fuit itaque circa hoc tempus tam ☉ quam ♀ in conſimili ad inuicem quaſi altitudine iuxta æquidiſtantiam Horizontis. Vnde conſimilis ferme vtrobique refractio diſtantiam veram inſenſibiliter variat, cumque eadem fere vtrobique præſupponatur parallaxis, hæc diſtantia emendatione non indiget, ſed ex dato loco ☉^{lis} viſo, quoad Aſc. Rectam & Declinationem, adhibita ♀ Declinatione etiam viſa, eius apparentem locum ſatis præciſe pandit, qui per parallaxin ſolam, ſiquidem refractio in tali altitudine inſenſibilis erat, ad locum verum redigi poteſt.]

Afterwards ♀ was again observed from ☉, as follows. [Poſtea iterum obſeruabatur ♀ a ☉ vt ſequitur.]

Dist. of ♀ and ☉ [Diſt. ♀ & ☉]	46 40⅓	Alt. of ☉ [Alt. ☉]	22 13
The same repeated [Eadem repetita]	46 40½		23 4
Repeated again [Iterum repetita]	46 40½		23 17

From these one can investigate the place of ♀ at its greatest departure from ☉, which fell around this very day. Its distance from ☉, moreover, has changed since the last day on which it was likewise observed, namely the 15th of this month — an interval of six days — by M. 22 according to our observation; by M. 17 according to the Alfonsine calc., and by M. 33 according to the Prutenic. The Alfonsine calc. therefore falls short by M. 5, and the Prutenic exceeds by M. 11. It is gathered from Cyprian's Ephemerides that the greatest departure should fall tomorrow; from Magini's, after 5 or 6 days. [Ex his poteſt inquiri locus ♀ in maxima digreßione a ☉^{le}, quæ circa hunc ipſum diem fuit: mutata autem eſt eius Diſtantia a ☉^{le} ab vltimo die, quo pariter obſeruabatur, nempe 15 huius menſis, interuallo ſex dierum, iuxta obſeruationem noſtram M. 22. Iuxta

Calc. Alphonſ. M. 17, iuxta Prutenicum M. 33. Deficit itaque Calc. Alphonſ. M. 5, Prutenicus abundat M. 11. Colligitur ex Cypriani Ephemeridibus, quod maxima digreßio debeat eße cras. E Magini poſt dies 5 vel 6.]

DIE 22 FEBRUARIJ, MANE. [22 February, morning.]

		Altit. of ♀ [Altit. ♀]
Hour med. 5.[2] Dist. of ♀ from the heart of ♏ [Hora Med. 5.[2] Diſt. ♀ a Corde ♏]	42 48⅓	5 47
H. med. 5 the same repeated [H.med.5 Eadem repet.]	42 47	6 4
The same repeated [Eadem repetita]	42 46	6 15½
		Alt. of the heart of ♏ [Alt. Cor. ♏]
H. about 5 Dist. of the heart of ♏ from Spica ♍ [H. fere 5 Diſt. Cordis ♏ a Spica ♍]	45 53⅔	14 7⅙
A little after med. 6 Dist. of ♀ repeated, from the heart of ♏ [Paul. poſt. Med. 6 Diſt. ♀ repet. a Corde ♏]	42 49½	7 20
The same repeated [Eadem repet.]	42 49½	7 37
H. about 6 the same repeated [H. fere 6 Eadem repet.]	42 49⅔	8 51⅙
H. 6 exactly Dist. of ♀ from Aquila [H. 6 præciſe Diſt. ♀ ab Aquila]	27 36⅓	9 22
H. 6 M. 10 the same dist. [H. 6 M. 10 Eadem diſt.]	27 37½	9 48
The same repeated [Eadem repetita]	27 37⅓	9 59⅔
Merid. altit. of the heart of ♏ [Altit. merid. Cordis ♏]	14 15⅔	
		Altit. of ♀ [Altit. ♀]
H. a little after 6. Dist. of ♀ from the heart of ♏, when they were at almost the same altitude [H. paulo poſt 6. Diſt. ♀ a Corde ♏ cum eßent in eadem ferme altitudine]	42 50⅚	11 19
The same repeated [Eadem repetita]	42 50⅚	11 32⅔
The same repeated a third time [Eadem tert. repet.]	42 50⅚	11 41
H. about med. 7 Dist. of ♀ from ♄ with the new pinnules [H. med. 7 fere Diſt. ♀ a ♄ per nov. pinnac.]	77 52	12 12½
H. med. 7		
The same dist. repeated [Eadem diſt. repet.]	77 51⅓	12 29
The same repeated [Eadem repetita]	77 52½	12 36⅓

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

[2] That is, H. 4 M. 30. [[2] Id eſt, H. 4 M. 30.]

Afterwards, ☉ having now risen and the clock having been corrected to the rising of ☉, the following were observed in the dist. of ♀ from ☉. [Poſtea

exorto iam ☉le & correcto horologio ad ☉lis ortum, ſequentia in diſt. ☿ a ☉le obſeruabantur.]

H. M.	Dist. of ☉ and ☿ [Diſt. ☉lis & ☿]	Altit. of ☉ [Altit. ☉is]
7 16	46 37½	3 27
7 20	46 37½ twice [bis]	3 42
7 40	46 38	6 28
7 45	46 39⅓ three times [ter]	7 15
7 49	46 41	7 35
7 50½	46 41⅓	8 0
8 8	46 42	10 20
8 10	46 42	10 36
8 12	46 42	10 50
8 30	46 41⅓	13 15
8 32½	46 42	13 31
8 34	46 42⅓	13 46
8 37	46 42	14 3
9 19	☿ crossed the meridian, having an altit., with both slits of the pinnule, of [Tranſiuit ☿ per Meridianum habens Altit. vtraque pinnacidij rima]	20 28½

N.B. The declination of ☿ has increased from the preceding day up to now by only one and a half minutes, whereas its advance, by reason of its place with respect to the ecliptic — namely from the 16th up to the 17th degree of ♍ — required it to increase its declination by 8′. What is lacking, therefore, came about roughly because the northern latitude of ☿ was diminished; on that account the decrease of its latitude within this single revolution was about 6′, whereas the Alfonsine calculation grants only ⅓; *according to the Prutenic calculation it could have been 5′ at most.* [N.B. Declinatio ☿ a die antecedente huc vſque adaucta eſt ſeſquialtero ſaltem minuto, cum tamen promotio eius ratione loci eius reſpectu Eclipticæ a 16 nimirum vſque in 17mum gradum ♍ requireret, vt 8 minutis augeret Declinationem. Quæ igitur deſiderantur ob Latitudinem ☿ris Boream imminutam propemodum euenere, fuit ob id decrementum Latitudinis eius intra vnicam hanc reuolutionem quaſi 6 minutorum, cum Alphonſinus calculus ſaltem ⅓ largiatur, *iuxta Prutenicum calculum poterat ad ſummum eſſe 5 minutorum.*]

After ☿ had crossed the meridian. [Poſtquam ☿ tranſierat Meridianum.]

H. M.	Dist. of ☉ and ☿ [Diſt. ☉ & ☿]	Altit. of ☉ [Altit. ☉]
9 29	46 42⅓	20 3
9 31	46 42	20 24
9 34	46 42	20 38

N.B. ☉ and ☿ were then at almost the same altitude above the horizon, and so the refraction did no perceptible harm, especially at such an altitude. [N.B.

Fuerunt tunc ☉ & ♀ in eadem quaſi altitudine ſupra Horizontem, ideoque refractio ſenſibiliter non obfuit, præſertim in tali altitudine.]

9 47	46 42	21 57

Afterwards ♀ could not be made out clearly enough. [Poſtea ♀ non ſatis diſcerni potuit.]

N.B. The clock I used was running 10 M. faster than correct by the noon that soon followed; this is to be corrected proportionally from the time of sunrise onward. [*N.B. Horologium quo vſus ſum in meridie mox ſequente 10 M. iuſto celerius mouebatur, quod proportionaliter corrigendum inde a tempore exortus Solis.*]

DIE 16 MARTIJ, MANE. [16 March, morning.]

As dawn was then approaching, ♀ was rising at the same time, very reddish, and it was recorded as follows. [Aduentante tum aurora oriebatur ſimul ♀ admodum rubicunda, quæ ſic denotabatur.]

H. M.	Dist. of ♀ from the heart of ♏ [Diſt. ♀ a Corde ♏]	Altit. of ♀ [Altit. ♀]
5 0	66°32′30″	5°36′
	66 32⅓	6 42
	66 32⅓	6 51
	Dist. of ♀ from Aquila [Diſt. ♀ ab Aquila]	
	31 8⅓	7 1
	31 8½	7 20

Clouds then again covered the whole sky, and they also prevented it from being observed from ☉. [Nubes tum rurſus totum cœlum inuoluebant, quæ etiam a ☉^{le} eam obſeruari prohibebant.]

DIE 22 FEBRUARIJ. [22 February]

The true place of ♀ is investigated in this way. First, from the heart of Scorpius. [Inquiritur verus locus ♀ hoc modo. Primum a corde Scorpij.]

Since ♀ and the heart of ♏ were at the same altitude above the horizon at the time of observation, the intrusion of refraction could not perceptibly alter the distance. Let it therefore be kept as observed, corrected only for the error of the sextant, 1½′, and it will be 42° 52′ 20″. The declination of the heart of ♏, as the *Progymnasmata* give it, 25° 25′ 15″. [Quia in eadem Horizontis Altitudine ♀ & Cor ♏ tempore obſeruationis fuerunt, Refractionis inſinuatio ſenſibiliter Diſtantiam alterare non potuit, retineatur ergo illa prout obſeruata eſt, tantum pro aberratione Sextantis 1½′ correcta & erit 42° 52′ 20″. Declinatio Cordis ♏ veluti Progymnasmata præbent 25° 25′ 15″.]

Meridian altitude of ♀ [♀ Altitudo Meridiana]	20°28′30″	H. 9 M. 20

Refraction subtracts [Refractio aufert]	2 0	S.
Parallax adds [Parallaxis addit]	3 52	A.
True altitude [Altitudo vera]	20 30 22	
Altitude of the equator [Altitudo æquatoris]	39 41 30	
Declination of ♀ [Declinatio ♀]	19 11 8	

The diurnal motion of ♀ 58′; from the observation up to the transit of ♀ across the meridian, 3^{H}; to these are due 7′15″, the amount by which it was then anterior. The declination meanwhile changes [Motus diurnus ♀ 58′; ab obſeruatione vſque ad tranſitum ♀ per Meridianum 3^{H}, his debentur 7′15″ quibus tum anterior fuit. Declinatio interim mutatur]

by 53″. The latitude also decreases by 30″. The declination of ♀ at H. 6⅓ was therefore 19° 12′ 31″. From this, the angle of the difference of right ascension is 46° 4′ 37″, and the right ascension of ♀ 287° 21′ 7″. [53″. Latitudo etiam decreſcit 30″. Declinatio ergo ♀ H. 6⅓ fuit 19° 12′ 31″. Hinc Angulus diff. Aſc. R. 46° 4′ 37″, Aſc. R. ♀ 287° 21′ 7″.]

Conversely, from the Sun. [Vice verſa a Sole.]

Altitude of ☉ [Altitudo ☉]	13°30′		
Refraction [Refractio]	8 15″ S.		
Parallax [Parallaxis]	2 55	Side, long. [Latus Long.]	8 43
Apparent latitude of ☉ [Latitudo ☉ viſa]	5 20	Side, lat. [Latus Lat.]	59 22

The true place of ☉ at noon, ♓ 3° 18′ 40″. The diurnal motion of ☉ 60′22″. The intervening time is H. 3 M. 30; proportionally, 8′ 48″ are due to it. The true long. of ☉ at the time of observation 3° 9′ 52″ ♓, the apparent 3° 9′ 0″ ♓. [Verus locus $\odot^{lis}$ in Meridie ♓ 3° 18′ 40″. Motus ☉ diurnus 60′22″. Tempus intermedium H. 3 M. 30, his proportionaliter debentur 8′ 48″. Vera long. $\odot^{lis}$ tempore obſeruationis 3° 9′ 52″ ♓, viſa 3° 9′ 0″ ♓.]

Declination corresponding to the apparent long. [Declinatio reſp. Long. viſæ]	10°23′ 9″ M.
The latitude diminished it [Latitudo eam minuit]	5 21
Apparent declination of ☉ [Declinatio viſa $\odot^{lis}$]	10 17 48
Declination of ♀ [Declinatio ♀]	19 11 24
Observed distance [Diſtantia obſeruata]	46 42 0

But since refraction pushed ☉ forward by 50″, and the sextant also gave 1½′ too little, the true distance will be 46° 44′ 22″. [Verum quia Refractio 50″ in anteriora $\odot^{lem}$ protruſit, tum etiam Sextans 1½′ minus dedit, erit vera diſtantia 46° 44′ 22″.]

Angle of the difference of asc. [Angulus diff. aſcenſ.]	47°36′20″	Right asc. of ♀ found before [Aſc. R. ♀ antea inuenta]	287°21′7″
Right asc. of ☉ [Aſc. R. ☉]	335 3 55	Corresponding to H. 2 M. 10, add [Reſp. H. 2 M. 10 add.]	4 58
Right asc. of ♀ [Aſc. R. ♀]	287 27 30	Right asc. of ♀ from ♏, H. 8⅓ [Aſc. R. ♀ ex ♏, H. 8⅓]	287 26 5

The limited right ascension of ♀ 287° 26′ 47″, declination 19° 11′ 24″M. [Aſcenſio Recta limitata ♀ 287° 26′ 47″, Declinatio 19° 11′ 24″M.]

The corresponding true place of ♀ [Reſpondet Verus locus ♀]	16°28′35″ ♍
Latitude [Latitudo]	3 20 13 B.

N.B. ♀ *was at its greatest elongation from the Sun.* [*N.B. Erat* ♀ *in maxima digreßione a Sole.*]

Comparison of the calculation of ♀ with Copern. and Alfonso. [Calculi ♀ cum Copern. & Alphonſ. collatio.]

	Longit. obs. [Longit. obſ.]	Copernic.	Diff.[a]	Alfonso. [Alphonſ.]	Diff.[a]
H. 8⅓	16°28′35″ ♍	16°52′ 0″	23′25″p.	16°57′37″	29′ 2″p.
	Latit. obs. [Latit. obſ.]				
	3 20 13 B.	2 49 0 B.	31 13 m.	3 4 0 B.	16 13 m.

OBSERUATIONES MERCURIJ. [Observations of Mercury]

DIE 21 JANUARIJ. [21 January]

In the evening after sunset ☿ was seen very distinctly, so much so that in magnitude it vied with the stars of the first rank; it also twinkled like the fixed stars, and its altitude, when it was first seen, was about 10 G. But it could not be observed from any fixed stars, because the sky elsewhere was covered over with thinnish clouds. [Veſperi poſt occaſum ☉[lis] admodum diſcrete videbatur ☿ ſtella, adeo vt magnitudine certaret cum ſtellis primi honoris, & ſcintillabat etiam inſtar Fixarum, fuitque Altitudo eius, cum primum cerneretur, quaſi 10 G. Sed non potuit obſeruari ab vllis Fixis, quia Cœlum erat alibi nubibus ſubraris obductum.]

DIE 23 JANUARIJ. [23 January]

Immediately after sunset ☿ *was observed in the following manner.* [*Statim ab occaſu* ☉[lis] *obſeruabatur* ☿ *in hunc modum vt ſequitur.*]

As soon as ☿ *could be seen, while the fixed stars from which its distance could be taken had not yet appeared, its altitude was taken as well as it could be, 9⅙ G.* [*Quamprimum* ☿ *videri potuit & nondum ſtellæ fixæ apparerent, a quibus diſtantia eius capi poßet, ſumebatur altitudo eius prout fieri potuit 9⅙ G.*]

and the declin. of ☿ [*atque Declin.* ☿]	*14 3*
Again its alt. [*Rurſus alt. eius*]	*8 2⅙*
Declin. ☿	*15 3*
Altitude with the pinnules, by the revolving instrument [*Altitudo cum pinnacidijs per Volub.*]	*5 50*
Declin. ☿	*14 3½*
Afterwards the dist. of ☿ *from the bright star in the breast of Cygnus was taken with the larger sextant* [*Poſtea capiebatur per Sextantem maiorem Diſt.* ☿ *a lucida in pectore Cygni*]	*48 52½*
With the smaller steel sextant the distance from the same star[1] *was taken at the same instant* [*Per minorem Chalyb. Sextantem eiusdem*[1] *Diſtantia eodem inſtanti capiebatur*]	*40 25½*
The altit. of ☿ *was then* [*Fuit autem tunc altit.* ☿]	*5 20*

[1] It should be: of the bright star in the tail of Cetus. [[1] Debet eße lucidæ in cauda Ceti.]

And its declination by the armillae [*Et Declinatio eius per Armillas*]	*14 4*
The distance of ☿ *from the breast of Cygnus, repeated with the larger sextant* [*Diſtantia* ☿ *a pectore Cygni repetita per maiorem Sextantem*]	*48 52*
corr.	*55*
With the smaller one, from the other star, as before [*Per minorem ab altera vt prius*]	*40 25*
The altit. of ☿ *was then* [*Fuit tunc altit.* ☿]	*4 4*
The dist. from the tail of Cetus repeated, with the larger sextant [*Repetita diſt. a Cauda Ceti per maiorem Sextant.*]	*40 22½*
Corr.	40 24 (23)
The Altit. of ☿ *was then* [*Fuit tunc Altit.* ☿]	*3 45*
And its declin. [*Et Declin. eiusdem*]	*14 4½*
The dist. of ☿ *repeated, from the southern tail of Cetus* [*Repetita Diſt.* ☿ *ab auſtr. Cauda Ceti*]	*40 22½*
The Altit. of ☿ *was then* [*Fuit tunc Altit.* ☿]	*3 24*
Its declination [*Eiusdem Declinatio*]	*14 5*
Afterwards the dist. of ☿ *from the bright star in the mouth of Pegasus was taken with the larger sextant* [*Poſtea ſumebatur Diſt.* ☿ *a Lucida in ore Pegaſi per Sextant. maiorem*]	*22 13* 35 corr.
Its altitude was then [*Fuit tunc ipſius Altitudo*]	*2 41*
and its declination [*et Declinatio eiusdem*]	*14 6*
The same dist. repeated soon after [*Repetita mox eadem diſt.*]	*22 12*
The altit. of ☿ *was then* [*Altit.* ☿ *tunc fuit*]	*1 54*

Afterwards, near the horizon, ☿ *was wrapped in very thick clouds, so that it could no longer be seen this evening, much less observed.* [*Poſtea iuxta Horizontem inuoluebatur* ☿ *craßis admodum nubibus, vt amplius hac veſpera videri nedum obſeruari nequierit.*]

N.B. The declination of the setting ☿ *is limited according to the declination of Sirius at almost the same altitude, so that refraction contributes an imperceptible amount. But this declination is nevertheless not to be trusted too much, because the armillae were not yet sufficiently corrected; rather, the distances by the sextant, reduced to a triangle and limited for refraction, are to be trusted.* [*N.B. Declinatio* ☿ *eſt limitata iuxta*

Declinationem Syrij in eadem quaſi altitudine occidentis, vnde refractio inſenſibiliter quid importat. Sed tamen non nimis fidendum huic Declinationi, ob Armillas nondum ſatis correctas, at potius diſtantijs per Sextantem in triangulum redactis & limitatis ob refractionem.]

DIE 24 JANUARIJ. [24 January]

After sunset ☿ was observed, as soon as it could be seen, as follows. [Poſt occaſum ☉^{lis} obſeruabatur ☿ quamprimum videri potuit vt ſequitur.]

Between ☿ and the bright star in the tail of Cetus [Inter ☿ & lucid. in Cauda Cete]			Alt. of ☿ [Alt. ☿]
H. 5½	Dist. [Diſt.]	40 7	5 0
5⅔	Repeated [Repetita]	40 6	4 27
5⅚	Repeated [Repetita]	40 5	4 0
5 55	Repeated [Repetita]	40 4	3 36
6 0	Repeated [Repetita]	40 4	3 0

N.B.[1] Around this day and the preceding one, ☿ had, according to Copernicus, passed beyond the limit of its greatest distance from ☉; according to Alfonso it could have become more distant still, but the observation rather stands on the side of Copernicus. [N.B.[1] ☿ circa hunc & antecedentem diem iuxta Copernicum erat prætergreßus limitem maximæ remotionis a ☉^{le}; iuxta Alphonſum adhuc remotior fieri potuit, ſed obſeruatio potius ſtat a partibus Copernici.]

According to the last three observations, the bright star of Sirius, towards the east, was raised above the horizon almost equally with ☿, that is, between the 3rd and 4th degree of altitude. [Iuxta tres vltimas obſeruationes fuit Sirij lucida verſus ortum æque ferme eleuata ſupra Horizontem atque ☿, id eſt inter 3 & 4 altitudinis gradum.]

		Altit. of ☿ [Altit. ☿]
A little after the 6th hour ☿ was distant from the mouth of Pegasus [Paulo poſt 6^{tam} diſtabat ☿ ab ore Pegaſi]	21 37	2 10
H. 6⅙ the same dist. repeated [H. 6⅙ Eadem diſt. repetita]	21 35	1 55

After this ☿ could no longer be observed this evening. But from these very observations — since it will have made a fairly well-shaped triangle with the two fixed stars from which it was taken — its longitude and latitude can be investigated; these, however, are afterwards to be limited for refraction and parallax. [Poſtea non amplius obſeruari poterat ☿ hac veſpera, ſed ex his ipſis, ſiquidem triangulum ſatis bene diſpoſitum fecerit cum duabus Fixis a

quibus capiebatur, poterit inquiri eius Longitudo & Latitudo, quæ tamen ob refractionem & parallaxin poſtea limitandæ ſunt.]

OBSERUATIONES STELLARUM FIXARUM. [Observations of the Fixed Stars]

N.B. Around the preceding winter solstice, in order to establish the elevation of the pole in the castle of Benátky exactly, the following were taken several times, as clear weather allowed, before and about the beginning of this following year. [*N. B. Iuxta ſolſtitium hybernum præcedens pro eleuatione poli in Arce Benatica conſtituenda exacte, hæc capiebantur aliquoties prout ſerenitas tulit ante & iuxta initia huius anni ſequentis.*]

Altitude of the star [*Altitudo ſtellæ*]		*Therefore the elevation of the pole comes out* [*Ergo eleuatio poli prouenit*]	*50 18 10*
polar, greatest [*polaris maxima*]	*53 9 15*	*We found it before as* [*Hanc antea adinuenimus*]	*50 18 25*
of the same, least [*eiusdem minima*]	*47 27 5*	*From the altitude of the heart of ☋* [*Ex altitudine cordis ☋*]	
Diameter of the small circle that [*Diameter circelli quem*]		*corrected* [*correcta*]	*53 35*
it describes [*deſignat*]	*5 42 10*	*Its declin. at this time* [*Eius declin. hoc tempore*]	*13 53¾*
Half of it, [*Eius dimidium,*]		*Therefore the altitude of the equator* [*Ergo altitudo æquatoris*]	*39 41¼*
dist. from the pole [*diſt. a polo*]	*2 51 5*	*And on that account the altitude of the pole* [*Et ob id altitudo poli*]	*50 18¾*

[1] Written in the margin. [[1] In margine adſcripta.]

We shall compare this with the one from the pole star towards the north. For the difference is limited by halving it. [*Quam conferemus cum ea quæ e ſtella polari verſus ſeptent. Nam differentia dimidiata limitatur.*]

The same, slightly differently. [*Paulo aliter idem.*]

Greatest altit. observed [*Altit. maxima obſeruata*]	*53 9 15*
Our distance from the pole [*Diſtantia noſtra a polo*]	*2 51 10*
Altitude of the pole [*Altitudo poli*]	*50 18 5*
Altit. from the heart of ☋ [*Altit. e corde ☋*]	*50 18 40*
Difference [*Differentia*]	*40*
Therefore the pole [*Ergo polus*]	*50 18 25*

Altit. of the pole from the pole star [*Altit. poli e ſtella polari*]	*50 18 10*
from the heart of ☋ [*e corde ☋*]	*50 18 45*
Difference of the two [*Differentia vtriuſque*]	*35*

Half of which is [*Cuius dimidium eſt*]	*18*
Which, added to the former, gives [*Quod additum priori facit*]	*50 18 28*

We shall therefore have hit the mark precisely enough in setting the elevation of the pole at Benátky at 50 18½ and the altit. of the equator at 39 41½, which are to be used. [*Satis itaque præciſe ſcopum attigerimus ſtatuentes eleuationem poli Benaticæ 50 18½ & altit. æquat. 39 41½ quibus vtendum*]

At Prague I found the height of the pole [*Pragæ adinueni poli ſublimitatem*]	*50 4½*
Which others make [*Quod alij faciunt*]	*50 7*

N.B. Girzitz, near the town of Costelenz, about two great miles from Benátky in the direction of Prague — where, over seven weeks, while the plague at Benátky was abating — was likewise found to have a pole altitude of 50 16. [*N.B. Girzitz prope ciuitatem Coſtelenz, diſtans Benatica verſus Pragam fere duobus magnis miliaribus, vbi per ſeptem hebdomadas, interea dum lues Benaticæ remitteret, inuenta eſt pariter habere poli altitudinem 50 16.*]

NOCTU QUÆ PRÆCEDEBAT 1 JANUARIJ, BENNACHIÆ. [On the night preceding 1 January, at Benátky]

Merid. altit. of the heart of ♌, by the revolving instrument [Altit. merid. cordis ♌ per Volub.]	53 34⅚
The bright star of the neck of ♌ [Luc. ceruicis ♌]	61 31
Afterwards the least altit. of the pole star was observed, when it was in the vertical with Schedar in Cassiopeia [Poſtea obſeruabatur altit. minima Polaris cum eßet in perpendiculo cum Schedir Caßiopeæ.]	47 27⅓
An hour later, again by the sextant [Elapſa hora rurſus per Sextant.]	47 36⅓

We could not observe the Moon because of rather thick clouds. [Lunam propter nubes denſiores obſeruare non potuimus.]

DIE 2 JANUARIJ. [2 January]

In the evening the greatest altit. of the pole star was observed with the sextant [Veſpera obſeruabatur Altit. Polaris maxima Sextante]	53 9⅙

EA NOCTE QUÆ PRÆCESSIT DIEM 20 JANUARIJ. [On the night that preceded 20 January]

To test the revolving quadrant, with which the other meridian altitudes were taken, the following stars were taken in the meridian itself. [Pro explorando

Quadrante Volubili, quo ceteræ Altitudines Meridianæ acceptæ ſunt, ſequentes ſtellæ in ipſo meridiano capiebantur.]

	Altit. obs. [Altit. obſ.]	It should have been [Debuit eße]
The first of Aries [Prima Arietis]	57 0 10	56 59 46
The bright star of Aries [Lucida Arietis]	61 15 50	61 14 0
The northern eye of Taurus [Borealis Oculus Tauri]	57 55 0	57 55 52
Aldebaran [Aldeboran]	55 21 0	55 19 51
The upper head of ♊ [Superius Caput ♊]	72 23 30	72 22 37
The lower head of ♊ [Inferius Caput ♊]	68 36 30	68 37 34
The bright star of Hydra [Lucida Hydræ]	32 45 30	32 44 45
The bright star of the head of ♌ [Lucida Capitis ♌]	65 16 0	
The heart of ♌ [Cor ♌]	53 35 0	53 35 16
The bright star of the neck of ♌ [Lucida Ceruicis ♌]	61 32 10	61 31 57
The tail of ♌ [Cauda ♌]	56 31 0	56 30 50
The third of the wing of ♍ [Tertia alæ ♍]	40 27 40	40 27 59
Spica ♍, doubtful [Spica ♍ dubia]	30 32 30	30 40 37

NOCTE PRÆCEDENTE 22 JANUARIJ. [On the night preceding 22 January]

The pole star was observed at its least altitude, very carefully [Obſeruabatur ſtella Polaris in minima ſua Altitudine admodum diligenter]	47 27 20
And since its distance from the pole is now [Cumque eius diſtantia nunc a Polo ſit]	2 51 10
The elevation of the pole comes out exactly [Prouenit eleuatio Poli exacte]	50 18 30

This agrees with the preceding limited observations. [Quod cum antecedentibus obſeruationibus limitatis conſentit.]

To examine the sextant, several distances were taken the same night, such as between the heart of ♌ and Spica [Pro examinando Sextante capiebantur aliquot diſtantiæ eadem nocte, vti inter Cor ♌ & Spicam]	53 59 twice [bis]
Afterwards the same was found again [Poſtea eadem denuo inuenta eſt]	53 57½
But in truth it should have been [Debuit autem re vera eße]	54 2

From this it is clear that the sextant falls short near the end of its arc by 3′ or 4′, or a little more. [Vnde patet, Sextantem deficere circa finem ſui arcus 3 vel 4 minutis aut paulo amplius.]

Between the heart of ♌ and the third of the wing, the distance observed with the same sextant three times [Inter Cor ♌ & tertiam alæ obſeruata diſtantia eodem Sextante ter]	40 22¼
But in truth it should have been [Debuit autem re vera eße]	40 21¼

Here, therefore, the sextant gives one minute too much, whereas before it had less. So on the following day this fault of the sextant was investigated, and it was found that the arc [Ergo hic abundat Sextans vno Minuto cum prius minus habuerit. Quare die ſequente vitium hoc Sextantis inquiſitum eſt, & inuentum quod arcus]

had contracted slightly and did not correspond to its centre; this was corrected as far as possible. In the distances observed earlier with the same instrument, however, a limitation can be made, as the fixed stars whose distances are known require at an approximately similar interval. [ſe paululum contraxerat, nec centro ſuo reſponderet, quod correctum eſt quantum fieri potuit. In diſtantijs autem antea per eundem obſeruatis poteſt fieri limitatio, prout fixæ ſtellæ, quarum diſtantiæ patent, in conſimili quaſi intercapedine requirunt.]

Nocte præcedente diem 24 Januarij. [On the night preceding 24 January]

First, to examine the sextant, the interval between Aldebaran and the bright star of the foot of ♊ was taken [Primum pro examinando Sextante ſumebatur intercapedo Aldeboræ & luc. pedis ♊]	29 12
It should have been [Debuit eße]	29 9
The same distance repeated [Eadem diſtantia repetita]	29 12
Merid. altitude of the foot of Sirius, by the revolving instrument [Altitudo Merid. pedis Sirij per Volub.]	21 50
The same repeated, with the brass sextant [Eadem repetita per Sext. Orich.]	21 52
Merid. altit. of the bright star of the foot of ♊, by the revolving instrument [Altit. merid. luc. pedis ♊ per Volub.]	56 22½
Dist. of Aldeb. and the upper one of ♊ [Diſt. Aldeb. & ſuperior. ♊]	43 18½
The same repeated [Eadem repetita]	43 18½
It should have been [Debuit eße]	43 12½
Dist. of Aldeb. and the lower head of ♊ [Diſt. Aldeb. & inf. Capitis ♊]	45 2⅓
It should have been [Debuit eße]	45 5½
Merid. altitude of Sirius [Altitud. Merid. Sirij]	23 30⅚
The dist. of Aldeb. from the lower head of ♊ repeated [Repetita diſt. Aldeb. ab infer. Cap. ♊]	45 2⅓
Merid. altit. of the one in the hind hip of Sirius [Altit. Merid. eius quæ in coxa poſteriore Sirij]	11 17⅔
Merid. altit. of the brighter one in the rear part of Argo Navis [Altit. Merid. lucidior. in poſter. parte Argo Nauis]	13 57
Merid. altit. of the upper head of ♊, by the revolving instrument [Altit. Merid. ſup. Cap. ♊ per Volub.]	72 23⅙

Merid. altit. of the lower head of ♊ [Altit. Merid. infer. Capitis ♊]	68 35
Merid. alt. of Procyon, by the revolving instrument [Alt. Mer. Procyonis per Vol.]	45 51⅙
Its merid. altit., with the brass sextant [Eiusdem altit. Merid. per Sext. Orichalc.]	45 52⅔
Merid. altit. of the heart of ♌ [Altit. Merid. Cordis ♌]	53 33⅚
Merid. altit. of the bright star of the neck of ♌ [Altit. Merid. Luc. Ceruicis ♌]	61 31½
Dist. of the heart of ♌ from the 3rd of the wing of ♍, to examine the sextant [Diſt. Cordis ♌ a 3tia alæ ♍ pro examine Sextantis]	40 23
It should have been [Debuit eße]	40 24 53
The same repeated again [Eadem denuo repetita]	40 23

DIE 24 JANUARIJ. [24 January]

The same night,[1] to examine the sextant and the quadrant, several fixed stars were observed, as long as the sky was clear, as follows. [Eadem nocte[1] pro examinando Sextante atque Quadrante obſeruabantur aliquot Fixæ ſtellæ, quamdiu ſudum erat, vt ſequitur.]

Dist. between Aldeb. and the bright star of ♈ [Diſt. inter Aldeb. & Lucid. ♈]	35 34⅓
Repeated twice, very exactly [Repetita bis exactißime]	35 34⅓
It should have been [Debebat eße]	35 32
Between Aldeb. and the right shoulder of Or. [Inter Aldeb. & dext. hum. Or.]	21 27
Repeated [Repetita]	21 26
Repeated [Repetita]	21 25¾
Repeated [Repetita]	21 25¾
It should have been [Debebat eße]	21 25 10
Dist. between the two shoulders of Orion [Diſt. inter vtroſque humeros Orion.]	7 32⅓
Repeated four times [Repetita quater]	7 32⅓
It should have been [Debebateße]	7 30⅔
Merid. altit. of the left shoulder of Orion, by the revolving instrument [Altit. Merid. ſiniſtri humeri Orionis per Volub.]	45 36
It should have been [Debebat eße]	45 36 30
Altit. of the middle one of Orion's belt, by the sextant [Altit. Mediæ Balthei Orionis per Sextantem]	38 8½
The same, taken by the revolving instrument [perVolub. eadem ſumpta]	38 8⅔

It should have been [Debebat eße]	38 11 30
Merid. alt. of the left foot of Or., by the sextant [Alt. Merid. ſin. ped. Or. per Sext.]	25 48⅔
by the revolving instrument [per Volub.]	25 49
Merid. alt. of the following shoulder of Or., by the sextant [Alt. Mer. ſeq. hum. Or. per Sext.]	46 55⅓
The same by the revolving instrument [per Volub. eadem]	46 55½
It should have been [Debebat eße]	46 57½

Afterwards the sky was covered with thick clouds, so that no planets could be observed this night, nor any more fixed stars either. On the following day the sky was wet and stormy, because the Sun, rising on this day, the 24th, had formed its image a little above itself in rather thin clouds, almost like the genuine Sun, so much so that it gave out some light. [Poſtea cœlum obuoluebatur denſis nubibus, ita vt nulli Planetæ hac nocte obſeruari potuerint, nec etiam plures ſtellæ Fixæ. Die ſequente erat vdum cœlum & tempeſtuoſum, quod Sol hoc die 24 exoriens iconem ſuum paulo ſupra ſe in nubibus rariuſculis expreſſerit, inſtar fere genuini Solis, adeo vt lumen aliquale ederet.]

NOCTE QUÆ PRÆCEDEBAT 3 FEBRUARIJ. [On the night preceding 3 February]

To examine the sextant. [Pro examinando Sextante.]

		It should have been [*Debuit eße*]
Dist. between Aldeb. and the bright star of ♈ [Diſt. inter Aldeb. & Lucid. ♈]	35 35½	35 32
Repeated II [Repetita II]	35 35½	
Repeated III [Repetita III]	35 35½	
Dist. between Aldeb. and the 2nd of ♈ [Diſt. inter Aldeb. & 2^{dam} ♈]	38 22	38 21⅔
Repeated [Repetita]	38 23½	
Repeated [Repetita]	38 23	

[1] After the observations of Mercury. [[1] Poſt obſeruationes Mercurij.]

Between the southern head of ♊ and the heel of ♊ [Inter Merid. Caput ♊ & Calcem ♊]	19 29½	19 28
Repeated twice [Repetita bis]	19 29½	

Between Aldeb. and the bright star of ♈, with the brass sext. [Inter Aldeb. & Lucid. ♈ per Orich. Sext.]	35 31½	35 32	

It is therefore clear that the brass sextant agrees more correctly, since it falls short by only ½′; we therefore used it for all the distances that follow. [Patet itaque quod Orichalc. Sextans rectius quadret, cum ſaltem ½′ deficiat, quare in omnibus diſtantijs ſequentibus eo vſi ſumus.]

Dist. between the heart of ♌ and the northern head of ♊ [Diſt. inter Cor ♌ & Bor. Cap. ♊]	40 32	*It should have been* [*Debuit eße*]
Repeated three times [Repetita ter]	40 32	40 32
Merid. alt. of the bright star of the foot of ♊ [Alt. Mer. lucid. ped. ♊]	56 22⅓	
Merid. altit. of Sirius [Altit. Merid. Sirij]	23 32⅓	
Merid. altit. of the upper head of ♊ [Altit. Merid. ſuper. Cap. ♊]	72 24⅓	
Merid. altit. of the lower head of ♊ [Altit. Merid. infer. Cap. ♊]	68 39⅔	
Merid. altit. of the bright star in the head of ♌ [Altit. Merid. luc. in Cap. ♌]	65 13½	
Merid. altit. of the heart of ♌ [Altit. Merid. Cordis ♌]	53 37⅙	
True altit. of the bright star of the neck of ♌ [Altit. Lucidæ Ceruicis ♌ vera]	61 33⅚	61 31 57
Merid. altit. of the tail of ♌ [Altit. Merid. Caudæ ♌]	56 28⅙	

NOCTE SEQUENTE 3 FEBRUARIJ. [On the night following 3 February]

All the distances were taken with the brass sextant, because it had contracted no perceptible fault on the journey. The altitudes, however, were taken with the revolving quadrant, since it too could have strayed imperceptibly. [Diſtantiæ omnes capiebantur per Sextantem orichalcicum eo quod is nihil ſenſibilis vitij in itinere contraxerat. Altitudines vero per Quadr. Volubilem, quoniam is etiam inſenſibiliter aberrare potuit.]

First, to examine the sextant, the following were recorded. [Primum pro examinando Sextante hæc denotabantur.]

Between Canicula and the bright star of Orion [Inter Caniculam & Lucidam Orionis]	26 0	*It should* [*Debuit*]
Repeated twice [Repetita bis]	26 0	*have been* [*eße*]

Between Aldeb. and the bright star of the foot of ♊ [Inter Aldeb. & Luc. ped. ♊]	29 7½	29 9
Repeated [Repetita]	29 7½	
Repeated [Repetita]	29 7⅓	
Between the heart and the tail of ♌ [Inter Cor & Caudam ♌]	24 39⅔	24 39¾
Repeated twice [Repetita bis]	24 39⅚	
At the same moment [with ☿] the brighter star in the head of ♌ was crossing the merid., and it had altitude [Tranſibat eodem momento [cum ☿] per Merid. Lucidior in Capite ♌, habuitque altitud.]	65 17	
Between the lower head of ♊ and the heel [Inter infer. cap. ♊ & calcem]	19 28	
The same, repeated twice [Eadem repetita bis]	19 27½	
Merid. altit. of the heart of ♌ [Altit. Merid. Cordis ♌]	53 35⅔	
Altit. of the bright star of the neck of ♌ [Altit. Lucid. Ceruicis ♌]	61 32⅔	
Spica ♍ crossed the merid., having altitude [Tranſiuit Spica ♍ Merid. habens altitudinem]	30 41⅓	
Limited [Limitata]	30 40 37	

Meanwhile the dist. of the heart of ♌ and Spica ♍ was observed with the same sextant as 54 1½, which falls short of the true value by only half a minute, so that the distances taken with this sextant were good enough. [Obſeruata eſt interea diſt. Cordis ♌ & Spicæ ♍ per eundem Sextantem 54 1½, quod ſaltem dimidio minuto a vero deficit, vt ſatis bonæ fuerint diſtantiæ per hunc Sextantem acceptæ.]

NOCTE SEQUENTE 4 FEBRUARIJ. [On the night following 4 February]

To examine the sextant, the following distances were taken. [Pro examinando Sextante hæ capiebantur diſtantiæ.]

Between the heart of ♌ and the southern head of ♊ [Inter Cor ♌ & Merid. Caput ♊]	36 39⅔
Repeated I [Repetita I]	36 39½
Repeated II [Repetita II]	36 39½
Repeated III [Repetita III]	36 39½
With the new pinnule the dist. of Spica and the heart of ♌ was taken twice [Per nouum pinnacidium capiebatur Diſt. Spicæ & Cordis ♌ bis]	54 5
The same, however, simply with the sextant [Eadem vero ſimpliciter per Sextantem]	54 1

It is therefore clear that the sextant falls short by 1′ near this point, while with the new pinnule there are 3′ too many. This could easily happen, since the pinnule had been fitted for the first time that same evening and had not yet been corrected and examined exactly enough. [Patet itaque quod in Sextante iuxta hunc locum deficiat 1′. Per nouum autem pinnacidium abundant 3′. Quod facile fieri potuit, ſiquidem eadem veſpera fuit primo impoſitum, nec adhuc ſatis exquiſite correctum & examinatum.]

DIE 9 FEBRUARIJ. [9 February]

Since it had turned clear again on this day, the following were observed up to the following midnight, chiefly to examine the instruments. [Cum hoc die iterum factum ſit ſerenum, vſque ad mediam noctem ſequentem ſunt hæc obſeruata, præſertim pro examinandis inſtrumentis.]

8^{H} 55^{M} Sirius crossed the meridian with altitude 23 33⅓, and the clock was then set to that hour and minute. [8^{H} 55^{M} Tranſiuit Sirius meridianum habens altitudinem 23 33⅓, atque tunc adaptabatur Horologium ad dictam horam & minutum.]

Afterwards the following was observed with the new pinnule: [Poſtea per nouum pinnacidium obſeruabatur]

Dist. between the heart of ♊ and Aldeb. [Diſt. inter Cor ♊ & Aldeb.]	80 8⅔	*It should have been* [*Debuit eße*]
Between the heart of ♌ and the heel of ♊ [Inter Cor ♌ & Calcem ♊]	54 36½	54 35
Between Aldeb. and the bright star of ♈, with the usual pinnules, twice [Inter Aldeb. & Lucid. ♈ conſuetis pinnacidijs, bis]	35 32½	35 32⅙

Between Aldeb. and the northern head of ♊ [Inter Aldeb. & Cap. Bor. ♊]	43 13⅓	43 12½
Repeated [Repetita]	43 13	
Repeated again [Iterum repetita]	43 13	
Between the southern head of ♊ and the heel [Inter Mer. Cap. ♊ & Calcem]	19 28	19 28
The same, repeated [Eadem repetita]	19 28½	
Repeated a third time [Tertio repetita]	19 28½	
Merid. altit. of Pollux [Altit. Merid. Pollucis]	68 38	
12^{H} 55^{M} The bright star of the neck of ♌ crossed the meridian, having altitude [12^{H} 55^{M} Tranſiuit Lucida Ceruicis ♌ per Meridianum habens altitud.]	61 33	

But it should then have been 12^{H} 26^{M}. [Debuit autem tunc eße 12^{H} 26^{M}.]

Then clouds suddenly came on and prevented any further observation that night, although the students stayed awake until 4 in the morning. [Ingruebant tunc ſubito nubes, quæ vlteriorem obſeruationem hac nocte præpediebant, quamuis ſtudioſi ad horam 4 matutinam vigilarint.]

DIE 18 FEBRUARIJ. [18 February]

Merid. altit. of the upper head of ♊ [Altit. merid. ſuper. Cap. ♊]	72 23⅙
of the lower head of ♊ [infer. Cap. ♊]	68 37¾

To examine the sextant, the following was taken: [Pro examinando Sextante ſumebatur]

Dist. between Aldeb. and the bright star of the foot of ♊ [Diſt. inter Aldeb. & Lucid. pedem ♊]	29 10½
The same dist. repeated [Repetita eadem diſt.]	29 10½
The same, repeated [Eadem repetita]	29 10½
It should have been [Debuit eße]	29 9

NOCTE QUÆ PRÆCEDEBAT DIEM 22 FEBRUARIJ. [On the night preceding 22 February]

Merid. altit. of the bright star of the foot of ♊ [Altit. merid. lucid. pedis ♊]	56 22⅓
of the upper head of ♊ [ſuper. Capitis ♊]	72 24⅓

To examine the sextant, the following was taken: [Pro examinando Sextante ſumebatur]

Dist. between the heart of ♌ and the tail [Diſt. inter Cor ♌ & Caudam]	24 39
The same, repeated [Eadem repetita]	24 39
The same, repeated [Eadem repetita]	24 39
About hour 11. Then the dist. between the heart of ♌ and Canis Minor was observed [Hora fere 11. Deinde obſeruabatur diſt. inter Cor ♌ & Can. minor.]	37 20⅓
The same, repeated [Eadem repetita]	37 20⅓
The same, repeated, exactly [Eadem repetita præciſe]	37 20⅓
H. 11⅔ The merid. altit. of the heart of ♌ was taken [H. 11⅔ Sumebatur Altit. merid. Cordis ♌]	53 35⅙
H. 11⅚ The merid. alt. of the bright star of the neck of ♌ was taken [H. 11⅚ Capiebatur Alt. mer. luc. Ceruic. ♌]	61 32

As morning was beginning [Incipiente mane]

Merid. altit. [Altit. merid.]	
of the bright star in the loins of ♌ [Luc. in lumbis ♌]	62 24⅓
of the tail of ♌ [Caudæ ♌]	56 30⅚
of the 3rd of the wing of ♍ [3 alæ ♍]	40 28½
of Spica ♍ [Spicæ ♍]	30 40⅓

DIE 23 FEBRUARIJ, MANE. [23 February, morning]
To examine the sextant. [Pro examinando Sextante.]

Dist. between the head of Ophiuchus and the bright star of Cygnus [Dist. inter Caput Ophiuchi & Luc. Cygni]	51 10⅓
The same, repeated [Eadem repetita]	51 10⅓
The same, repeated a 3rd time [Eadem 3^{tio} repetita]	51 10⅓

DIE 28 FEBRUARIJ, VESPERI. [28 February, evening]

Merid. altit. of the right shoulder of Orion [Altit. merid. dextri hum. Orion.]	45 37⅔
of the bright shoulder of Orion [Lucidi humeri Orionis]	46 58

To examine the sextant. [Pro examinando Sextante.]

Dist. between Aldeb. and the 2nd of ♈ [Dist. inter Aldeb. & 2^{dam} ♈]	38 21
Repeated [Repetita]	38 21
The book gives [Liber præbet]	38 21⅔
Between Procyon and the bright star of the foot of Orion [Inter Procyonem & Luc. ped. Orion.]	38 37
Repeated [Repetita]	38 37
It should have been [Debebat eße]	38 37½
Merid. altit. of the upper head of ♊ [Altit. merid. super. Cap. ♊]	72 22⅓
of the lower head of ♊ [infer. Cap. ♊]	68 37⅔

DIE 2 MARTIJ, VESPERI. [2 March, evening]
To examine the sextant. [Pro examinando Sextante.]

Dist. between Aldeb. and the bright star of ♈ [Diſt. inter Aldeb. & Lucid. ♈]	35 35
Repeated twice [Repetita bis]	35 35
In excess [*abundant*]	*3*

With the new pinnule. [Nouo pinnacidio.]

Between Aldeb. and the heart of ♌ [Inter Aldeb. & Cor ♌]	80 8½
Repeated [Repetita]	80 8½
Dist. between the lower head of ♊ and the bright star of ♈ [Diſt. inter. infer. Cap. ♊ & Lucid. ♈]	70 44½
Repeated [Repetita]	70 44½
Between Aldeb. and the bright star of the foot of ♊ [Inter Aldeb. & luc. pedem ♊]	29 11½
Repeated twice [Repetita bis]	29 13
Between Aldeb. and Procyon [Inter Aldeb. & Procyonem]	46 22⅔
Repeated [Repetita]	46 22⅔
Between Aldeb. and the lower head of ♊ [Inter Aldeb. & infer. Cap. ♊]	45 4⅔
Repeated [Repetita]	45 4⅔
Between Aldeb. and πρόπον [Greek: πρόπον (propon, "fore-foot" — the star Propus at the feet of ♊)] [Inter Aldeb. & πρόπον]	24 4
Repeated [Repetita]	24 4
Between Aldeb. and the heel of ♊ [Inter Aldeb. & Calcem ♊]	25 53
Repeated twice [Repetita bis]	25 53
Between Aldeb. and the northern head of ♊ [Inter Aldeb. & boreale Cap. ♊]	43 11½
Repeated [Repetita]	43 11½
Between the heart of ♌ and the southern head of ♊ [Intcr Cor ♌ & merid. Cap. ♊]	37 1
Repeated [Repetita]	37 1

DIE 9 MARTIJ. [9 March]

During the night the following were taken among the fixed stars, to test the instruments. [*Nocte hæc in fixis capiebantur pro experimentandis inſtrumentis.*]

Merid. altit. of the heart of ♌ [*Altit. merid. Cordis* ♌]	*53 34⅓*
Between the heart of ♌ *and the tail of* ♌ [*Inter Cor* ♌ *& Caudam* ♌]	*24 41*
II. Repeated [*II. Repetita*]	*24 40½*
III. Repeated [*III. Repetita*]	*24 40⅔*
IIII. Repeated, exactly [*IIII. Repetita exacte*]	*24 41*
Between the heart and the southern head of ♊ [*Inter Cor & merid. Cap.* ♊]	*37 1*

The same repeated several times [*Eadem aliquoties repet.*]	*37 1*

DIE 15 MARTIJ, VESPERI. [15 March, evening]
To test the sextant. [Pro experimentando Sextante.]

Dist. between the heart of ♌ and the lower head of ♊ [Diſt. inter Cor ♌ & infer. Cap. ♊]	37 2½
Dist. repeated [Diſt. repetita]	37 2
Repeated [Repetita]	37 2
The Book of Letters gives [Liber Epiſtolarum præbet]	36
	59⅔

So at this point the sextant gives very nearly two minutes too many. More would have been taken then, but rather sparse clouds prevented further observation. [Ergo duobus proxime minutis Sextans hoc in loco abundat. Acceptæ tum plures fuißent, ſed nubes rariuſculæ vlteriorem obſeruationem impediebant.]

DIE 16 MARTIJ, MANE. [16 March, morning]

Merid. altit. of the middle one of the forehead of ♏ [Altit. merid. mediæ frontis ♏]	18 12
of the lower, or toward the south [inferioris vel verſus meridiem]	14 40
of the upper, toward the north [ſuperioris verſus ſept.]	21
	6⅓
For the heart of ♏. [Pro Corde ♏.]	
Dist. of the heart of ♏ from Spica ♍ [Diſt. Cordis ♏ a Spica ♍]	45 57
Repeated [Repetita]	45 57
Repeated [Repetita]	45 57
Conversely. [Vice verſa.]	
Dist. of the heart of ♏ from Aquila, with the new pinnule [Diſt. Cordis ♏ ab Aquila, nouo pinn.]	60 30
Repeated [Repetita]	60 30
Repeated [Repetita]	60 30
Merid. altit. of the heart of ♏ [Altit. merid. Cordis ♏]	14 11½

DIE 25 MARTIJ, VESPERI. [25 March, evening]
The pole star was attended to in this way, because near the meridian it was at its least altitude. [Ad ſtellam Polarem attendebatur hoc modo quia iuxta Meridianum erat in minima ſua altitudine.]

Least altitude of the pole star [Altitudo Polaris minima]	47 27 10
Its dist. from the pole [Diſt. eius a Polo]	2 51 5
Therefore the alt. of the pole, which agrees well enough [Ergo alt. Poli, quod ſatis conſentit]	50 18 15
Altit. of the heart of ♌, merid. [Altit. Cordis ♌ merid.]	53 35 40

Declin.	13 53 45
Altit. of the equator [Altit. Æquatoris]	39 41 7[1]
Altit. of the pole [Altit. Poli]	50 18 53[2]
Altit. of Spica, merid. [Altit. Spicæ merid.]	30 40 50
Declin.	9 1
Altit. of the equator [Altit. Æquatoris]	39 41 50
Therefore the altitude of the pole [Ergo Altitudo Poli]	50 18 10

This agrees well enough with the value from the pole star, within 5″, which cannot be observed. [Quæ cum ea quæ ex Polari ſatis conſentit intra 5″ inobſeruabilia.]

To examine the sextant. [Pro examinando Sextante.]

Dist. between Spica and the northern scale-pan [Diſt. inter Spicam & Lancem Bor.]	27 34
Dist. repeated [Diſt. repetita]	27 34
Dist. repeated [Diſt. repetita]	27 34

And from this you can verify the earlier distances, that they deviate imperceptibly. [Atque hinc potes verificare priores diſtantias, vt inſenſibiliter deuient.]

DIE 4 APRILIS, VESPERI. [4 April, evening]

To examine the sextant. [Pro examinando Sextante.]

Dist. between the heart and the tail of ♌ [Diſt. inter Cor & Caudam ♌]	24 42
Repeated twice [Repetita bis]	24 42
Least altit. of the pole star [Altit. Polaris minima]	47 27½
Its dist. from the pole [Diſt. eius a Polo]	2 51 5
Therefore the elevation of the pole [Ergo Eleuatio Poli]	50 18 35
Altit. of the heart of ♌, observed earlier [Altit. Cordis ♌ antea obſeruata]	53 35
Declination [Declinatio]	13 53 40
Altit. of the equator [Altit. Æquatoris]	39 41 20
Elevation of the pole [Eleuatio Poli]	50 18 40
H. 11 55′ Altit. of Spica, merid. [H. 11 55′ Altit. Spicæ merid.]	30 40 20
Declination [Declinatio]	9 0 50
Altit. of the equator [Altit. Æquatoris]	39 41 10
Elevation of the pole [Eleuatio Poli]	50 18 50

DIE 11 APRILIS. [11 April]

A trial was made of the new sextant, which for a beginning performs moderately. In the angle of the difference of longitude it gave 15′ more, and in latitude 20′ less; but these could easily be corrected, since most parts, having so far been made only roughly, have not yet received the proper precision.

[Capiebatur experimentum noui Sextantis, qui pro exordio mediocriter ſe habet. Dabat in angulo differentiæ Longitudinis plus 15′ & in Latitudine minus 20′, ſed facile hæc emendari poterint, cum plæraque groſſo tantum modo adhuc facta ſcrupuloſitatem decentem nondum ſenſerint.]

[1] 39 31 7 in the codex. [[1] 39 31 7 in codice.]

[2] Thus in the codex. [[2] Sic in codice.]

To examine the sextant, the dist. between Spica and the northern scale-pan was taken three	27
times [Pro examinando Sextante ſumebatur ter Diſt. inter Spicam & Lancem Boream]	35⅓
Again, between Spica and the southern scale-pan [Rurſus inter Spicam & Lancem Auſtralem]	21
	23½
Repeated twice [Repetita bis]	21
	23½
$2^{H}51^{M}$ Merid. altit. of the heart of ♏ [$2^{H}51^{M}$ Altit. Merid. Cordis ♏]	14
	16½

DIE 13 APRILIS. [13 April]

Least altitude of the pole star [Altitudo minima Polaris]	47 27½

DIE 18 APRILIS, VESPERI. [18 April, evening]

Dist. of the heart of ♌ from the tail of ♌ [Diſt. Cordis ♌ a Cauda ♌]	24 40⅔
The book gives [Liber dat]	24 39¾
Repeated [Repetita]	24 40⅓
Repeated [Repetita]	24 40⅔

DIE 20 APRILIS, VESPERI. [20 April, evening]

To examine the sextant. [Pro examinando Sextante.]

Dist. between the heart of ♌ and the tail [Diſt. inter Cor ♌ & Caudam]	24 41
Repeated twice [Repetita bis]	24 41
The book gives [Liber præbet]	24 39⅔

DIE 9 JUNIJ, VESPERI. [9 June, evening]

To examine the sextant, the distance of Spica and the northern scale-pan was taken [Pro	27
examinando Sextante ſumebatur Diſtantia Spicæ & Lancis Boreæ]	35½

Repeated twice [Repetita bis]	27 35½

DIE 27 JUNIJ, VESPERI. [27 June, evening]
To examine the sextant. [*Pro examinando Sextante.*]

Between Spica and the northern scale-pan of ♎ [*Inter Spicam & Lancem Bor.* ♎]	*27 35⅓*
The same dist. repeated [*Eadem diſt. repetita*]	*27 35⅓*

OBSERUATIONES PRAGÆ HABITÆ. [Observations made at Prague]
DIE 25 DECEMBRIS. [25 December]

Max. altit. of the pole star [Altit. Polaris max.]	
with the quadrant [Quadrante]	52 59½
with the sextant [Sextante]	52 57½
Merid. altit. of the first of ♈, with the revolving instrument [Altit. merid. primæ ♈ Volub.]	57 16⅓
of the second of ♈ [ſecundæ ♈]	58 46
of the third of ♈, or the bright one [tertiæ ♈ ſeu lucidæ]	61 30

But these observations are very uncertain, partly because the quadrant was not fixed firmly enough on the garden wall, partly because of the unsteadiness of the air. [Verum admodum incertæ ſunt hæ obſeruationes, partim propter Quadrantis non ſatis in horti muro firmati, partim propter aëris inconſtantiam.]

A few fixed stars, for the completed year 1600 [Stellarum Fixarum aliquot ad annum 1600 completum]

	Declination [Declinatio]	Right ascension [Aſc. Recta]
The first of ♈ [Prima ♈tis]	17° 18⅔′ B.	22° 56′
The bright star of ♈ [Lucida ♈]	21 33 B.	26 13
The northern eye of ♉ [Boreus oculus ♉]	18 14½ B.	61 21
Aldebaran [Aldebora]	15 38½ B.	63 16½
The heel of the foot of ♊ [Calx pedis ♊]	22 38⅕ B.	
The bright star of the foot of ♊ [Lucidus pes ♊]	16 40 B.	93 38
Pollux	28 56 B.	110 13
The northern Ass [Aſellus Boreus]	22 49½ B.	124 58
The bright star of the neck of ♌ [Lucida Colli ♌]	21 50⅙ B.	149 25½
Regulus	13 53½ B.	146 45½
The third of the wing of ♍ [Tertia alæ ♍]	0 $46\frac{1}{12}$ B.	
Spica	9 1⅕ A.	196 4

	Declination [Declinatio]	Right ascension [Aſc. Recta]
The pole star [Stella Polaris]	87 9⅙ B.	5 47

DIE 27 DECEMBRIS, VESPERI. [27 December, evening]

Hour 6 M. 5 P. M., altit. of the pole star [Hora 6 M. 5 P. M. Altit. Polaris]		
by the revolving instrument [per Volub.]	52 58⅚	
by the sextant [per Sextant.]	52 57 50	
Merid. altit. 1 ♈ [Altit. merid. 1 ♈]	57 14 40	
2 ♈	58 45 50	} by the revolving instrument [per Volub.]
3 ♈	61 28 40	

	1st ♈ [1ª ♈]	2nd ♈ [2ª ♈]	Bright star of ♈ [Luc. ♈]
Merid. alt. [Alt. mer.]	57 14 40	58 45 50	61 28 40
Decl.	17 18 40	18 50	21 33
Elev. [Eleu.]			
of the equator [Æquat.]	39 56 0	39 55 50	39 55 40
of the pole [Poli]	50 4 0	50 4 10	50 4 20

Afterwards, before the 10th hour, there was observed: [Poſtea ante horam 10 obſeruabatur]

	Of the northern eye of ♉ [Borei oculi ♉]	Of Aldebaran [Aldeboræ]
Merid. altit. [Altit. merid.]	58 9 20	55 34 20
Declination [Declinatio]	18 14 30	15 38 30
Elevation of the equator [Eleuatio Æquat.]	39 54 50	39 55 50
of the pole [Poli]	50 5 10	50 4 10

DIE 29 DECEMBRIS. [29 December]

Least alt. of the pole star, with the sextant [Alt. Polaris minima Sextante]	47 16⅓
Dist. from the pole [Diſt. a Polo]	2 50 50
Elevation of the pole [Eleuatio Poli]	50 7 10

Appendices to the observations of the year 1600 [APPENDICES AD OBSERUATIONES ANNI 1600.]

I. Observations of David Fabricius, sent from Frisia [I. OBSERUATIONES DAVIDIS FABRICII EX FRISIA MISSÆ.]

Certa obſeruatio in ☾ 18 Octobris die ♄ mane. [A reliable observation of the ☾, 18 October, day of ♄, in the morning]

The alt. of the lower limb of the ☾ in the meridian was [Alt. limbi inferioris ☾ erat in meridiano]	55° 25′
Dist. of the eastern limb of the ☾ from Regulus [Diſt. limbi orientalis ☾ a Regulo]	27 41 approximately [fere]

Being alone, I could not observe from two different stars so quickly. [Ego ſolus a duabus diuerſis ſtellis obſeruare tam ſubito non potui.]

Observations of Saturn [OBSERUATIONES SATURNI.]

For the quadrature of ♄ and ⊙ [Pro □ ♄ & ⊙.]

13 JANUARIJ DIE ⊙. [13 January, day of ⊙]

At hour 1½ before the rising of the ⊙, ♄ was distant from [Hora 1½ ante ortum ⊙ diſtabat ♄ a]:

Spica	11 2
Arcturus [Arcturo]	29 52
the northern scale-pan [lance bor.]	16 30

For the trine of ♄ and ⊙ [Pro △ ♄ & ⊙.]

1 FEBRUARIJ DIE ♀. [1 February, day of ♀]

In the morning, at hour 4½, ♄ was distant from [Mane hora 4½ diſtabat ♄ a]:

the northern scale-pan [lance boreali]	16 19½
Spica ♍	11 15
Merid. altitude of ♄ [Altitudo merid. ♄]	27 56
Merid. altit. of the southern scale-pan [Altit. merid. lancis auſtralis]	22 4

3 FEBRUARIJ DIE ⊙. [3 February, day of ⊙]

In the morning, at hour 4½, ♄ was distant from [Mane hora 4½ diſtabat ♄ a]:

Spica	11 14½
the northern scale-pan [lance boreali]	16 20
Arcturus [Arcturo]	29 50
Merid. altitude of ♄ [Altitudo merid. ♄]	27 56½

For the opposition of ♄ and ☉ [Pro ☍ ♄ & ☉.]

25 MARTIJ DIE ♂. [25 March, day of ♂]

In the following night, at hour 2½ and at hour 3 after midnight, ♄ was distant from [Nocte ſeq. hora 2½ & hora 3 poſt med. noct. Diſtabat ♄ a]:

the tail of ☋ [cauda ☋]	40 37
the northern scale-pan [boreali lance]	18 39½
the southern scale-pan [merid. lance]	13 45
Arcturus [Arcturo]	29 2
Spica	9 4

Another most exact observation, made under a calm sky. I do not doubt that it can be trusted, because of the repeated distances and the still air. [Alia exactißima obſeruatio pacato cœlo inſtituta, cui fidendum eße non dubito propter repetitas diſtantias & aërem placidum.]

31 MARTIJ DIE ☾. [31 March, day of ☾]

At night, at hour 12 after noon. [Nocte hora 12 poſt merid.]

With the new sextant, ♄ from [Per nouum Sextantem ♄ a]	
the northern scale-pan [lance boreali]	19 4
Spica	8 43
the southern scale-pan [lance merid.]	14 10
the star under the girdle, in the right haunch [ſtella ſub perizomate in clune dextro]	10 39
Merid. alt. of ♄ [Alt. merid. ♄]	29 5
	a little more [p. plus]
Alt. of Spica, with the quadrant left entirely unmoved [Alt. Spicæ immoto plane quadr.]	27 21
From these the declination of ♄ was found [Ex his inuenta eſt declinatio ♄]	7°17M.
approximately, southern [fere auſtralis,]	
right ascension, limited [aſc. Recta limit.]	204 41
Latitude, north [Latitudo bor.]	2 49
Longitude of ♄ [Longitudo ♄]	25 32 ♎

DIE 8 APRILIS (♂ videlicet). [8 April (that is, day of ♂)]

At hour 12 after noon I observed ♄ with the new sextant. ♄ was distant [Hora 12 poſt meridiem obſeruaui ♄ per nouum ſextantem. Diſtabat ♄]

from Spica ♍ [a Spica ♍]	8 13½

the tail of ♌ [cauda ♌]	39 36
the third of the southern wing of ♍ [tertia auſtr. alæ ♍]	20
	15½
the northern scale-pan [Lance boreali]	19 39
the southern scale-pan [Lance merid.]	14
	46½
the more northern star in the left hand of Ophiuchus [borealiori in ſin. manu Ophiuchi]	34 24
Merid. altitude of ♄ [Altitudo merid. ♄]	29
	19½
of Arcturus, with the quadrant unmoved [Arcturi immoto quadr.]	57
	40½
of the southern scale-pan [lancis auſtralis]	22 4

From these, by a quick calculation, I derived the following [Ex his ſubito calculo ſequentia elicui:]

Southern declination of ♄ [Declinatio auſtralis ♄]	7° 2½′
Right ascension, limited [Aſc. Recta limitata]	204 6½
Longitude [Longitudo]	24 57½ ♎
Latitude [Latitudo]	2 49½

The motion over 8 days (from 31 March to this time) was 35′, the daily motion about 4½. Therefore, by the proportion of the daily motion, ♄ was in opposition to the mean ☉ on 6 April, at hour 5 M. 43 p.m., in 25° 4′ ♎. I should like to know how far this differs from your observations. [Motus 8 dierum (ab 31 Martij ad hoc tempus) fuit 35 Minut., diurnus 4½ fere. Ergo iuxta proportionem motus diurni ♄ fuit in ♌ medij ☉ die 6 Aprilis hora 5 M. 43 p. m. in 25° 4′ ♎, quantum hæc a veſtris obſeruationibus diſtet, ſcire cupio.]

For the trine of the ☉ and ♄ [Pro △ ☉^{lis} et ♄.]

9 MAIJ DIE ♀. [9 May, day of ♀]

At hour 10 p.m., merid. altit. of ♄ [Hora 10 P.M. Altit. merid. ♄]	30 1
Distance of ♄ and Spica [Diſtantia ♄^{i} & Spicæ]	6 36

17 JUNIJ DIE ♂. [17 June, day of ♂]

At hours 10 and 11 p.m., ♄ is distant [Hora 10 & 11 P.M. ♄ diſtat]

from Spica ♍ [a Spica ♍]	5 50
the northern scale-pan [Lance Boreali]	22 40
the southern scale-pan [Lance Auſtrali]	17 50
the lowest of the 2 [?] in the girdle of ♍ [infima 2 in cing. ♍]	17 13

the bright star in the northern wing of ♍ [clara in ala Bor. ♍]	21 55½

T. M.[10] will easily be able to see from the preceding whether I have gone wrong in the names of the last 2 stars in ♍. For in summer the whole constellation can scarcely be seen in the evening, and we can use only the brighter stars, and an easy transposition of the names can creep in, especially for someone unfamiliar with the names of the stars. [An in nominibus 2 vltimarum ſtellarum in ♍ errauerim, T. M. facile videre ex præcedentibus poterit, nam æſtiuo tempore totus aſteriſmus vix videri poteſt veſperi, et tantum clarioribus vti poßumus, et facilis transpoſitio nominum irrepere poteſt, præſertim ignaro ſtellarum nominum.]

For the quadrature of ♄ and ☉ [Pro □ ♄ & ☉.]

2 JULIJ DIE ☿, Veſperi hora 9½. [2 July, day of ☿, in the evening at hour 9½]

♄ is distant from Arcturus [♄ diſtat ab Arcturo]	28 40
* the bright star in the northern wing of ♍ [* clara in bor. ala ♍]	22 10
the northern scale-pan [Lance Borea]	22 25

When ♄ first began to emerge from the rays of the ☉ in the morning, [Cum ♄ radijs ☉ mane primum emergere cœpit,]

8 NOUEMBRIS DIE ♄. [8 November, day of ♄]

In the morning, one hour before the rising of the ☉. [Mane hora vna ante ortum ☉.]

♄ dist. from Arcturus [♄ diſt. ab Arcturo]	32 12
Vindemiatrix [Vindemiatrice]	32 28 exactly [exacte]
at an altitude of Saturn above the horizon of 9 and 10 degrees [in Saturni altit. ab Horiz. 9 & 10 grad.]	

23 NOUEMBRIS DIE ☉. [23 November, day of ☉]

In the morning before the rising of the ☉, at an altitude of ♄ of about 15°. [Mane ante ortum ☉ in altit. ♄ 15 grad. circiter.]

♄: distance from Arcturus [♄ Diſtantia ab Arcturo]	33 0
from Spica [a Spica]	18 10

[10] probably *Tua Magnificentia*, "Your Magnificence"

29 NOUEMBRIS DIE ♄. [29 November, day of ♄]

In the morning, dist. of ♄ from Spica [Mane Diſt. ♄ a Spica]	18 46
from Arcturus [ab Arcturo]	33 17

16 DECEMBRIS DIE ♂. [16 December, day of ♂]
In the morning, at about hour 6. [Mane circa H. 6]

Distance of ♄ from Spica [Diſtantia ♄ a Spica]	20 16
from the northern scale-pan [a Lance Boreali]	8 29
from Arcturus [ab Arcturo]	34 0

Observations of Jupiter [OBSERUATIONES IOUIS.]
For the opposition of ♃ and ☉ [Pro ☍ ♃ & ☉.]
12 JANUARIJ DIE ♄. [12 January, day of ♄]
At hour 12 p.m. I observed ♃ from [Hora 12 p.M. obſeruaui ♃ a]:

Regulus [Regulo]	5 37
the neck, or nape, of ♌ [collo vel ceruice ♌]	9 22
the southern head of ♊ [merid. capite ♊]	31 20
Merid. altit. of ♃ [Altit. merid. ♃]	52 35
Altit. of Hydra [Altit. hydræ]	29 25

DIE 22 JANUARIJ. [22 January]
At hour 11 p.m. I observed ♃ from [Hora 11 P.M. obſeruaui ♃ a]:

Procyon [Procyone]	31 41
the southern head of ♊ [Mer. cap. ♊]	30 6
Regulus [Regulo]	6 55
the neck of ♌ [collo ♌]	10 10
Merid. altit. of ♃ [Altit. merid. ♃]	53 0

For the trine of ♃ and ☉ [Pro △ ♃ & ☉.]
25 MARTIJ DIE ♂. [25 March, day of ♂]

At hour 8 p.m., ♃ from Regulus [Hora 8 P.M. ♃ a Regulo]	12 30
the southern head of ♊ [mer. cap. ♊]	24 39½
Procyon [Procyone]	27 11½

the tail of ♌ [cauda ♌]	35 49
Merid. altit. of ♃ [Altit. merid. ♃]	54 41

19 APRILIS DIE ♄. [19 April, day of ♄]

In the evening at hour 9, ♃ and Regulus [Veſperi hora 9 ♃ & Regulus]	11 45
the neck of ♌ [collum ♌]	13 49½

For the quadrature of ♃ and ☉ [Pro □ ♃ & ☉.]
20 APRILIS DIE ☉. [20 April, day of ☉]
In the evening at hour 9 [Veſperi hora 9]

♃ from the southern head of ♊ [♃ a Merid. cap. ♊]	25 28½
Procyon [Procyone]	27 47
Regulus [Regulo]	11 42½
the neck of ♌ [collo ♌]	13 44½

9 MAIJ DIE ♀. [9 May, day of ♀]

In the evening at hour 10, ♃ and Regulus [Veſperi hora 10 ♃ & Regulus]	9 54½
the neck of ♌ [collum ♌]	12 21
the southern head of ♊ [Merid. cap. ♊]	27 14

15 SEPTEMBRIS DIE ☾¹. [15 September, day of ☾¹]
In the morning I observed ♃ in the east, at an altitude of 12 and 13°. [Mane ♃ orientalem obſeruaui in altit. 12 & 13 grad.]

♃ from Regulus [♃ a Regulo]	14 41
the neck of ♌ [collo ♌]	16 48

16 SEPTEMBRIS DIE ♂. [16 September, day of ♂]
At an altitude of 12°. [In alt. 12 Gr.]

♃ from Regulus [♃ a Regulo]	14 53
the neck of ♌ [collo ♌]	16 58
the tail of ♌ [cauda ♌]	13 45

17 OCTOBRIS DIE ♀. [17 October, day of ♀]

In the morning, 1 or 1½ hours before the rising of the ☉. [Mane hora 1 aut 1½ ante ortum ☉.]

♃ was then exactly distant from Regulus [♃ tunc a Regulo exacte diſtabat]	20 55
from the tail of ☌ [a cauda ☌]	11 17 approximately [circiter]

12 NOUEMBRIS DIE ☿. [12 November, day of ☿]

In the morning, two hours before the rising of the ☉. [Mane horis duabus ante ortum ☉.]

♃ from the tail of ☌ [♃ a cauda ☌]	11 35
Regulus [Regulo]	24 51 nearly [fere]

23 NOUEMBRIS DIE ☉. [23 November, day of ☉]

One hour before the rising of the ☉. [Hora vna ante ortum ☉.]

♃ from Regulus [♃ a Regulo]	26 10
from Spica [a Spica]	28 1½
from Arcturus [ab Arcturo]	40 2

For the quadrature of ♃ and ☉ [Pro □ ♃ ☉.]
30 NOUEMBRIS DIE ☉². [30 November, day of ☉²]

One hour before the rising of the ☉. [Vna hora ante ortum ☉.]

♃ from Spica [♃ a Spica]	27 23
from Arcturus [ab Arcturo]	39 38
from the tail of ☌ [a Cauda ☌]	12 10
from Regulus [a Regulo]	26 48
from ♄ [a ♄^{no}]	45 30

EX OBS. 3 DECEMBRIS DIE ☿. [From the obs. of 3 December, day of ☿]

In the morning, with the sextant and the quadrant. [Mane, per Sext. & Quadr.]

♃ from Spica [♃ a Spica]	27 10 a little more [p. pl.]

the tail [cauda]	12 13
the neck of ♌ [ceruice ♌]	28 13
Regulus [Regulo]	27 2½ nearly [fere]
from Arcturus [ab Arcturo]	39 27½
Merid. altit. of ♃ [Altit. merid. ♃]	40 59
♃ from the head of Hydra [♃ ab hydræ capite]	37 17½
Alt. of the tail of ♌, with the quadrant standing [Alt. caudæ ♌ ſtante quadr.]	53 11

Observations of Mars [OBSERUATIONES MARTIS.]
For the opposition of ♂ and ☉ [Pro ☍ ♂ & ☉.]
DIE 12 JANUARIJ. [12 January]

At hour 11 p.m., dist. of ♂ from Regulus [Hora 11 P.M. diſt. ♂ a Regulo]	13 50
from the neck of ♌ [a ceruice ♌]	13 32½
Procyon [Procyone]	28 55
the southern head of ♊ [mer. cap. ♊]	23 17½
Merid. altit. of ♂ [Altit. merid. ♂]	58 12
Merid. altit. of Hydra [Altit. merid. hydræ]	29 25
Distance of ♃ and ♂ [Diſtantia ♃ & ♂]	8 20

Found from these by me, by calculation [Hinc a me inuenta per calculum:]:

Declination of ♂ [Declinatio ♂]	21°50′
Right ascension of ♂ [Aſc. Recta ♂]	134 49
Northern latitude [Latitudo Borea]	4 29 15″
Longitude [Longitudo]	11 0 ♌

DIE 22 JANUARIJ. [22 January]

At hour 11 p.m., ♂ from Procyon [Hora 11 P.M. ♂ a Procyone]	26 24
the southern head of ♊ [merid. cap. ♊]	19 27
the following shoulder of Orion [ſeq. hum. Orion.]	48 3
Regulus [Regulo]	17 37
the neck of ♌ [ceruice ♌]	17 18
Merid. altit., exactly [Altit. merid. exacte]	59 17

Found from these by calculation [Hinc per calculum inuenta:]:

Declination of ♂ [Declinatio ♂]	22°54′
Longitude [Longitudo]	7 7½ ♌
Latitude [Latitudo]	4 30

Therefore, over a space of 10 days, the motion of ♂ was Gr. 3 M. 52½; the daily motion comes out as 23′ 15″; and by the proportion of the daily motion, ♂ was in opposition to the mean ☉ on 19 January, at hour 9 min. 39 p.m., in 8° 18′ 30″ ♌, holding, without doubt, a latitude of 4° 31′. [Fuit igitur 10 dierum ſpatio motus ♂ Gr. 3 M. 52½, motus diurnus datur 23′ 15″ & iuxta proportionem motus diurni ♂ fuit in ☍ medij ☉ 19 Januarij hora 9 min. 39 p. M. in 8° 18′ 30″ ♌, latitudine 4° 31′ haud dubio obtinente.]

For the trine of ♂ and ☉ [Pro △ ♂ & ☉.]

27 FEBRUARIJ DIE ☿. [27 February, day of ☿]

At hour 8 p.m., ♂ was distant from [Hora 8 P.M. ♂ diſtabat a]

Regulus [Regulo]	25 27
Procyon [Procyone]	21 23

[1] Tycho wrote in the margin: ♃ *eastern in the morning, outside the rays of the* ☉. [[1] Adſcripſit Tycho in margine: ♃ *orientalis mane extra radios* ☉.]

[2] It is written beside it: the □ of ♃ and ☉ had already passed two days before. [[2] Adſcriptum eſt: □ ♃ ☉ duobus diebus iam præterierat.]

the southern head of ♊ [Mer. cap. ♊]	11 38½
the bright star in the foot of ♊ [lucido pede ♊]	27 27
Merid. altit. of ♂ [Altit. merid. ♂]	60 18

For the quadrature of ♂ and ☉ [Pro □ ♂ ☉.]

19 APRILIS DIE ♄. [19 April, day of ♄]

In the evening at hour 9, ♂ and [Veſperi hora 9 ♂ &]

Regulus	13 5
the neck of ♌ [collum ♌]	14 19½
♃	1 37

20 APRILIS DIE ☉. [20 April, day of ☉]

At hour 9 p.m., ♂ from the southern head of ♊ [Hora 9 P.M. ♂ a Merid. cap. ♊]	24 22
Procyon [Procyone]	27 43
Regulus [Regulo]	12 41½
the neck of ♌ [collo ♌]	13 59

9 MAIJ DIE ♀. [9 May, day of ♀]

At hour 10 p.m., ♂ from Regulus [Hora 10 P.M. ♂ a Regulo]	4 13
the neck of ♌ [collo ♌]	8 9
the back of ♌ [tergo ♌]	19 46

Observations of Mercury [OBSERUATIONES MERCURIJ.]

16 OCTOBRIS DIE ♃. [16 October, day of ♃]

In the morning, one hour or 1½ before the rising of the ☉, *an observation of* ☿ *after its greatest elongation.* [Mane vna hora vel 1½ ante ortum ☉, ☿ *obſeruatio poſt digreßionem maximam.*]

☿ was distant [☿ diſtabat]

from the tail of ♌ [a cauda ♌]	30 34½	at an altitude of ☿ of 7 Gr. [in alt. ☿ 7 Gr.]
from Arcturus [ab Arcturo]	28 59½	at an altitude of ☿ of 8 Gr. [in alt. ☿ 8 Gr.] approximately [circiter]
from ♃ [a ♃ue]	30 12	at an altitude of ☿ of 9 Gr. [in alt. ☿ 9 Gr.]

17 OCTOBRIS DIE ♀[1]. [17 October, day of ♀[1]]

In the morning, at hour 1½ before the rising of the ☉. [Mane hora 1½ ante ortum ☉.]

☿ from the tail of ♌ [☿ a cauda ♌]	31 41	at an altitude of 6 Gr. [in alt. 6 Gr.]
from Arcturus [ab Arcturo]	28 43	at an altitude of 7 Gr. [in alt. 7 Gr.]
from ♃ [a ♃]	31 20	at an altitude of 8 Gr. [in alt. 8 Gr.]

☿ then appeared very large, as it had never been seen by me before. The sky was very clear in the east. It also twinkled. [☿ tunc valde magnus apparuit vt nunquam antea a me viſus. Clarißimum erat cœlum ab ortu. Scintillabat quoque.]

N.B. All these observations were made at Resterhafe in East Frisia, where the pole is 53 38, the longitude probably 29 30. [*N. B. Omnes hæ obſeruationes habitæ ſunt in Orientali Friſia Reſterhauiæ, vbi polus 53 38, Longitudo probabiliter 29 30.*]

[1] Tycho wrote beside it: *NB* ☿ *here near its greatest elongation from the* ☉ [[1] Adſcripſit Tycho: *NB* ☿ *hic iuxta maximam digreßionem a* ☉]

II. Observations that Kepler sent me from Styria at the beginning of August 1600 [*II. OBSERUATIONES QUAS MIHI MISIT KEPLERUS E STIRIA A^{O} 1600 INITIO AUGUSTJ.*]

Observations I was able to obtain[1] [OBSERUATIONES QUAS HABERE POTUI[1].]

[Margin: ☌ ♄ ♃]

For the year 1484, on 25 November, Stöflerus [Stöffler] puts the ☌ ♄ ♃ at 23° 42′ ♏. [Anno 1484 ad diem 25 Nouembris ponit Stöflerus ☌ ♄ ♃ in 23° 42′ ♏.]

Liechtembergius [Lichtenberger] speaks of this conjunction as follows: the conjunction of Saturn and Jupiter was complete in the year 1484, on 20 Nov., at hour 6 Min. 3 after noon, with ♋ rising, at 22° gr. 42′ M. ♏, Saturn with its exaltation overpowering Jupiter. [De hac conjunctione ſic loquitur Liechtembergius. Saturni et Iovis conjunctio completa fuit anno 1484 die 20 Nov: hora 6 Min. 3 poſt meridiem, oriente ♋ in 22° gr. 42′ M. ♏, Saturno cum ſua exaltatione Iovem opprimente.]

From this we infer that this conjunction was observed by Liechtembergius, and that Saturn was more northerly than Jupiter. [Hinc colligimus obſeruatam eße hanc conjunctionem a Liechtembergio, et Saturnum fuiße ſeptentrionaliorem Iove.]

[Margin: ☌ ♄ ♂]

The same author also reports a conjunction of Saturn and Mars on 30 November at 9 ♏, incomplete at the hour of the Moon's conjunction, with Saturn by its exaltation overpowering Mars. [Refert idem et conjunctionem Saturni et Martis die 30 Nouembris in 9 ♏, hora conjunctionis Lunæ incompleta, Saturno cum ſua exaltatione opprimente Martem.]

That was doubtless in the year 1483, and I do not have the ephemeris for that year to hand. [Fuit id proculdubio anno 1483, cuius anni Ephemeris mihi non eſt in promptu.]

[Margin: ☌ ♃ ♂]

He likewise puts a ☌ ♃ ♂ at 18 ♏, with Jupiter exalted above Mars. Whether such a conjunction occurred in November or December of the year 1483, I do not know. In January of the year 1484, on the first day of the month, ♃ was at 5 ♏ and ♂ at 6 ♐; and ♃ had already been direct for a long time. I would therefore rather believe that such a conjunction occurred at 18 ♎. [Idem ponit ☌ ♃ ♂ in 18 ♏, Iove exaltato ſupra Martem. An talis menſe Nouembrj vel Decembrj anni 1483 acciderit, neſcio. Menſe Januario annj 1484 die primo menſis fuit ♃ in 5 ♏, ♂ in 6 ♐. Fuitque ♃ jam diu directus. Potius ergo in 18 ♎ crediderim accidiße conjunctionem talem.]

It is not certain, however, that these conjunctions are given by the author from his own observations; for it could be that Liechtenbergius had one set of tables and Stöfflerus another. Certainly the ☌ ♄ ♃ preceded the place of the Sun by only 20°. [Non tamen certum eſt, has conjunctiones ab authore ponj ex obſeruationibus proprijs. Fieri namque potuit, vt alias habuerit tabulas

Liechtenbergius, alias Stöfflerus. Certe ♂ ♄ ♃ tantum 20 gradibus anteceßit locum Solis.]

There exists an ephemeris for the year 1510 by Ioannes Angelus [Johannes Engel], composed, as he says, from new tables, in whose preface one reads the following: [Extat Ephemeris annj 1510 Ioannis Angelj, ex novis vt ait tabulis compoſita, in cujus præfatione leguntur iſta.]

[Margin: Peurbach's observations — Obſeruationes Purbachij]

The motions of the planets in the tables of Alfonso [Alfonso X] and Blanchinus [Bianchini] are false, as the own hand of Master Georgius Peurbachius [Georg Peurbach], a most perceptive observer of the stars, attests today at Vienna in the monastery of the Friars Preachers. Master Ioannes de Monte Regio [Regiomontanus] also made known the falsity of the motions in a letter to a certain mathematician of Erfurt. [Motus planetarum in tabulis Alphonſj et Blanchini ſunt falſj, vt manus propria Magiſtrj Georgij Peurbachij aſtrorum obſeruatoris perſpicacißimj Viennæ in monaſterio fratrum Prædicatorum hodie atteſtatur. Magiſter quoque Ioannes de Monte Regio falſitatem motuum cuidam mathematico Erfordienſj literis ſignificauit.]

[Margin: ♂]

In the *Cosmographia* of Frisius [Gemma Frisius] and Apianus [Apian], which came out at Antwerp in the year 1584, there are a few observations, fol. 307, 309, 310, 311, 312, 314, where there is an observation of Mars. The rest concern the ☉ and ☾. Likewise 362, 365, 367, 369, 376, 386, 388, 402, 403, 445. [In Cosmographia Friſij et Apianj quæ prodijt Antuerpiæ anno 1584 ſunt aliquot obſeruationes fol. 307, 309, 310, 311, 312, 314 vbi eſt obſeruatio Martis. Cæteræ pertinent ad ☉ et ☾. Sic 362, 365, 367, 369, 376, 386, 388, 402, 403, 445.]

In the year 1596 Ioannes Rothmannus [Johannes Rothmann] published at Erfurt, in German, a comparison of chiromancy with astrology. There he declares that he gave the places of the planets from his own observations, by means of the instruments of the Prince of Hesse. Mention of the restoration of the fixed stars and of Tycho Brahe. [Anno 1596 edita eſt a Ioanne Rothmanno Chiromantiæ cum Aſtrologia comparatio, Erfordiæ Stylo Germanico. Ibi profitetur ſe loca planetarum ex obſeruationibus proprijs poſuiße: per Haßj Principis inſtrumenta. Mentio reſtitutionis fixarum et Tychonis Brahe.]

[Margin: ♂ ♀ et cor ♌ — ♂ ♀ and the heart of ♌]

[Margin: These are from Mæstlinus's [Michael Mästlin's] disputation on eclipses, written in the year 96 for the benefit of a certain student, by whom it was published. — Hæc ex Mæſtlini disputatione de Eclipſibus anno 96 conſcripta in gratiam Studioſi cuiusdam a quo eſt edita.]

In the year 1574, on 16 Septemb., in the morning at hour 4, ♀ was seen by Mæstlinus at Tübingen to cover the heart of ♌. See something of the kind below, among my own, at the year 98. [Anno 1574 16 Septemb. mane hora 4 ♀ a Mæſtlino Tubingæ viſa eſt cor ♌ tegere. Vide infra tale quid inter meas ad annum 98.]

[Margin: ♂ ♀ ♂]

In the year 1590, 3 Oct., Old Style, in the morning at hour 5, Mars was wholly occulted by Venus at Tübingen. [Anno 1590 3 Oct: ſtylo veterj mane hora 5 Mars totus a Venere occultabatur Tubingæ.]

[Margin: ♂ ♃ ♂]

In the year 1591, 9 Jan., in the morning, the same man saw ♃ wholly occulted by Mars. By the sixth hour this conjunction had already passed, as I myself remember seeing. [Anno 1591 9 Janu: mane vidit idem ♃ totum a Marte occultatum. Hæc conjunctio hora ſexta jam tranſierat, vt ipſe memini me videre.]

[Margin: Eclipse of the ☉ — Eclipſis ☉]

In the year 1595, 23 Sept., the limb of the Sun, beginning to be eclipsed a little after noon, declined from the vertical by 9° degrees toward the east; 2½ digits were eclipsed, from the north, nothing beyond. Compare below also my own of 3 Oct., New Style. [Anno 1595 23 Sept. ora Solis paulo poſt meridiem incipiens deficere a verticalj declinabat 9° gradibus ad ortum, defecerunt 2½ digiti a borea nihil vltra. Confer infra et meam 3 Oct: ſt: novi.]

[Margin: Refraction in an eclipse of the ☾ — Refractio in Eclipſi ☾]

In the year 1590, on 7 July: "Here at Tübingen," says the same man, "with the centre of the Sun emerging above the horizon, we saw the Moon, already eclipsed by some digits from the south, raised almost two degrees; and conversely, with the centre of the Moon descending [Anno 1590 die 7 Julij Nos hic Tubingæ (inquit idem) Solis centro ſupra horizontem emergente vidimus lunam ab auſtro aliquot digitis jam deficientem duobus pene gradibus eleuatam: et contra Lunæ centro ſub occaſum deſcen-]

[1] From codex I. Written out by Kepler himself. [[1] E codice I. Ab ipſo Keplero conſcriptæ.]

below the western horizon (and yet Mästlin's horizon is not free of mountains in the east and the west), we noted the altitude of the Sun above the eastern horizon as two degrees. The Moon, however, set before the greatest obscuration." [dente (atqui non caret horizon Mæſtlinj montibus ab ortu et occaſu) notavimus Solis ſupra ortum duorum graduum altitudinem. Occidit autem luna ante maximam obſcurationem.]

Observations are doubtless also to be found in the commentaries of Clavius [Christoph Clavius] on Ioannes de Sacrobosco. [Inveniuntur proculdubio et in Clavij commentarijs ſuper Ioannem de Sacrobuſto obſeruationes.]

[Margin: ♂ ♄ ♂]

In the year 1576, 17 Mar., a ♂ ♄ ♂ was seen by Mästlin, such that it was completed at hour 10. He puts ♄ at 0. 36 ♍, ♂ at 0. 34 ♍; Lat. of ♄ 1° 40′ B, of ♂ 0. 24 B. [Anno 1576 17 Mart. fuit Mæſtlino viſa ♂ ♄ ♂, ſic vt hora 10 impleretur. Reponit ♄ in 0. 36 ♍, ♂ in 0. 34 ♍, Lat. ♄ 1° 40′ B, ♂ 0. 24 B.]

[Margin: ♂]

In the year 76, 5 July, Mästlin puts ♂, from observation, at 22° 44′ ♍, Lat. 5° 15′ A. [Anno 76 Julij 5 Mæſtlinus ponit ♂ ex obſ: in 22° 44′ ♍ Lat: 5° 15′ A.]

More certain ones, from my own observations [CERTIORES EX MEIS OBSERUATIONIBUS.]

[Margin: ♄]

In the year 1594, on the day of ☿, 9 Nov., New Style, ♄ was on the line from the heart of ♌ to the star above the neck that is the third of the pentagon. [Anno 1594 die ☿ 9 Nov: ſtylo novo ♄ fuit in linea ex corde ♌ in illam ſupra ceruicem quæ eſt tertia ex quinquangulo.]

On the day of ♄, 12 Nov., ♄ was midway between the neck and the heart. [Die ♄ 12 Nov: ♄ medius fuit inter ceruicem et cor.]

On the day of ♂, 27 Decemb., ♄ was between the neck and the heart. [Die ♂ 27 Decemb. ♄ fuit inter ceruicem et cor.]

[Margin: ♂ ♃ ♀]

On the day of ♀, 30 December, ♀ was more southerly than Jupiter and seemed about to pass below it at a distance of a solar diameter, more or less; and that at the fifth hour. [Die ♀ 30 Decembris ♀ erat Iove auſtralior et videbatur infra ipſum tranſitura cum diſtantia diametri ſolaris plus minus, idque hora quinta.]

On the day of ♄, 31 Decemb., ♀ had already passed Jupiter, being more northerly than it. The difference of longit. was very small, from which it is concluded that it rose above Jupiter before the conjunction. At hour 5, moreover, it was in the vertical circle with Jupiter, a little nearer to it than on the preceding day. To my sight their rays touched each other. But wrinkling my brow, or looking through a perforated paper, I saw that 4 Jupiters or 3 Venuses (as they appeared with their scattered rays) could lie between them. Half an hour later ♀ was more westerly than Jupiter with respect to the vertical. [Die ♄ 31 Decemb: ♀ iam tranſierat Iouem ipſo borealior. Differentia longit. fuit valde exigua, vnde concluditur ſupra Iovem ante conjunctionem aſcendiße. Erat autem hora 5 in circulo verticalj cum Ioue, paulo illi propior, atque præcedentj die. Radij ſe contingebant in meo viſu. At corrugata fronte aut per papyrum inſpiciens perforatum videbam 4 Ioues aut 3 Veneres (quales cum radijs ſparſis apparebant) intereße poße. Dimidia hora poſt ♀ a verticalj Ioue occidentalior fuit.]

ANNO 1595. [The year 1595]

[Margin: ♄]

On the day of ☉, 12 Feb., in the morning, ♄ was on the straight line from the neck to the breast of ♌, onto which the straight line drawn from the heart to ♄ fell perpendicularly. The sides from the heart to ♄ and from the breast to ♄ equal. [Die ☉ 12 Feb. mane ♄ erat in recta ex ceruice in pectus ♌, in quam recta a corde in ♄ ducta perpendiculariter incidebat. Latera a corde in ♄ et a pectore in ♄ æqualia.]

On the day of ☾, 27 Mar., at night at hour 10, Saturn's position was as follows. A Saturn; B the southern one of the three in the neck of ♌, the 7th in number; C the heart of ♌; D Canis Minor; E the more southerly of the Twins. B, however, was more northerly than the line DA by about 2 diameters of the

body of ♄. [Die ☾ 27 Mart. noctu hora 10 talis erat ſitus Saturnj. A Saturnus, B auſtralis trium in collo ♌ 7ma numero. C cor ♌, D Canis minor, E Geminorum auſtralior. B tamen erat DA linea borealius quaſi 2 diametris corporis ♄.]

Diagram. A small line figure set to the right of the text lines from "trium in collo" to "tis incepit". Two lines cross at a point labelled a: one runs from a point labelled e at the upper left, through a, to a point labelled c at the lower right; the other runs from a point labelled d at the lower left, through a, to a point labelled b at the upper right. The labels are lower-case italic letters; the text refers to the points by capitals A–E.

- a (crossing point of the two lines): a
- b (upper right end): b
- c (lower right end): c
- d (lower left end): d
- e (upper left end): e

[Margin: Eclipse of the ☾ — Eclipſis ☾]

On the day of ☾, 24 April, in the morning, a little before hour 3 of the night, the ☾ began to be darkened; the altitude of Arcturus was 44° by a paper astrolabe a foot in diameter, and the Moon about 15½° high. Then, a little before 4, the faint light ceased to tinge the thick air near the western horizon, which was evidence that it had now entered the shadow completely. At that time the altitude of Arcturus was about 34°, and the Moon, a little before, about 6° high. [Die ☾ 24 Aprilis mane paulo ante horam 3 noctis incepit obſcurarj ☾, altitudo Arcturi 44° per papyraceum aſtrolabium pedem in diametro habens, Luna vero alta 15½° circiter. Deinde paulo ante 4 deſijt lucula craßum aerem circa occaſum tingere, quod argumento fuit iam penitus ingreßam fuiße vmbram. Ibi fuit altitudo Arcturj 34° circiter, Luna vero paulo ante 6° circiter alta.]

[Margin: ♂ ♃ ♂]

On the day of ♄, 10 June, in the morning, before the 3rd hour by the town clock, the distance between ♃ and ♂ was, to the sight, as great as the distance of the little star that lies between the two bright ones in the constellation of Cassiopeia from the nearer of them (in the shoulder, I think). And then a line drawn out through ♃ ♂ pointed to the one next to the uppermost of the five bright stars of Cassiopeia. [Die ♄ 10 Junij mane ante 3° vrbis horam erat diſtantia ♃ et ♂ ad viſum quanta eſt diſtantia ſtellulæ quæ eſt inter duas lucidas in ſidere Caßiopeæ a propiori (vt puto in humero). Et tunc educta per ♃ ♂ ad ſupremæ proximam e quinque lucidis Caßiopeæ collimabat.]

Diagram. An unlabelled figure set to the right of the text lines from "eſt diſtantia ſtellulæ" to "pior pedj illius". Four small dots stand clear of any line: one at the top, two side by side below it, and one lower and to the left. A straight line runs from the upper left down to the lower right; a small dot sits on it near its left end, and two larger dots near its right end, the second at the end itself. No letters or numbers are printed in the figure.

On the day of ☉, 11 June, in the morning at hour 3, the line through ♃ ♂ ran between the foot of Pegasus and the head of Andromeda, nearer by a third

to the foot of the former than to the head of the latter. [Die ☉ 11 Junij mane hora 3 linea per ♃ ♂ incedebat inter pedem Pegaſi et caput Andromedæ triente propior pedj illius quam huius capiti.]

[Margin: ♂]

[Margin: I have many lengthy descriptions of this kind, but I omit them to avoid tedium. — Huiusmodi deſcriptionum prolixarum multas habeo, ſed tædij vitandj cauſa omitto.]

On the day of ☿, 6 Septemb., Mars fell on the line from the heel of Perseus (no. 25) through the middle of the Pleiades, a little nearer to the Pleiades [Greek: πλείασι (pleiasi, "to the Pleiades")] than they to the heel. It had already left the line from the intersection (1.2) to the Pleiades, somewhat nearer to the Pleiades than to the intersection. It was, moreover, more northerly than the line drawn from the dewlap of Taurus (6) to the base of the triangle (2. 3), yet in such a way that it grazed this line with its rays. And it was farther [Die ☿ 6 Septemb: Mars incidebat in lineam a calcaneo Perſei (no. 25) per mediam Plejadum paulo propior πλείασι quam hæ calcaneo. Iam erat egreßus lineam a ſectione (1.2) ad Plejadas, propior Plejadibus quam ſectioni pluſculum. Erat autem ſeptentrionalior linea quæ a palearj Taurj (6) ad baſin trianguli (2. 3) ducitur, ita tamen vt radijs hanc lineam ſtringeret. Et plus diſtabat]

from the dewlap than from the Pleiades. So it had not yet reached the line from Capella to the intersection, but it grazed it with its rays. It thus lay on the line drawn through the bright stars in the ear, below the root of the northern horn, into the northern horn. [a palearj quam a Plejadibus. Sic nondum acceßerat ad lineam e Capella ad ſectionem, ſed ſtringebat radijs. Ita in linea fuit quæ per lucentes in aure ſub radice cornu borealis in cornu boreale ducebatur.]

[Margin: ♂]

On the day of ♀, 22 Sept., in the morning at hour 4, Mars fell on the line drawn from the star of the left foot (the one that lies nearest the straight line of the dewlap and the Pleiades) through the dewlap, very slightly more westerly. Again, around the ear and the root of the northern horn there are two little stars joined together (22. 23) and a third standing farther off (29). So a line drawn from the northern horn through the southern of the joined pair (23) touched Mars, in such a way that Mars was very slightly more southerly. [Die ♀ 22 Sept. mane hora 4 Mars incidebat in lineam e ſiniſtrj pedis (illa quæ proxime abeſt a directo palearis et Plejadum) per paleare ductam parum admodum occidentalior. Item circa aurem et radicem cornu borealis ſunt duæ junctæ ſtellulæ (22. 23) et tertia longius (29) diſtans. Educta igitur linea e cornu borealj per meridionalem junctarum (23) tangebat Martem ita vt Mars parum admodum eßet meridionalior.]

[Margin: ♃]

On the day of ♀, 29 Sept., in the evening at hour 8, Jupiter was on the line from the head of Andromeda through the wing of Pegasus, and on the line from the projection of the foot of Pegasus through the fifth of the Fishes. [Die

♀ 29 Sept: veſperj hora 8 Iupiter erat in linea ex capite Andromedæ per alam Pegaſj et in linea ex eductione pedis Pegaſj per quintam piſcium.]

[Margin: Eclipſis ☉]

On the day of ♂, 3 Oct., the eclipse of the ☉ began when the altitude of the ☉ was about 39. The shadow exactly grazed the lowest edge of the round ray let in through the hole. Then, when about 3° digits were eclipsed, the altitude of the ☉ was about 35°. I was using a wooden quadrant of half a foot, and so a very unreliable one. A little later I seemed to have taken, most correctly, the inclination of the circle through the centres of the bodies to the vertical as 75° or 15°. [Die ♂ 3 Oct: Eclipſis ☉ incepit cum eßet altitudo ☉ 39 circiter. Vmbra præciſe raſit imum marginem radij rotundj per foramen intromißj. Cum deinde deficerent 3° circiter digitj, fuit altitudo ☉ 35° circiter. Vtebar quadrante ligneo ſemipedalj itaque valde infido. Paulo poſt videbar rectißime cepiße inclinationem circulj per centra corporum ad verticalem 75° vel 15°.]

I did it this way. I caught the Sun's failing ray, εκλειποντα [Greek: ἐκλείποντα (ekleiponta, "failing, being eclipsed")], on a small board set directly opposite. Then I placed one side of an upright quadrant between the hole and the ray, and set the upright quadrant so that the shadow of that side bisected the bright horn; and the plumb-line showed the degree 15°. 75°. The semidiameter of the Sun seemed to be to that of the ☾ as 12 to 11. Clouds cut off the end. [Id ſic adminiſtraui. Excepi radium Solis εκλειποντα tabella directe oppoſita. Poſtea quadrantis erecti vnum latus interpoſui foramini et radio, erectumque quadrantem ſic conſtitui vt vmbra lateris illius biſecaret cornu lucens, monſtravitque perpendiculum gradum 15°. 75°. Videbatur eße ſemidiameter Solis ad ☾ vt 12 ad 11. Finem nubes interceperunt.]

[Margin: ♂]

On the day of the ☉, 8 Oct., at night at hour 10, Mars was still, as about eight days before, at the intersection of two lines, one of which is drawn from 3 and 4 ♉ to 10 of the Charioteer, the other from 6 ♉ to 23. 24 of Perseus. [Die ☉ 8 Oct. noctu hora 10 Mars erat adhuc vt ante octiduum circiter in linearum duarum interſectione quarum vna ex 3 et 4 ♉ in 10 Heniochj, altera ex 6 ♉ in 23. 24 Perſej ducitur.]

On the day of ☿, 25 Oct., at night at hour 10, Mars was on two lines: from 2 of Cetus through the middle of 3. 4 of the Charioteer, and also from the eye of ♉ through the middle of the 3 stars of ♈, 2 of which are close to each other. [Die ☿ 25 Oct. noctu hora 10 Mars erat in duabus lineis ex 2 Ceti per medium 3. 4 Heniochj, item ex oculo ♉ per medium ſtellarum 3 ♈ quarum 2 inuicem vicinæ ſunt.]

Diagram. A line drawing set to the right of the shortened text lines from "ſtravitque perpendiculum" to "cem vicinæ ſunt." It shows a slanted band of crossing straight lines forming a lattice, several of the lines running out beyond the band on the left, and a single heavy curved line that arcs across the upper part of the lattice, swings out to the right and ends in a small hook below. No letters, numerals or other labels are printed in the figure.

In 1596 nothing, because I was away from home. [Anno 1596 nihil, quia domo aberam.]

ANNO 1597. [Year 1597]

[Margin: ♂]

On the day of ♄, in the morning of 23 August, ♂ had fallen midway between the northern horn of ♉ and Palilicium, so that one could not make out which way it leaned; yet it was lower than the line. The bright Hyades mark the letter [dot figure: five dots set in a V], and to them are added four fainter ones, making up the letter [dot figure: a vertical column of four small dots, then five larger dots set in a V]. It was exactly midway, in every direction, between the uppermost of those little stars and the northern horn. [Die ♄ mane 23 Auguſtj ♂ ita inciderat medius inter cornu ♉ boreum et Palilitium, vt quorſum inclinaret diſcerni non poßet, depreßior tamen a linea. Claræ Hyades literam [dot figure] ſignant, quibus accedunt obſcuriores quatuor conficientes literam [dot figure] Illarum ſtellularum ſummam inter et cornu boreum præciſe medius fuit per omnes plagas.]

[Margin: ♃]

Jupiter had now almost exactly reached the line from the left foot of Pollux through the southern horn. [Iupiter jam fere ad vnguem acceßerat ad lineam ex ſiniſtro pede Pollucis per cornu auſtrinum.]

On the day of ☿, 22 Aug., in the morning, Jupiter had, as it were, in some fashion crossed the line from the shoulder of the Charioteer through the northern horn. Mars had not yet reached the line from the southern horn through Jupiter. It was as far from Jupiter as the two Kids are from each other, and from the northern horn a little more than Jupiter was. Jupiter, with the 2 horns, formed a triangle such that it was right-angled at ♃ and its legs were almost equal, ἴσα σκέλη [Greek: ἴσα σκέλη (isa skelē, "equal legs")]; but ♃ was nevertheless farther from the northern horn. Nor did it deviate so little from the line drawn from Palilicium to the southern horn that it could not be northerly. Indeed, the line from the Pleiades into the southern horn left both planets to the north. From all this it seemed that there would be some bodily ☌ of ♃ and ♂ on the following day. And ♃ was exactly [Die ☿ 22 Aug: mane Iupiter quaſi quodammodo tranſierat lineam ex humero Heniochj per cornu boreum. Mars nondum acceßerat lineam ex cornu Auſtrino per Iouem. Eratque remotus a Ioue quantum abinuicem duo hædj, a cornu vero boreo paulo plus quam Iupiter. Iupiter cum 2 cornubus tale triangulum conſtituebat vt rectus eßet ad ♃ eiusque ἴσα fere σκέλη, ſed tamen ♃ remotior a boreo. Nec ita parum a linea ex palilitio in cornu auſtrinum ducta declinabat, vt ſeptentrionalis eße non poßet. Imo linea ex Plejadibus in auſtrale cornu relinquebat vtrumque planetam in Septentrione. Ex his omnibus videbatur futura corporalis aliqua ☌ ♃ ♂ die ſequente. Eratque ♃ præ-]

on the line from the left foot of Pollux through the southern horn. And Mars was almost on the same line. [ciſe in linea ex ſiniſtro pede Pollucis per cornu auſtrinum. Et Mars fere in eadem.]

[Margin: ♂]

On the day of ♃, 28 August, in the morning at the 2nd and 3rd hours [h. 2° et 3°], I saw Mars very slightly more northerly than the line from the southern horn through Jupiter, so that on the 27th, at sunset [ſub occaſum ☉], it had undoubtedly fallen on that line. It was distant from ♃ in longitude by half a diameter, and a little more, off the body of the present line [?]. From this it was clear that there would be a ☌, not indeed a bodily one, but one coming very close to touching at the edges. [Die ♃ 28 Auguſtj mane h. 2° et 3° vidj Martem a linea ex cornu auſtrino per Iouem paulo admodum ſeptentrionaliorem, adeo vt die 27 ſub occaſum ☉ in eam proculdubio inciderit. Aberat autem a ♃ ſecundum longitudinem dimidia diametro et parum plus de corpore lineæ præſentis. Conſtabat ex his, fore ☌ non quidem corporalem ſed tamen proxime attingentem marginibus.]

[Margin: ♂]

On the day of ♄, 13 Sept., ♂ was between the last star of the belt and the right palm of the Charioteer, a full twice as far [?] from the belt. [Die ♄ 13 Sept: ♂ erat inter vltimam balthej et dextram volam Heniochj duplo more integro remotior a baltheo.]

On the day of the ☉, 12 October, in the morning at hour 3, ♃ was on the straight line from the left shoulder of Orion into the northern horn of ♉, about three times farther from the former than from the latter. [Die ☉ 12 Octobris mane hora 3 ♃ fuit in recta a ſiniſtro humero Orionis in cornu ♉ boreum, triplo circiter ab illo quam ab hoc remotior.]

♂ was on the line through 10.13 in the constellation ♊. [♂ fuit in linea per 10.13 in conſtellatione ♊.]

On the day of ♂, 14 Oct., in the morning at hour 4, ♂ had passed beyond the upper line by a very small space. Its position was as follows, namely three proportional lines. [Die ♂ 14 Oct. mane hora 4 ♂ admodum exiguo ſpaciolo egreßus erat lineam ſuperiorem. Situs ejus talis, ſcilicet lineæ tres proportionales.]

Diagram. A single row of four dots set centred on its own line between "Situs ejus talis, ſcilicet lineæ tres proportionales." and "Iupiter hærebat". Small-type labels stand above three of the dots.

- First dot (left): "Bubo" above it.
- Second dot: no label.
- Third dot: "♂" above it.
- Fourth dot (right): "propus" above it.

Jupiter was fixed on the upper line, and also on the other one, from the right shoulder of the Charioteer to its more northerly foot. [Iupiter hærebat in ſuperiori linea item in altera ex humero dextro Heniochj ad pedem eius borealiorem.]

[Margin: ☾]

On the day of ♀, 31 Oct., in the morning at hour 5, the gibbous Moon, αμφικυρτος [Greek: ἀμφίκυρτος (amphikyrtos, "gibbous, convex on both

sides")], covered the ninth star of the constellation of the Twins, unless a faulty table of the fixed stars has misled me. [Die ♀ 31 Oct: mane hora 5 Luna αμφικυρτος texit nonam de conſtellatione Geminorum, niſi me vitioſus abacus fixarum fefellerit.]

[Margin: ♄]

On the day of ☿, 5 Nov., in the morning at hour 6, with the Moon present, I saw ♄ distant from 6 ♍ by one and a half diameters of the Moon. In the triangle between the tail of ☋, ♄ and 6 ♍, the angle at ♄ was slightly obtuse. [Die ☿ 5 Nov: mane hora 6 luna præſente vidj ♄ a 6 ♍ diſtantem ſesquidiametro lunæ. Triangulj inter caudam ☋, ♄ et 6 ♍ angulus ad ♄ fuit parumper obtuſus.]

[Margin: ♂]

On the day of ♄, 8 Nov., in the morning ♂ had not yet entered the line from 12 to 4 ♊. [Die ♄ 8 Nov: mane ♂ nondum erat ingreßus lineam ex 12 in 4 ♊.]

On the day of the ☉, 9 Nov., in the morning ♂ had already passed beyond it. It was on the line from 11 to 9, and likewise on the line from 1 to 5, almost imperceptibly more easterly. [Die ☉ 9 Nov: mane ♂ iam erat egreßus illam. Erat in linea ex 11 in 9, item ex 1 in 5 inſenſibiliter pene orientalior.]

On the days of ♄ and the ☉, 15.16 Nov., in the morning ♂ was stationary. It was a little more northerly than the line from 11 to 6, standing so far from each that one could not make out which it was nearer to. [Die ♄ et ☉, 15.16 Nov: mane ♂ fuit ſtationarius. Erat paulo borealior linea ex 11 in 6, ſic diſtans ab vtraque vt vtri propior eßet diſcerni non poßet.]

On the days of ☿ and ♃, 19.20 Nov., ♂ was now plainly seen to have gone back; it was on the line from 1 to 5 and from 2 to 6. [Die ☿ et ♃ 19.20 Nov. iam regreßus ♂ oculis patuit, fuit in linea ex 1 in 5 et 2 in 6.]

[Margin: ☿]

On the day of ♃, 11 Dec., ☿ was rising two hours by the town clock before sunrise. [Die ♃ 11 Dec: ☿ duabus in automato vrbico horis oriebatur ante ortum Solis.]

On the next day I saw ☿ below the heart of ♏, on a line drawn out a long way from two bright stars which I believe are in Ophiuchus. For it was a clear morning. ☿ was on the left of an observer facing the sunrise. To the eye it was far from the heart of ♏. [Poſtero die vidj ☿ infra cor ♏ in linea ex duabus claris ſtellis longe producta, quas opinor eße in Ophiucho. Erat enim clarum mane. Erat autem ☿ ad lævam ſpectantj ortum. Erat a corde ♏ ad ſpeciem longe remotus.]

[Margin: Alt. polj]

On the days 25.26.27.28 I observed the altitude of the pole star with my rulers of 6.8.10 feet (by which arrangement a right angle is formed) from the most careful observations; therefore its least [Die 25.26.27.28 obſeruauj polaris altitudinem per regulas meas 6.8.10 ped. (quo pacto rectangulum conformatur) ex diligentißimis, ergo fuit minima eius]

altitude [altitudo]	44°14′58″	computed [computata.]
But the greatest [Sed maxima]	50 1 45,	
distance from the pole [diſtantia a polo]	2 53 24.	
Therefore the altitude of the pole [Ergo altitudo polj]	47 8 22.	

The other, less accurate observations gave the altitude of the pole as 47° 1′, 47° 4′, 47 5. [Cæteræ minus accuratæ dabant alt: polj 47° 1′, 47° 4′, 47 5.]

[Margin: ♀]

On the day of the ☉, 28 Decemb., I saw ♀ near the two bright stars in the tail of ♍, in this position: [Die ☉ 28 Decemb. vidi ♀ prope lucentes duas in cauda ♍ hoc ſitu]

Diagram. A small dot figure set in the left part of the measure, beside the three shortened lines from "Nondum acceßerat" to "Die ☾ 29 Dec". Three dots with four direction labels in small type.

- "Ori" (left), with a dot just to its right.
- "Sept." (top).
- "Oc" (right), with a dot just to its left.
- "Mer." (bottom).
- A third, smaller dot stands below and slightly left of the right-hand dot.

It had not yet reached the leading star of the tail; I judged it to be a Moon's diameter away. [Nondum acceßerat ad priorem caudæ, cenſui abeße diametro lunæ.]

[Margin: ♄]

On the day of the ☾, 29 Dec., in the morning, ♄ was placed thus with 6 and 7 ♏: [Die ☾ 29 Dec: mane ♄ ſic erat ſitus cum 6 et 7 ♏.]

Diagram. A small dot figure set at the right end of the same three shortened lines. Three dots with four direction labels in small type.

- "Or." (left), with a small dot just to its right.
- "Sept." (top).
- "• Oc." (right): a dot just to the left of the label.
- "Mer." (bottom).
- A larger dot stands just right of and slightly below the left-hand dot.

That is, it was distant from the seventh by one part of the kind of which it was five from the sixth. The distance was a little greater than the Moon's present diameter. [Sc. a ſeptima diſtabat vna parte qualium a ſexta quinque. Fuit diſtantia paulo major diametro lunæ præſente.]

ANNO 1598. [Year 1598]

[Margin: ♄]

On the day of the ☉, 8 Feb., in the morning, ♄ was on the line of 6 and 7 ♏. The distance of ♄ from 7 was very nearly as great as the distance between two stars in the coils of the Serpent. [Die ☉ 8 Feb: mane ♄ erat in linea 6 et 7 ♏. Diſtantia ♄ a 7 quanta duarum in ſpiris ſerpentis quam proxime abſunt ab inuicem.]

On the day of ♃, 12 Feb., ♄ was now more northerly than that line. [Die ♃ 12 Feb: ♄ iam erat illa linea borealior.]

[Margin: Eclipſis Lunæ]

On 21 Feb., in the morning, when the bell was striking 4½, the eclipse had not yet begun. Afterwards there were clouds. A little before 5 the Moon, not yet half darkened, stood fully upright. A little after five, half the diameter was eclipsed, the Moon now lying on its back. A little before 6 it withdrew under the clouds with very faint light, so that its light seemed entirely lost. When six had struck, it stood out by some degrees, so that it seemed about to set after ¾. [Die 21 Feb. mane cum Campana ſonaret 4½ nondum fuit initium defectus. Poſt nubes fuere. Paulo ante 5 luna nondum ex dimidio obſcurata penitus erecta ſtetit. Paulo poſt quintam dimidia diameter defecit, luna iam ſupina. Paulo ante 6 tenuißimo cum lumine ſub nubes ſe ſubduxit, adeo vt videretur lumen penitus perditum. Cum ſexta inſonuißet, extabat aliquot gradibus vt videretur poſt ¾ occubitura.]

[Margin: ♄]

On the day of ☿, 4 March, ♄ was equally distant from 6 and 7; it was more northerly than that line by about ⅓ of a degree. [Die ☿ 4 Martij ♄ æqualiter diſtabat a 6 et 7, fuit borealior illa linea circiter ⅓ gradus.]

[Margin: Eclipſis ☉]

On 7 March, when the clock was striking ¼ past 10, the eclipse of the ☉ was already of notable magnitude, namely about ½ a digit; the inclination of the failing part from the vertex 90, imperceptibly tending downward in the ray, upward in the sky. It ended a little before 12¾ by the town clock, with an inclination of 23° gr. More than 9 digits were eclipsed. The diameter of the ☾ appeared smaller. [Die 7 Martij cum ſonaret horologium ¼ poſt 10 Eclipſis ☉ iam notabili erat magnitudine, ſc. circiter ½ digitum Inclinatio deficientis partis a vertice 90 inſenſibiliter deorſum vergens in radio ſurſum in cœlo. Deſijt paulo ante 12¾ horologij vrbicj cum inclinatione 23° gr. Defecerunt plus quam 9 digitj. Diameter ☾ minor apparuit.]

[Margin: ♂ ♄ ☾]

On the night that followed 22 March, when ♄ was in 1 ♎ and my rulers had been set for taking the altitude of the pole star and so faced exactly south, I saw the Moon applying centrally with Saturn at the meridian. [Ea nocte quæ ſequebatur 22 Martij cum ♄ eßet in 1 ♎ et regulæ meæ pro polaris altitudine capienda diſpoſitæ eßent ideoque meridiem præciſe ſpectarent, vidj Lunam cum Saturno centraliter applicantem ad meridianum.]

[Margin: ♀]

On the day of ☿, 1 Apr., ♀ stood beside the Pleiades at an interval almost as great as the length of the Pleiades from the rear wheels, so to speak, to the front horse. It had, however, passed beyond the line of the western wheels, and was nearer to the line of the eastern ones. [Die ☿ 1 Apr. ♀ ſtabat iuxta Plejadas tanto fere interuallo quanta eſt longitudo plejadum a poſterioribus, vt ita dicam,

rotis ad anteriorem equum. Erat autem egreßa lineam occidentalium rotarum et propior erat lineæ orientalium.]

[Margin: ♀]

On the day of ♃, 2 Apr., ♀ was on the straight line from the western and southern wheel to the eastern and northern one. It was less distant from the bright star of the Pleiades than the two in the belt. When lines were let fall from the bright star and from ♀ to the foot of the Charioteer, the angle at the bright star was more nearly right. [Die ♃ 2 Apr: ♀ erat in recta ex occidentalj et meridionalj rota in orientalem et aquilonarem. Diſtabat minus a lucida plejadum quam duæ in baltheo. Lineis a lucida et a ♀ in pedem Heniochj ſummißis, angulus ad lucidam erat rectior.]

On the day of the ☾, 6 Apr., ♀ stood above the Pleiades, on the line from the head of the Charioteer to the Pleiades. [Die ☾ 6 Apr: ♀ ſtabat ſupra Plejadas in linea ex capite Heniochj in Plejadas.]

[Margin: ♂]

Mars was on three lines: first, from 2.6.9 ♊; second, from 1 to 5; third, from 13 to 12. [Mars erat in tribus lineis, primo ex 2.6.9 ♊, ſecundo ex 1 in 5, tertio ex 13 in 12.]

[Margin: ♄]

Saturn formed a right angle at itself with 6.7 ♍. [Saturnus cum 6.7 ♍ formabat rectum angulum ad ſeſe.]

[Margin: ☾]

On the day of ☿, 8 April, when it had just struck exactly 8, the Moon stood so close to the rear wheels of the Pleiades that they could barely, or not even barely, be made out, and no more than ⅙ of the diameter of the ☾ lay between. It stretched its horns upward, almost about to embrace Venus, and was then inclining a little to the south. It was seen with its whole body most clearly; therefore, at its outermost edge, it stood off from the bright one of the Pleiades only by as much as the breadth of its body, and the two rear wheels stood farther apart than the Moon could have covered both at once, had an application taken place. [Die ☿ 8 Aprilis cum iam horam 8 præciſe ſonuißet, Luna tam prope ſtabat ad Plejadum poſteriores rotas, vt vix ac ne vix quidem cernerentur, nec plus quam ⅙ diametrj ☾ intereßet. Cornua ſurſum tetendit, fere amplexatura Venerem, parumque tum declinans ad meridiem. Toto corpore videbatur clariſſime, igitur extremo margine tantum a lucente Plejadum diſtitit, quanta fuit amplitudine corporis, et duæ poſteriores rotæ longius diſtiterunt, quam vt vtramque ſimul luna tegere potuerit, ſi fieret applicatio.]

[Margin: ♂]

Mars was so near the ninth of ♊ that, by its brightness, it barely admitted the sight of it; the distance was less than the diameter of the ☾. [Mars tam erat propinquus nonæ ♊ vt vix eius aſpectum admitteret ſua claritudine, diſtantia minor diametro ☾.]

[Margin: ♀]

On the day of the ☾, 27 July, in the morning, between hours 2 and 3, ♀ was distant from the southern horn of ♉, on a line parallel to the horizon, by 2½ diameters of the present ☾, toward the south. The line met the star in the arm or belt of Orion that is midway between Palilicium and the left shoulder of Orion. [Die ☾ 27 Julij mane horam inter 2 et 3 ♀ diſtabat a cornu ♉ auſtralj in linea horizontj parallela per 2½ diametros ☾ præſentis verſus auſtrum. Linea occurrebat ſtellæ in brachio vel baltheo Orionis quæ media eſt inter palilitium et humerum ſiniſtrum Orionis.]

[Margin: ☾]

The Moon's diameter equalled the distance of the 2 bright transverse stars in the Pleiades. The Kids were a little farther apart, and the two in the section of ♉ farther still. The Moon stood with its horns turned toward the Pleiades, so that a perpendicular drawn from the lower horn would graze the Pleiades from above. It was distant from the brightest of the Pleiades a little more than Palilicium is from its neighbour, and less than that neighbour is from the third of the Hyades, which stands at the root of the letter [dot figure: a V-shaped group of short strokes and dots]. [Lunæ diameter æquabat diſtantiam 2 clararum transverſarum in Plejadibus Paulo longius diſtabant hædj, adhuc longius duæ in ſectione ♉. Stabat luna, converſis ad Plejadas cornibus ſic vt perpendicularj ex imo cornu ducta ſtringeret Plejadas ſuperius. Diſtabat a clariſſima Plejadum paulo plus quam Palilitium a ſua vicina, minus quam hæc a tertia Hyadum quæ eſt in radice literæ [dot figure]]

[Margin: ♃]

Jupiter was on the line from Palilicium to Venus, and on another through the 2 brightest in ♊ (I think they are 14.15). [Iupiter erat in linea ex Palilitio in Venerem, et altera per 2 clariſſimas in ♊ (puto eße 14.15).]

[Margin: ☾ ☿]

On 31 July, in the morning, when the ☉ was in 7 ♌, the ☾ in 16 ♋, and ☿ in 17 ♋ Mer:, I saw the Moon clearly, so that there was hope it would be seen the next day as well. But Mercury, though I looked about far and wide, I could not see, although I could see 1. 2. 10. 14. 15 ♊ and also Propus. So either the calculation erred very widely, or its light was weaker than Ptolemy's table of appearances shows, or it was covered by the ☾. But I could observe neither before nor after this day. [Die 31 Julij mane cum eßet ☉ in 7 ♌, ☾ in 16 ♋, ☿ in 17 ♋ Mer: Vidi lunam clare, vt ſpes eßet etiam poſtridie viſum irj. At Mercurium longe lateque circumſpiciens videre non potui, cum tamen viderem 1. 2. 10. 14. 15 ♊ vt et propoda. Ergo aut longiſſime errauit calculus aut debilior eius lux, quam Ptolemæj tabula apparitionum monſtrat, aut is a ☾ tectus fuit. Sed nec ante nec poſt hunc diem obſeruare potui.]

On 16 August, when it was striking exactly hour 8 in the town and the clouds were parting, this was the appearance of the eclipse. AB the horizon; CD the bright horn, thus inclined to the horizon; EGF the part wholly in shadow. EFDC such a redness that, before the horn CD was uncovered, it would have been taken for the very light of the Sun. And so the boundaries DF were near,

CE remote. But the boundary GF was not so conspicuous; it was rather a kind of continuity, ending from the deepest darkness in the deepest redness. But once the horn CD had emerged, the redness was counted with the darkness, and the difference between the two was more obscure. At exactly nine by the town clock it ended, at a place midway between the vertex and the right. [Die 16 Auguſtj cum in vrbe ſonaret horam 8 præciſe nubibus discedentibus hæc fuit facies Eclipſeos. AB horizon, CD cornu lucens ſic inclinatum ad horizontem, EGF pars penitus obumbrata. EFDC tantus rubor, vt antequam cornu CD detegeretur, lux ipſa Solis eße crederetur. Erantque ſic termini DF propinquj, CE remotj. Sed GF terminus non ita conſpicuus fuit, ſed quaſi quædam continuitas a ſummis tenebris in ſummum ruborem deſinens. Sed orto cornu CD rubor tenebris accenſebatur, et differentia inter vtrumque erat obſcurior. Hora præciſe nona horologij vrbici deſijt medio loco inter verticem et dextram.]

Diagram. A drawing set to the right of the shortened lines from "AB horizon, CD cornu" to "deſijt medio loco inter verticem et dextram." It shows a circular disc, its left part filled with scattered dots and its right part with cross-hatching, with heavier irregular strokes inside the disc and along its lower left edge. Below the disc runs a long horizontal line. Small lower-case letters stand around the figure.

- e (above the disc): e
- g (right of the disc): g
- c (left of the disc): c
- d (below the disc, left of the pair): d
- [f?] (below the disc, right of the pair): a hooked letter, read as f
- a (left end of the horizontal line): a
- [b?] (right end of the horizontal line): a tall stroke ending in a loop, shaped like a 6, read as b

[Margin: ♂ ♀ & cor ♌]

On the day of ♀, 25 Sept., in the morning at the third hour, when Venus had barely risen, I could not yet see the heart of ♌ (that is, I could not yet distinguish it from ♀); at hour 3½ it was a little more westerly than ♀; at the fourth hour more than one Venus could already lie between, the distance q: ¼ of the lunar diameter. So a little before rising it was covered by ♀. But yet the line from ♀ to the heart of ♌ fell a little below ♃. [Die ♀ 25 Sept. mane hora tertia vix dum orta Venere, nondum videre potui cor ♌ (nondum ſcilicet diſcernere potui a ♀) hora 3½ id paulo fuit occidentalius ♀^{e}, quarta hora iam plus vna Venere potuit intereße, diſtantia q: ¼ diametrj lunaris. Itaque paulo ante ortum tegebatur a ♀. Sed tamen linea a ♀ in cor ♌ cadebat paulo infra ♃.]

[Margin: ♄ ☾ ♀ ☿]

On the day of ☿, 25 Nov., in the morning at hour 6½, I saw Saturn, Spica and the centre of the ☾ on one and the same vertical. A line drawn from ♄ through ♀ fell below ☿ by the space of two diameters of the ☾ and somewhat more. If a straight line were to run through ☿ ♀, it would fall above the Moon

by the space of a lunar diameter. ♀ was less distant from ☿ than the ☾ from Spica. ☿ seemed a little ruddier than ♀ and not of such abundant light, and it twinkled somewhat. I saw it for as long as Spica and ♄. It seemed smaller than Arcturus. [Die ☿ 25 Nouemb. mane hora 6½ vidj Saturnum, Spicam et centrum ☾ in vno et eodem verticalj. Linea a ♄ per ♀ ducta cadebat infra ☿ ſpacio duo diɔmetrorum ☾ et plus nonnihil. Si recta per ☿ ♀ incedat, ſupra lunam cadat ſpacio diametrj lunaris. Diſtabat ♀ a ☿ minus quam ☾ a Spica. Videbatur ☿ paulo rubicundior quam ♀ nec adeo copioſæ lucis, et nonnihil ſcintillabat. Tamdiu vidj illum quamdiu Spicam et ♄. Minor videbatur Arcturo.]

On the day of ☿, 26 Nov., at the moment the bell struck 5°, the horn of the ☾ began to rise. One and a half quarters after it, ♀ rose; and half a quarter or less after ♀, ☿ rose. The Moon was highest; after it scale-pan B, then scale-pan A, then ♀; lowest ☿. The southern scale-pan was above the line from the ☾ to ♀ by barely half the Moon's diameter. ♀ below the line of the scale-pans by about a semidiameter of the ☾. ♀ above the line from the southern scale-pan to ☿, by a little more than a semidiameter of the ☾. ☿ ♀ were nearer on this day than the day before. ♀ was distant from scale-pan A about 3 diameters of the ☾, toward the northern. Double that distance and more lay between ♀ and ☿. A triangle from the northern scale-pan, ♀, ☿, whose angle at ☿ a little less than a right angle. When it struck 7¼, the Sun had risen. The ortive amplitude between ☾ and ☿ about 5½°; less between ☾ and ☉. [Die ☿ 26 Nouemb. eo momento quo campana ſonuit 5° cœpit oriri cornu ☾. Sesquiquadrante poſt illam orta eſt ♀. Et ſemiquadrante vel minus poſt ♀ ortus eſt ☿. Luna fuit altißima, poſt hanc lanx B, tum lanx A, dein ♀, humilimus ☿. Lanx auſtrina erat ſupra lineam a ☾ in ♀ vix dimidia diametro lunæ. ♀ infra lineam lancium ſemidiam. ☾ circiter. ♀ ſupra lineam ex lance auſtrina in ☿, paulo plus ſemid. ☾. Propiores erant hoc die ☿ ♀ quam pridie. Diſtabat ♀ a lance A circiter 3 diam. ☾ verſus borealem. Cuius diſtantiæ duplum et amplius fuit inter ♀ ☿. Triangulum ex lance borea, ♀, ☿, cuius angulus ad ☿ paulo minor recto. Cum ſonaret 7¼, ſol fuit ortus. Amplitudo ortiva inter ☾ ☿ circiter 5½°, minus inter ☾ ☉.]

[Margin: ♀ ☿]

On the day of the ☾, 30 Nov., in the morning I saw ♀, ☿ and the southern scale-pan on the same line, ♀ more southerly by a tiny bit. The line let fall from the northern scale-pan to ♀ was, as it were, perpendicular to the other, but yet the angle at ♀ was slightly obtuse. The triangle between the scale-pans and ☿ was isosceles above the base, the distance of ☿ and the northern scale-pan; were that distance not very slightly smaller, the triangle would be equilateral. But the ratio of the distance ♀ ☿, and of ♀ from the northern scale-pan, greater than triple. The line from Spica to ♀ left ☿ to the north by a semidiameter of the ☾. [Die ☾ 30 Nou: mane vidj ♀ ☿ et lancem Auſtr: in eadem linea, ♀ exigua particula auſtralior. Ex borealj lance in ♀ demißa quaſi perpendicularis erat alterj, ſed tamen obtuſiuſculus angulus ad ♀. Triangulus inter lances et ☿ æquicrurus ſupra baſin ☿ et lancis bor: diſtantia, quæ niſi admodum paulo

minor foret, æquilaterum eßet triangulum. At ratio diſtantiæ ♀ ☿, et ♀ a lance Borealj maior tripla. A Spica in ♀ linea relinquebat ☿ ſemidiametro ☾ in borea.]

[Margin: ♀ ☿]

On 9 December, in the morning, I saw ♀ ☿ much farther apart from each other than on 26. 30 Nov.; the difference, by the estimate of the eyes, about 2° degrees. And it had become much more southerly, because the line from ☿ through ♀ fell far above ♄. [Die 9 Decembris mane vidj ♀ ☿ longe remotiores ab invicem quam 26. 30 Nov. differentia ex æſtimatione oculorum quaſi ad 2° gradus. Erat autem multum factus auſtralior, quia linea ex ☿ per ♀ longe ſupra ♄ cadebat.]

ANNO 1599. [Year 1599]

[Margin: ♀ ☉]

On the day of ♂, 5 Jan., the ortive amplitude between ♀ and ☉ was about 2° degrees. [Die ♂ 5 Jan: fuit amplitudo ortiva ♀ inter et ☉ 2° graduum circiter.]

[Margin: ♃]

On the day of ☿, 13 Jan., ♃ fell on the line 7.12.11 ♊, roughly speaking, distant from 12 a little more than the diameter of the Moon. [Die ☿ 13 Jan. ♃ incidit in lineam craßo modo 7.12.11 ♊ diſtans a 12 paulo plus diametro lunæ.]

[Margin: ♀]

That morning I could not see ♀. [Eo mane ♀ videre non potuj.]

[Margin: ♃]

On the day of ☉, 17 Jan., in the evening, ♃ was more certainly on the line through 7.11 ♊. It was distant from 12 by a third part of that which lies between 14.15 ♊. [Die ☉ 17 Jan. veſperj ♃ erat in linea per 7.11 ♊ certius. Diſtabat a 12 tertia parte eius quæ eſt inter 14.15 ♊.]

On the day of ♃, 21 Jan., at night, ♃ was on the line 13.12 ♊, so distant from 12 that, as it were, 2 Jupiters could fit between, or the semidiameter of the ☾. And yet it seemed almost more remote than the day before. [Die ♃ 21 Jan: noctu, ♃ erat in linea 13.12 ♊ ſic a 12 diſtans, vt quaſi 2 Ioues intereße poßent vel ſemidiameter ☾. Et tamen videbatur fere remotior quam pridie.]

[Margin: ☿]

At the beginning of February I saw Mercury very clearly, with no star nearby. [Initio Februarij clarißime vidj Mercurium, nulla in propinquo ſtella.]

[Margin: Eclipſis ☾]

The eclipse of this month began in the morning at h. 4¼ or a little before. At hour 5⅓ it was wholly immersed. At hour 5°.52′ a greater redness still held the western horn; it had therefore not yet passed the middle. A little later it went off behind the mountains, with no trace of recovered light shown. [Eclipſis huius menſis incepit mane h. 4¼ vel exiguo ante. Hora 5⅓ tota mergebatur. Hora 5°.52′ rubor maior adhuc tenebat cornu occidentale, nondum igitur tranſierat medium. Paulo poſt abijt poſt montes nullo recuperatæ lucis edito veſtigio.]

Above the spot that we may call the eastern eye, something gaping appeared, which you might call a valley, which would be the first to feel the shadow, as though at the outermost circle something were lacking to its roundness. At

hour 4⅛ things stood so with the Moon that you could not tell whether this belonged to the very stripping of the light. For it was like a crack. When it was now being immersed in the shadow completely, it was nevertheless seen whole, all alike, by its own redness. And then, from the region opposite the light, it seemed to fail again, the redness itself, that is, also gradually giving way. The last light ended in the ἀκμήν [Greek: akmēn, "peak"] of the redness, so that you could not distinguish it except by the fact that the red horn spread an even colour widely along the circumference, not a bright one toward the interior. [Supra maculam quam oculum orientalem dicere poßumus, videbatur hiulcum quid quod vallem diceres, quæ primo vmbram ſentiat, quaſi extremo circulo aliquid ad rotunditatem deeßet. Hora 4⅛ ſic erat comparatum cum Luna, vt neſcires pertineretne id ad ipſam lucis ſpoliationem. Nam erat quaſi rima. Cum iam mergeretur vmbra penitus, rubore tamen ſuo iuxta tota cernebatur. Et tum ex adverſa lucis regione videbatur denuo deficere, rubore ſcilicet ipſo etiam paulatim cedente. Vltima lux deſinebat in ruboris ἀκμήν, vt neſcires diſtinguere niſi ex eo quod rubeum cornu æqualem late colorem ſpargebat in circumferentia, non lucidum verſus interiora.]

[Margin: ♀ ☿]

On 17 May in the evening I saw ☿ below Venus, much more northerly than the line from ♃ to ♀. [Die 17 Maji veſperj vidj ☿ infra Venerem multo ſeptentrionaliorem quam linea a ♃ in ♀.]

On the 21st I saw ☿ around its setting, in light still bright, so that it could scarcely be made out; it was higher than Venus. [Die 21 vidj ☿ circa occaſum adhuc clara luce vt cernj vix poßet, altiorem Venere.]

On 24 May in the evening I saw that the line through ♀ ☿ made with the vertical through ♀ almost ⅓ of a right angle. The angle ♃ ♀ ☿ was acute, but greater than ⅔ of a right angle. Thus the angle ♃ ☿ ♀ was obtuse. So ☿ had now passed Venus. The distance ♀ ☿ seemed 3 diameters of the ☾. [Die 24 Maji veſperj vidj lineam per ♀ ☿ cum verticalj per ♀ conſtituere fere ⅓ rectj. Angulus ♃ ♀ ☿ erat acutus, ſed maior quam ⅔ rectj. Sic ♃ ☿ ♀ angulus erat obtuſus. Iam igitur ☿ tranſiverat Venerem. Videbatur diſtantia ♀ ☿ 3 diametrj ☾.]

[Margin: ♀ ☿ ☾]

On 25 May the situation of the 3 planets was as follows. ♀ ☿, that is, were not yet in the same vertical, and they were distant by 2½ diameters of the present ☾. But ♀ ☾ was double in relation to ♀ ☿, greater, by about one diameter of the ☾ above ☿, so that about a diameter of the ☾ lay between. The line from ♀ through the centre of the ☾, or a little below the centre, was parallel to the horizon. [Die 25 Maji talis erat ſitus 3 planetarum. Nondum ſc: ♀ ☿ in eodem erant verticalj et diſtabant 2½ diametris ☾ præſentis. At ♀ ☾ erat dupla ad ♀ ☿ maior, vna fere diametro ☾ ſupra ☿, vt intereßet fere diameter ☾. Linea ex ♀ per centrum ☾ vel exiguo infra centrum erat parallela horizontj.]

Diagram. A small unlabelled figure set at the right of the first three lines of the 25 May entry: two solid dots, one above the other, the upper standing

slightly to the right of the lower, and a small open circle to the right of the lower dot, a little below it. No letters or labels are printed.

Eclipſis ⊙ a Mæſtlino diligenter obſeruata me præſente, anno 1590 21 Julij St. V. [Eclipse of the ⊙ carefully observed by Mästlin in my presence, in the year 1590, 21 July, Old Style]

When exactly a semidiameter was lacking (for we did not see the beginning), the altitude of the ⊙ was 26°. The circle drawn through the centres of the ⊙ and the ☾ formed with the vertical an angle of 88° downward, 92° upward. The Moon, that is, appeared higher than the Sun in the ray, lower in the sky. [Cum præciſe ſemidiameter deficeret (initium enim non vidimus) fuit altitudo ⊙ 26°. Circulus per centra ⊙ et ☾ ductus conformabat cum verticalj angulum 88° deorſum, 92° ſurſum. Luna ſc: apparuit in radio ſuperior Sole, in cœlo inferior.]

Around the middle of the eclipse, the ratio of the semidiameters of the ⊙ to the ☾ as 24 to 23. Mästlin, however, sets the diameter of the Sun for that day at 14⅚′, from other observations, as he says. [Circa medium eclipſis proportio ſemidiametrorum ⊙ ad ☾ vt 24 ad 23. Ponit autem Mæſtlinus ad eum diem Solis diametrum 14⅚′ ex alijs, vt ait, obſeruationibus.]

When after the middle a semidiameter was again lacking, the alt. of the ⊙ was 33°. The angle with the vertical 2½°, by which the Moon's centre was west of the vertical, still lower, as before. [Cum poſt medium iterum ſemidiameter deficeret, fuit alt. ⊙ 33°. Angulus cum verticalj 2½°, quo lunæ centrum a verticalj occidentale fuit, adhuc inferius ſicut antea.]

The greatest obscuration of digits was 7¾ A. Mästlin demonstrates there that the moments of the apparent conjunction and of the greatest obscuration differ. [Maxima obſcuratio digitorum fuit 7¾ A. Demonſtrat ibj Mæſtlinus, differre momenta Coniunctionis apparentis et obſcurationis maximæ.]

When a quarter of the diameter of the ⊙ was lacking, the alt. of the ⊙ was 37¼°. The angle with the vertical 19°, the Moon now east of the vertical. [Cum quadrans diametrj ⊙ deficeret, fuit alt. ⊙ 37¼°. Angulus cum verticalj 19°, Luna iam orientalis a verticalj.]

At the end of the eclipse, alt. of the ⊙ 41¼°, angle 30°. [In fine Eclipſis alt. ⊙ 41¼°, Angulus 30°.]

OBSERUATIONES ANNI 1601 PRAGÆ BOHEMORUM HABITÆ. [Observations of the year 1601 made at Prague in Bohemia]

OBSERUATIONES SOLIS. [Observations of the Sun]

DIE 28 FEBRUARIJ. [28 February]

The meridian line having been found, as nearly as possible, on the preceding days, and fair weather shining on this last day of February, observation was made in this way: [Linea Meridiej præcedentibus diebus quam proxime adinuenta, & ſerenitate hoc vltimo Februarij die affulgente, obſeruabatur in hunc modum]

Altit. of the ⊙, merid., by the revolving instrument [Altit. ⊙ merid. per Volub.]	32 2½
by the brass sextant [per Sext. orichal.]	32 9

The discrepancy that occurred, however, arose from this: that neither instrument had yet been adjusted exactly enough as regards the plumb-line and the other requisites; for that could not be done so suddenly, on that very day. This observation is therefore not to be trusted much; rather, one must wait until the instruments have been examined more correctly. [Diſcrimen autem quod intercidit hinc ortum, quod neutrum inſtrumentum adhuc ſatis exacte quoad perpendiculum & alia requiſita rectificatum eßet, neque enim id tam ſubito eo ipſo die fieri poterat, quare huic obſeruationi non admodum fidendum, ſed expectandum donec inſtrumenta rectius examinata fuerint.]

DIE 4 MARTIJ. [4 March]

Merid. altit. of the ⊙, quadrant [Altit. merid. ⊙^{lis} Quadr.]	33 35⅔
Sextant [Sextante]	33 37⅓

DIE 5 MARTIJ. [5 March]

Merid. altit. of the ⊙, quadrant [Altit. merid. ⊙^{lis} Quadrante]	33 56

The shadow was rather faint *and not very apparent; 2′ must be added to the merid. altit. for it to be right.* [Erat vmbra ſatis tenuis *nec admodum apparens, addenda ſunt 2 minuta ad altit. merid. vt recte ſe habeat.*]

DIE 13 MARTIJ. [13 March]

Altit. of the ⊙, merid., revolving instrument [Altit. ⊙^{lis} merid. Volubili]	37 4

But because of small clouds passing across, the shadow was very thin, so that for that reason it could not be observed with the other instruments. [Sed propter nubeculas intercurrentes rara admodum erat vmbra, vt in reliquis inſtrumentis propterea obſeruari nequierit.]

DIE 15 MARTIJ. [15 March]

Merid. altit. of the ⊙, revolving instrument [Altit. merid. ⊙^{lis} Volubili]	37 53⅔
Sextant [Sextante]	about 37 54½ [fere 37 54½]

It was moderately clear, though small clouds passed across. [Erat mediocriter ſerenum intercurrentibus tamen nubeculis.]

DIE 19 MARTIJ. [19 March]

Altit. of the ☉, merid., revolving instrument [Altit. ☉ merid. Volubili]	39 29½
Steel instrument [Chalybeo]	39 30

Fairly clear. [*Vtcunque ſerenum.*]

Therefore the meridian altitude of 19 March [*Itaque altitudo meridiana 19 Martij*]	*39 30 0*
Parallax ad.	*2 20*
	39 32 20
Refraction [*Refractio*]	*10*
True altitude [*Vera altitudo*]	*39 32 10*
Altitude of the equator [*Altitudo æquat.*]	*39 55 30*
Declination of the ☉ [*Declinatio* ☉^{lis}]	*0 23 20* M.
Longitude of the ☉ [*Longitudo* ☉^{lis}]	*29 1½* ♓
Our calculation [*Calculus noſter*]	*29 0* ♓
Alfonsine [*Alphonſinus*]	*29 15*
Copernican [*Copernicæus*]	*28 24*
Everhartus	*28 36*

It is therefore evident that our restitution agrees with the observation within one and a half minutes, Alfonso by a fourth part of a degree, Copernicus deviating by ⅗, and that Everhartus having less by ⅖. [*Patet itaque quod noſtra reſtitutio conſonat cum obſeruatione intra ſeſquialterum minutum, Alphonſo per quartam gradus partem, Copernico ⅗ deuiante & Euerarto illo per ⅖ minus habente.*]

Yet it was not clear enough, nor were the instruments sufficiently arranged. [*Non tamen erat ſatis ſerenum, nec inſtrumenta ſufficienter diſpoſita.*]

DIE 21 MARTIJ. [21 March]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	40 17½
Mural [Murali]	40 18½
Steel instrument [Chalybeo]	40 18⅔

But it was not very clear. [Verum non erat bene ſerenum.]

DIE 26 MARTIJ. [26 March]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	42 14¾
Sextant [Sextante]	42 14⅚

Steel instrument [Chalybeo]	42 17⅔
With the rulers, 8097, 47°46′, or [Regulis 8097, 47°46′ ſeu]	42 14

It was not very clear, and the shadow could scarcely be made out. [Non erat bene ſerenum & vix diſcerni poterat vmbra.]

DIE 29 MARTIJ. [29 March]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	43 24⅚
Sextant [Sextante]	43 26⅓
Mural [Murali]	43 28⅓
Steel instrument [Chalybeo]	43 23⅓
With the rulers, 7906, or [Regulis 7906 ſeu]	43 26

It was quite clear. [Erat bene ſerenum.]

True place of the ☉ 8°51′55″♈ [Verus locus ☉^{lis} 8°51′55″♈]	3 30 50
	45
Declination [Declinatio]	3 31 35
	39 55 30
	43 27 5
Parallax [Parallaxis]	2 12
Visible altitude of the ☉ [Altitudo viſibilis ☉^{lis}]	43 24 53

DIE 30 MARTIJ. [30 March]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	43 48
Sextant [Sextante]	43 47½
Steel instrument [Chalybeo]	43 47⅓
With the rulers, 7844, or [Regulis 7844 ſeu]	43 49
Mural, with the ruler not yet sufficiently corrected [Murali cum regula nondum ſatis correcta]	43 51⅙ doubtful [43 51⅙ dub.]
With a single pinnule [Pinnacidio ſimplici]	43 48⅓
Merid. altit. of the ☉, limited [Altit. ☉^{lis} merid. limitata]	43 47⅔
True place of the ☉ 9°50′55″♈, [Verus locus ☉^{lis} 9°50′55″♈,] declin.	3 54 54
Altit. of the equator [Altit. æquat.]	39 55 30
	43 50 24
	2 12
Visible altitude of the ☉ [Altitudo ☉^{lis} viſibilis]	43 48 12
Difference [Differentia]	32

DIE 31 MARTIJ. [31 March]

Altit. of the ☉, merid., revolving instrument [Altit. ☉lis merid. Volubili]	44 12
Sextant [Sextante]	44 10
Mural [Murali]	44 12

It was not very clear. [Non erat bene ſerenum.]

True place of the ☉ 10°49′53″♈, [Verus locus ☉lis 10°49′53″♈,]	
decl.	4 18 5
True altitude [Altitudo vera]	44 13 35
Parallax [Parallaxis]	2 9
Visible altitude [Altitudo viſibilis]	44 11 26
observed [obſeruata]	44 12
Difference [Differentia]	34

DIE 5 APRILIS. [5 April]

Altit. of the ☉, merid., revolving instrument [Altit. ☉lis merid. Volubili]	46 5¾
Sextant [Sextante]	46 3[1]
Steel instrument [Chalybeo]	46 6½
Mural [Murali]	46 7⅙[1]

Since on the preceding night, because of excessive wind, we could not attend properly to the plumb-lines, today at noon we did so, and we found that the steel instrument was correct towards the south, but gave about one minute less towards the north, while the revolving instrument was correct on both sides. [Cum præcedenti nocte propter ventum nimium perpendiculis recte attendere non liceret, hodie in Meridie id fecimus & deprehendimus Chalybeum verſus Meridiem ſe recte habuiße, ſeptentrionem vero vno circiter minuto præbuiße minus, at Volubilem vtrinque recte.]

DIE 7 APRILIS. [7 April]

The meridian altitude of the ☉ was observed [Obſeruabatur altitudo ☉lis meridiana]

revolving instrument [Volubili]	46 51⅙
Steel instrument [Chalybeo]	46 51⅙
Mural, single pinnule [Murali pinnacidio ſimpl.]	46 51½
Sextant [Sextante]	46 49⅚
Meridian altitude [Altitudo meridiana]	46 51 10
Deviation of the quadrant [Deuiatio Quadr.]	1 5
	46 50 10

Altitude of the equator [Altitudo æquatoris]	39 54 30
Visible declin. of the ☉ [Declin. ☉^{lis} viſib.]	6 55 40
Parallax [Parallaxis]	2 3
True declination [Vera declinatio]	6 57 43
Corresponding true place of the ☉ [Reſp. verus locus ☉^{lis}]	♈ 17 40 30
Calculation [Calculus]	17 41 40
Difference [Differentia]	1 10

20″ can cause this difference. [Hanc differentiam poßunt 20″ cauſari.]

DIE 13 APRILIS. [13 April]

At noon. Altitude of the ☉ [*In Meridie. Altitudo* ☉^{lis}]

By the mural, with one pinnule [*Per Muralem vno pinnacidio*]	*49 3⅓*
the other ruler [*altera regula*]	*49 5*
By the steel instrument [*Per Chalybeum*]	*49 2⅙*
the sextant [*Sextantem*]	*49 1⅔*
the revolving instrument [*Volubilem*]	*49 2½*
Sextant II [*Sextantem II*]	*49 2½*
Sextant III [*Sextantem III*]	*49 2⅓*
With the Ptolemaic rulers, 7000 [*Regulis Ptolemaicis 7000*]	
or [ſeu]	49 2

but it could have been a little more, because it was somewhat later. [ſed poterat paulo plus eße quia erat aliquanto ſerius.]

Let us adopt the altitude [Aßumamus altitudinem]	49 2½
But the altitude of the equator [Sed altitudo æquat.]	39 54
Declination [Declinatio]	9 8½
Parallax [Parallaxis]	2 ad.
True declination [Vera declinatio]	9 10½

Corresponding 23° 32′ 50″♈, calculation 23° 33′ 17″, difference 27″ less. [Reſp. 23° 32′ 50″♈, calculus 23° 33′ 17″, differentia 27″ minus.]

It therefore deviates from our place of the ☉ by at least half a minute, with this altitude of the pole adopted. Six days before, however, namely on 7 April, it was found 1⅙ likewise deficient. [Deuiat itaque a noſtro loco ☉^{lis} ſaltem dimidio minuto adaptata hac Poli altitudine. Ante ſex vero dies, nempe 7 Aprilis, inuenta eſt 1⅙ etiam deficiens.]

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

DIE 14 APRILIS. [14 April]

Altit. of the ☉, merid., mural [Altit. ☉lis merid. Murali]	49 23[1]
Steel instrument [Chalybeo]	49 19⅔
Among clouds: brass sextant [Inter nubes: Sextante orichalc.]	49 20
revolving instrument [Volubili]	49 19½

DIE 15 APRILIS. [15 April]
Merid. altitude of the ☉ [Altitudo ☉lis merid.]

Mural, single pinnule [Murali pinnac. ſimpl.]	49 45
Steel instrument [Chalybeo]	49 45⅓
Brass sextant [Sextante orichalcico]	49 45
Revolving instrument [Volubili]	49 46⅔
Wooden sextant [Sextante ligneo]	49 45
The other [Altero]	49 45½
Ruler 6879, or [Regula 6879 ſeu]	49 45⅔
Set the altitude of the equator [*Pone altitud. æquatoris*]	*39 54¼*
and of the pole [*& Poli*]	*50 5¾*

It was moderately clear. [*Fuit mediocriter ſerenum.*]

Altitude [Altitudo]	49 45¼
Parallax [Parallaxis]	1 56 a.
True altitude [Vera altitudo]	49 47 11
Altitude of the equator [Altitud. æquat.]	39 54 11
Declination [Declinatio]	9 53 0
Corresponding [Reſp.]	25 28 ♈
Calculation [Calculus]	25 30 13

Difference 2′13″ less. [Differentia 2′13″ minus.]
DIE 16 APRILIS. [16 April]
Mer. alt. of the ☉ [Alt. mer. ☉]

Mural, first pinnule [Murali priori pinnac.]	50 5
With the other, which previously had the ruler [Altero quod antea habebat regulam]	50 6⅔
Steel instrument [Chalybeo]	50 6⅔
Brass sextant [Sextante orichalcico]	50 5½
Revolving instrument [Volubili]	50 7⅔
Wooden sextant [Sextante ligneo]	50 8½
the other [altero]	50 8
Ruler 6820, or [Regula 6820 ſeu]	50 7

Let the altitude be taken as [Aßumatur altitudo]	50 7
Parallax [Parallaxis]	1 56
	50 8 56
Altitude of the equator [Altitud. æquat.]	39 54 15
Declination [Declinatio]	10 14 41
Corresponding 26°27′53″♈, [Reſp. 26°27′53″♈,]	
Calculation 26 28 38 [Calculus 26 28 38]	45″ less [45″ minus.]

DIE 17 APRILIS. [17 April]

Altit. of the ☉, merid., mural, with one [Altit. ☉ merid. Murali, vno]	50 28⅔
with the other [altero]	50 29⅙
Steel instrument [Chalybeo]	50 27⅔
Brass sextant [Sextante orichalcico]	50 26⅚
Revolving instrument [Volubili]	50 29⅙
Wooden sextant [Sextante ligneo]	50 28⅔
The other sextant [Altero Sextante]	50 28⅔
Ruler 6766 [Regula 6766]	
Altitude of the ☉, steel instrument [Altitudo ☉lis Chalybeo]	50 27 40
aberr. of the instr. [aberr. inſtr.]	40
	50 28 20
Parallax [Parallaxis]	1 54
True altitude [Altitudo vera]	50 30 14
Altit. of the equator [Altit. æquat.]	39 53 54
Declination [Declinatio]	10 36 20

Corresponding 27° 27′ 28″♈ [Reſp. 27° 27′ 28″♈] Calculation 27 27 0, difference 28″ [Calculus 27 27 0 Differentia 28″]

DIE 19 APRILIS. [19 April]

Mer. alt. of the ☉, upper pinnule [Alt. mer. ☉lis pinnac. ſuper.]	51 10½
lower [inferiori]	51 10⅚
Ruler 6646, or [Regula 6646 ſeu]	51 10⅔
Steel instrument [Chalybeo]	51 9
Brass sextant [Sextante orichalcico]	51 8⅔
Revolving instrument [Volubili]	51 9⅓
Wooden sextant [Sextante ligneo]	51 10⅔
Altitude, steel instrument [Altitudo Chalybeo]	51 9
aberr. of the instr. [aberr. inſtr.]	40
	51 9 40
Parallax [Parallaxis]	1 54A.
True altitude [Altitudo vera]	51 11 34
Altit. of the equator [Altit. æquat.]	39 53 50
Declination [Declinatio]	11 17 44

Corresponding 29° 23′ 20″♈ [Reſp. 29° 23′ 20″♈] Calculation 29 23 38, difference 11″ less[2]. [Calculus 29 23 38, Differentia 11″ minus[2].]

DIE 20 APRILIS. [20 April]

Altit. of the ☉, merid., with both pinnules on the mural [Altit. ☉[lis] merid. vtroque pinnacidio in Murali]	51 31½
Steel instrument [Chalybeo]	51 31
Brass sextant [Sextante orichalcico]	51 29½
Revolving instrument [Volubili]	51 29⅔
With the rulers, 6596, or [Regulis 6596 ſeu]	51 29⅓
Wooden sextant [Sextante ligneo]	51 31½
Altitude, revolving instrument [Altitudo Volubili]	51 29
	40
aberr. of the instr. [aberr. inſtr.]	1 0
	51 30
	40
Parallax.	1 54
	51 32
	34
	39 34 0
Declination [Declinatio]	11 38 34
Corresponding 0°22′16″♉ [Reſp. 0°22′16″♉]	11 37
	46
Calc. 0 21 54, Diff. 22″	48

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

[2] Thus in the codex [Sic in codice.]

DIE 21 APRILIS. [21 April]

Merid. altit., mural [Altit. merid. Murali]	
upper pinnule [pinnac. ſuperiori]	51 51½
lower [inferiori]	51 51½
Steel instrument; with the pinnule it was not done properly [Chalybeo, pinnac. non rite fuit factum]	51 51
Brass sextant [Sextante orichalcico]	51
	49⅔
Revolving instrument [Volubili]	51 48
Wooden sextant [Sextante ligneo]	51 51
the other [altero]	51
	51⅓
With the rulers, 6540 [Regulis 6540]	

DIE 24 APRILIS. [24 April]

Merid. altit. of the ☉, revolving instrument [Altit. merid. ☉lis Volubili]	52 50½
Steel instrument [Chalybeo]	52 50⅔
Brass sext. [Sext. orichalcico]	52 49
Mural [Murali]	52 52
With the rulers, 6219 [Regulis 6219]	

It was not very clear. [Non erat bene ſerenum.]

DIE 29 APRILIS. [29 April]

Altit. of the ☉, merid., mural [Altit. ☉lis merid. Murali]	
upper pinnule [pinnacid. ſuperiori]	54 27⅓
lower [inferiori]	54 27⅔
With the rulers, 6110, or [Regulis 6110 ſeu]	54 25 20
Steel instrument [Chalybeo]	54 25⅚
Brass sextant [Sextante orichalcico]	54 23⅚
Revolving instrument [Volubili]	54 24
Altitude of the ☉, revolving instrument [Altitudo ☉lis Volubili]	54 24
aberr. of the instr. [aberr. inſtr.]	50
	54 24 50
Parallax [Parallaxis]	1 44
True altitude [Vera altitudo]	54 26 34
	39 54 15
Declination [Declinatio]	14 32 19

Corresponding 8° 58¼′♉. [Reſp. 8° 58¼′♉.]

DIE 30 APRILIS. [30 April]

Merid. altit. of the ☉, mural [Altit. merid. ☉lis Murali]	
upper pinnule [pinnacid. ſuperiori]	54 45
lower [inferiori]	54 45⅙
With the rulers, 6065 [Regulis 6065]	
Steel instrument [Chalybeo]	54 45
Brass sextant [Sextante orichalcico]	54 42⅙
Revolving instrument [Volubili]	54 43⅓
Altitude, revolving instrument [Altitudo Volubili]	54 43 20
aberr. of the instr. [aberr. inſtr.]	50
	54 44 10
Parallax [Parallaxis]	1 44
	54 45 54
	39 54 15
Declination [Declinatio]	14 51 39

Corresponding 9° 58′ 57″♉ [Reſp. 9° 58′ 57″♉] Calc. 10 3 0, Diff. 4′ 3″

N.B. It is clear from this that the revolving instrument still errs, more than we had supposed, namely by 1⅔ in the altitude of the ☉, and that the mural agrees very well. For if we take the altitude of that one, the place of the ☉ derived from it will agree very well with the calculation. [N. B. Patet hinc Volubilem adhuc plus quam putaßemus nemper per 1⅔ in ☉lis altitudine aberrare & Muralem optime congruere. Si enim illius altitudinem aßumpſerimus, optime locus ☉lis hinc proueniens cum calculo congruet.]

DIE 2 MAIJ. [2 May]

Altit. of the ☉, merid., revolving instrument [Altit. ☉lis merid. Volubili]	55 19¾
Brass sextant [Sextante orichalcico]	55 19⅓
Steel instrument [Chalybeo]	55 21⅔
With the rulers, 5955½, or [Regulis 5955½ ſeu]	55 21
Mural, lower pinnule [Murali pinnac. inferiori]	55 21⅔
upper [ſuperiori]	55 21½
Altitude of the ☉, mural [Altitudo ☉lis Murali]	55 21½
Parallax [Parallaxis]	1 42
True altitude [Altitudo vera]	55 23 12
	39 54 10
Declination [Declinatio]	15 29

Corresponding 11° 58′ 36″♉ [Reſp. 11° 58′ 36″♉] The calculation has 11 58 53 [Calculus habet 11 58 53] Difference 17″ [Differentia 17″]

DIE 3 MAIJ. [3 May]

Altit. of the ☉, mural [Altit. ☉ Murali]	
upper pinnule [pinnac. ſuperiori]	55 39⅙
lower [inferiori]	55 39½
Steel instrument [Chalybeo]	55 39⅔
With the rulers, 5907, or [Regulis 5907 ſeu]	55 38 34
Altitude of the ☉, mural [Altitudo ☉lis Murali]	55 39 20
Parallax [Parallaxis]	1 40
True altitude [Altitudo vera]	55 41 0
Altit. of the equator [Altit. æquat.]	39 54 10
Declination [Declinatio]	15 46 50

Corresponding 12° 56′ 52″♉ [Reſp. 12° 56′ 52″♉] Calculation 12 56 47 [Calculus 12 56 47]

DIE 4 MAIJ. [4 May]

Alt. of the ☉, mural [Alt. ☉lis Murali]	
upper pinnule [pinnac. ſuperiori]	55 56⅓

lower [inferiori]	55 56⅔
Steel instrument [Chalybeo]	55 56⅔
With the rulers, 5858½ [Regulis 5858½]	
Revolving instrument [Volubili]	55 57⅔

DIE 7 MAIJ. [7 May]

Altit. of the ☉, merid., revolving instrument [Altit. ☉lis merid. Volubili]	56 46⅔
Steel instrument [Chalybeo]	56 46⅔
With the rulers, 5717 [Regulis 5717]	
Mural, lower pinnule [Murali pinnac. inferiori]	56 47½
upper [ſuperiori]	56 47⅓

DIE 8 MAIJ. [8 May]

Altit. of the ☉, merid., mural [Altit. ☉ merid. Murali]	
upper pinnule [ſuperiori pinnac.]	57 4⅙
lower [inferiori]	57 3⅔
Steel instrument [Chalybeo]	57 3⅔
Revolving instrument [Volubili]	57 4
With the rulers, 5674 [Regulis 5674]	

DIE 9 MAIJ[1]. [9 May[1]]

Alt. of the ☉, merid., mural [Alt. ☉ merid. Murali]	
upper pinnule [pinnac. ſuper.]	57 21
lower [inferiori]	57 19⅚
Steel instrument [Chalybeo]	57 20⅓
Revolving instrument [Volubili]	57 20⅓
With the rulers, 5624, or [Regulis 5624 ſeu]	57 20
Let us adopt the altitude [Aßumamus altitudinem]	57 20 30
Parallax [Parallaxis]	1 38
True altitude [Altitudo vera]	57 22 8
Altit. of the equator [Altit. æquat.]	39 54 15
Declination [Declinatio]	17 27 53

Corresponding 18° 45′ 23″♉ [Reſp. 18° 45′ 23″♉] Calculation 18 43 37 [Calculus 18 43 37] Difference 1′46″, which 26″ can cause. [Differentia 1′46″ quam 26″ cauſari poßunt.]

DIE 10 MAIJ. [10 May]

Merid. alt. of the ☉, mural [Alt. merid. ☉ Murali]	
upper pinnule [pinnac. ſuper.]	57 35½
lower [inferiori]	57 35⅚
Steel instrument [Chalybeo]	57 35½
Revolving instrument [Volubili]	57 35⅓
With the rulers, 5585 [Regulis 5585]	

DIE 12 MAIJ. [12 May]

Merid. alt. of the ☉, mural [Alt. merid. ☉lis Murali]	
upper pinnule [pinn. ſuper.]	58 6½
lower [inferiori]	58 6⅔
Steel instrument [Chalybeo]	58 6⅔
Revolving instrument [Volubili]	58 6⅓
With the rulers, 5509 [Regulis 5509]	
Set the observed altitude [*Pone altitud. obſeruatam*]	*58 6 35*
Parallax [Parallaxis]	1 32
True altitude [Vera altitudo]	58 8 7
Altit. of the equator [Altit. æquat.]	39 54 15
Northern declination [Declinatio ſept.]	18 13 52

Corresponding 21° 36′ 37″♉ [Reſp. 21° 36′ 37″♉] Calculation 21 36 41, difference 4″. [Calculus 21 36 41 Differentia 4″.]

DIE 13 MAIJ. [13 May]

Alt. of the ☉, merid., mural [Alt. ☉lis merid. Murali]	
upper pinnule [pinn. ſuper.]	58 21⅙
lower [inferiori]	58 21⅓
Steel instrument [Chalybeo]	58 20⅚
Revolving instrument [Volubili]	58 20⅔
With the rulers, 5453 [Regulis 5453]	

DIE 14 MAIJ. [14 May]

Alt. of the ☉, merid., mural [Alt. ☉lis merid. Murali]	
upper pinnule [pinn. ſuper.]	58 36
lower [inferiori]	58 36⅓
Steel instrument [Chalybeo]	58 35

The tube of the steel instrument was broken; therefore the shadow could not be made out so exactly. [Chalybei canalis fractus erat, propterea vmbra diſcerni adeo exacte non poterat.]

Revolving instrument [Volubili]	58 36⅙
With the rulers, 5413 [Regulis 5413]	

DIE 21 MAIJ. [21 May]

Alt. of the ⊙, merid., mural [Alt. ⊙lis merid. Murali]	
upper pinnule [pinn. ſuper.]	60 10
lower [inferiori]	60 9½
Steel instrument [Chalybeo]	60 9
Revolving instrument [Volubili]	60 9
With the rulers, 5149 [Regulis 5149]	

It was not very clear. [Non erat bene ſerenum.]

DIE 22 MAIJ. [22 May]

Merid. altit. of the ⊙, revolving instrument [Altit. merid. ⊙lis Volubili]	60 21
Steel instrument [Chalybeo]	60 20½
Mural, upper pinnule [Murali pinn. ſuper.]	60 20⅚
lower [inferiori]	60 21⅓
With the rulers, 5121 [Regulis 5121]	

DIE 23 MAIJ. [23 May]

Merid. altit. of the ⊙, revolving instrument [Altit. merid. ⊙lis Volubili]	60 32½
Steel instrument [Chalybeo]	60 32⅓
Mural, upper pinnule [Murali pinn. ſuper.]	60 33⅔
lower [inferiori]	60 33

DIE 29 JUNIJ. [29 June]

Altit. of the ⊙, merid., mural [Altit. ⊙lis merid. Murali]	63 12
Revolving instrument [Volubili]	63 11½

[1] From codex V. Missing in codex I. [E codice V. Deeſt in codice I.]

DIE 3 JULIJ. [3 July]

Altit. of the ☉, merid., mural [Altit. ☉ merid. Murali]	62 56⅙
Steel instrument [Chalybeo]	62 55½
Revolving instrument [Volubili]	62 55⅚
With the rulers, 4690½ [Regulis 4690½]	
Observed altitude [Altitudo obſeruata]	62 56 0
Parallax [Parallaxis]	1 20
True altitude [Altitudo vera]	62 57 20
True place of the Sun [Verus locus Solis]	♋ 11 14 16
Declination [Declinatio]	23 2 49
Altit. of the equator [Altit. æquat.]	39 54 30
Elevation of the pole [Eleuatio poli]	50 5 30

agreeing with that from the stars. [*concordans cum ea quæ ex ſtellis.*]

DIE 13 JULIJ. [13 July]

Altit. of the ☉, merid., mural [Altit. ☉ merid. Murali]	61 48⅓
Steel instrument [Chalybeo]	61 48
Revolving instrument [Volubili]	61 48⅙

DIE 14 JULIJ. [14 July]

Alt. of the ☉, merid., mural [Alt. ☉^{lis} merid. Murali]	61 39⅓
Revolving instrument [Volubili]	61 38¾
With the rulers, 4905 [Regulis 4905]	

It was not very clear. [Non erat bene ſerenum.]

DIE 15 JULIJ. [15 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	61 29
Steel instrument [Chalybeo]	61 28⅔
Revolving instrument [Volubili]	61 29⅙
With the rulers, 4941 [Regulis 4941]	

Moderately clear. [Mediocriter ſerenum.]

DIE 16 JULIJ. [16 July]

Merid. altit. of the ☉, mural [Altit. merid. ☉^{lis} Murali]	61 19⅚
Steel instrument [Chalybeo]	61 20
Revolving instrument [Volubili]	61 19½

With the rulers, 4954 [Regulis 4954]

It was quite clear. [Erat bene ſerenum.]

DIE 17 JULIJ. [17 July]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	61 9⅓
Steel instrument [Chalybeo]	61 9⅔
Mural [Murali]	61 9½

With the rulers, 5004 [Regulis 5004]

DIE 18 JULIJ. [18 July]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	60 59⅓
Steel instrument [Chalybeo]	60 59⅙
Mural [Murali]	60 59⅓

DIE 19 JULIJ. [19 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	60 48⅔
Steel instrument [Chalybeo]	60 48⅔
Revolving instrument [Volubili]	60 47⅔

DIE 20 JULIJ. [20 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	60 37⅚
Steel instrument [Chalybeo]	60 37⅔
Revolving instrument [Volubili]	60 37⅓

DIE 22 JULIJ. [22 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	60 14⅓
Steel instrument [Chalybeo]	60 14⅓
Revolving instrument [Volubili]	60 13⅚

The clearness was moderate. [Mediocris fuit ſerenitas.]
DIE 23 JULIJ. [23 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	60 1⅓
Steel instrument [Chalybeo]	60 1
Revolving instrument [Volubili]	60 1

It was not very clear. [Non erat bene ſerenum.]
DIE 25 JULIJ. [25 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	59 36⅔
Steel instrument [Chalybeo]	59 36½
Revolving instrument [Volubili]	59 36⅓

DIE 26 JULIJ. [26 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	59 23⅔
Steel instrument [Chalybeo]	59 23⅚
Revolving instrument [Volubili]	59 23½

It was moderately clear. [Erat mediocriter ſerenum.]
DIE 30 JULIJ. [30 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	58 28⅓
Steel instrument [Chalybeo]	58 28½
Revolving instrument [Volubili]	58 28

It was not very clear. [Non erat bene ſerenum.]
DIE 31 JULIJ. [31 July]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	58 12⅚
Steel instrument [Chalybeo]	58 12⅔
Revolving instrument [Volubili]	58 13

The clearness was moderate. [Mediocris fuit ſerenitas.]
DIE 1 AUGUSTI. [1 August]

Altit. of the ⊙, merid., mural [Altit. ⊙^{lis} merid. Murali]	57 58
Steel instrument [Chalybeo]	57 57½
Revolving instrument [Volubili]	57 57⅓

It was quite clear. [Erat bene ſerenum.]

DIE 5 AUGUSTI. [5 August]

Altit. of the ⊙, merid., mural [Altit. ⊙^{lis} merid. Murali]	56 55
Steel instrument [Chalybeo]	56 55
Revolving instrument [Volubili]	56 55

It was quite clear. [Erat bene ſerenum.]

DIE 6 AUGUSTI. [6 August]

Altit. of the ⊙, merid., mural [Altit. ⊙^{lis} merid. Murali]	56 38⅙
Steel instrument [Chalybeo]	56 38⅓
Revolving instrument [Volubili]	56 38

It was exceptionally clear. [Erat apprime ſerenum.]

DIE 7 AUGUSTI. [7 August]

Altit. of the ⊙, merid., mural [Altit. ⊙^{lis} merid. Murali]	56 21½
Steel instrument [Chalybeo]	56 21½
Revolving instrument [Volubili]	56 21⅔

DIE 8 AUGUSTI. [8 August]

Altit. of the ⊙, merid., mural [Altit. ⊙^{lis} merid. Murali]	56 4⅚
Steel instrument [Chalybeo]	56 4⅔
Revolving instrument [Volubili]	56 4⅚[1]

DIE 10 AUGUSTI. [10 August]

Altit. of the ⊙, merid., mural [Altit. ⊙^{lis} merid. Murali]	55 30
Steel instrument [Chalybeo]	55 30⅙
Revolving instrument [Volubili]	55 29⅚

It was not very clear. [Non erat bene ferenum.]

DIE 12 AUGUSTI. [12 August]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	54 54⅚
Steel instrument [Chalybeo]	54 55
Revolving instrument [Volubili]	54 55

DIE 31 AUGUSTI. [31 August]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	48 33⅔
Steel instrument [Chalybeo]	48 33½
Mural [Murali]	48 33⅓

DIE 3 SEPTEMBRIS. [3 September]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	47 27½
Steel instrument [Chalybeo]	47 27⅓
Mural [Murali]	47 27⅔

DIE 6 SEPTEMBRIS. [6 September]

Altit. of the ☉, merid., revolving instrument [Altit. ☉^{lis} merid. Volubili]	46 22
Steel instrument [Chalybeo]	46 22⅙
Mural [Murali]	46 22

DIE 8 SEPTEMBRIS. [8 September]

Alt. of the ☉, merid., mural [Alt. ☉^{lis} merid. Murali]	45 35⅙
Steel instrument [Chalybeo]	45 35
Revolving instrument [Volubili]	45 35

DIE 21 SEPTEMBRIS. [21 September]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	40 34⅚

Steel instrument [Chalybeo]	40 35⅙
Revolving instrument [Volubili]	40 35

DIE 10 OCTOBRIS. [10 October]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	33 11⅙
Steel instrument [Chalybeo]	33 11
Revolving instrument [Volubili]	33 11

DIE 11 OCTOBRIS. [11 October]

Altit. of the ☉, merid., mural [Altit. ☉^{lis} merid. Murali]	32 48½
Steel instrument [Chalybeo]	32 48⅔
Revolving instrument [Volubili]	32 48⅓

OBSERUATIONES SATURNI. [Observations of Saturn]
DIE 4 MARTIJ. [4 March]

Distance of ♄ from Spica ♍ [Diſtantia ♄ a Spica ♍]	22 24⅔
Repeated [Repetita]	22 24½
Repeated [Repetita]	22 24⅔
Conversely. [Vice verſa.]	
Dist. from the left knee of Ophiuchus [Diſt. a ſiniſtro genu Ophiuchi]	24 54½
Repeated [Repetita]	24 55
Repeated [Repetita]	24 55
Merid. alt. of the southern scale-pan of ♎ [Alt. merid. Lancis auſtr. ♎]	25 35⅙
Merid. alt. of ♄ [Alt. merid. ♄]	27 26⅙

N.B. ♄ had passed the trine △ of the ☉ by only four days, tending toward opposition ☌. [*N.B. ♄ tantum quatriduo exceßerat △ ☉^{lis}, tendens ad ☌.*]

The time can be found from the transit through the meridian, by taking ½ hour before. [*Tempus poteſt inquiri ex tranſitu per meridianum ſumendo ½ hora ante.*]

N.B. In altitudes observed with the quadrant, 2′ must everywhere be added, so that they correspond. [*N.B. In altitudinibus per quadrantem obſeruatis vbique debent addi Minuta 2, vt correſpondeant.*]

DIE 4 APRILIS. [4 April]

Distance of ♄ from Spica ♍ [Diſtantia ♄ a Spica ♍]	20 58½

Repeated [Repetita]	21 0
Repeated [Repetita]	20 59
Repeated [Repetita]	20 59

[1] There is added in codex I: »Up to here the preceding observations have been transcribed.« [Adſcriptum eſt in codice I: »Hucusque obſeruationes antecedentes ſunt tranſcriptæ.«]

Conversely. [Vice verſa.]	
Distance of ♄ from the head of Ophiuchus [Diſtantia ♄ a Capite Ophiuchi]	48 22
Repeated [Repetita]	48 22
Repeated [Repetita]	48 21⅔
Merid. altit. of ♄, revolving instrument [Altit. merid. ♄ Volubili]	28 1⅔
Steel instrument [Chalybeo]	28 3
Mural [Murali]	28 1[1]

The mural was not yet adjusted well enough, so it is no wonder that it gives one or two minutes less than the correct value. [*Muralis non erat ſatis adaptatus adhuc, quare non mirum illum vno vel altero minuto iuſto minus præbere.*]

DIE 6 APRILIS. [6 April]

12ʰ35ᴹ Dist. of ♄ from Spica ♍ [12ʰ35ᴹ Diſt. ♄ a Spica ♍]	20 49½
12 37⅓ Repeated [12 37⅓ Repetita]	20 49½
12 38⅚ The same, repeated [12 38⅚ Eadem repetita]	20 49½
Conversely. [Vice verſa.]	
12 41 Dist. of ♄ from the head of Ophiuchus [12 41 Diſt. ♄ a capite Ophiuchi]	48 26½
12 45 Repeated [12 45 Repetita]	48 26½
12 48 Repeated, exactly the same [12 48 Repetita plane eadem]	48 26½
Afterwards the distance between ☌ and ♄ was taken [Sumebatur poſtea diſtantia inter ☌ & ♄]	54 45
2ʰ45ᴹ Merid. altit. of ♄ [2ʰ45ᴹ Altit. merid. ♄]	
Revolving instrument [Volubili]	28 4⅙
Steel instrument [Chalybeo]	28 4⅙
Mural [Murali]	28 4⅔

To these distances add 1⅔′ everywhere. [Diſtantijs hiſce vbique adde 1⅔′.]

Demonstration of the true place of ♄ from the preceding observations of 6 April. [Veri loci ♄ ex præcedentibus diej 6 Aprilis obſeruationibus demonſtratio.]

Declination of ♄ [Declinatio ♄]	11° 51′ 20″ M.
Right asc. from Spica [Aſc. R. ex Spica]	217 4 47
from the head of Ophiuchus [ex capite Ophiuchi]	217 5 52
limited [limitata]	217 5 19
Corresponding, from the calculation of triangles [Reſp. ex △^{lorum} calculo]	
Longitude [Longitudo]	8 35⅚ ♏
Latitude [Latitudo]	2 42 20 Bor.

DIE 12 APRILIS. [12 April]
N.B. ♄ is approaching the ☌ of the Sun. [*N.B. ♄ appropinquat ☌ Solis.*]

12^{H}27^{M} Dist. between ♄ and Spica ♍ [12^{H}27^{M} Diſt. inter ♄ & Spicam ♍]	20 27
Repeated [Repetita]	20 26½
Repeated [Repetita]	20 27
Conversely. [Vice verſa.]	
12 35 Dist. of ♄ from the head of Ophiuchus [12 35 Diſt. ♄ a cap. Ophiuchi]	48 47
Repeated [Repetita]	48 47
Repeated [Repetita]	48 47
1 0 Merid. altit. of ♄ [1 0 Altit. merid. ♄]	
Revolving instrument [Volubili]	28 12⅓
Steel instrument [Chalybeo]	28 10⅔
Mural, upper pinnule [Murali, pinnac. ſup.]	28 11⅙

DIE 13 APRILIS. [13 April]

	11^{H}24½^{M} Dist. of ♄ from the head of Ophiuchus [11^{H}24½^{M} Diſt. ♄ a cap. Ophiuchi]	48 50
	11 26 Repeated [11 26 Repetita]	48 50
	11 29 Repeated [11 29 Repetita]	48 50
	12 4 Dist. of ♄ from Spica ♍ [12 4 Diſt. ♄ a Spica ♍]	20 23
	12 7 Repeated [12 7 Repetita]	20 22⅔
	12 10⅔ Repeated [12 10⅔ Repetita]	20 23
	12 13 Repeated [12 13 Repetita]	20 23
	12 56 Merid. altit. of ♄, revolving instrument [12 56 Altit. ♄ merid. Volubili]	28 14⅓
	Steel instrument [Chalybeo]	28 12½
Take 28° 13′ [Pone 28° 13′]	Mural [Murali]	28 15

Among clouds [Inter nubes]	Sextant [Sextante]	28 15

DIE 18 APRILIS. [18 April]

11ʰ48ᵐ Dist. of ♄ from Spica ♍ [11ʰ48ᵐ Dist. ♄ a Spica ♍]	19 58
11 50 Repeated [11 50 Repetita]	19 57½
11 51 Repeated [11 51 Repetita]	19 57
11 54 Repeated [11 54 Repetita]	19 57
Conversely. [Vice verſa.]	
11 57 Dist. of ♄ from the head of Ophiuchus [11 57 Dist. ♄ a cap. Ophiuchi]	49 5
11 59 Repeated [11 59 Repetita]	49 5
12 2 The same, repeated [12 2 Eadem repetita]	49 5
Merid. altit. of ♄, mural [Altit. merid. ♄ Murali]	28 20
Steel instrument [Chalybeo]	28 19½
Brass sextant [Sextante orich.]	28 18⅔
Revolving instrument [Volubili]	28 19⅚
True altitude of ♄ [Altitudo vera ♄]	28° 20⅓′
Declination [Declinatio]	11 34 0

DIE 19 APRILIS. [19 April]

11ʰ50ᵐ Dist. of ♄ from Spica ♍ [11ʰ50ᵐ Dist. ♄ a Spica ♍]	19 58⅓
Repeated [Repetita]	19 58½
Repeated [Repetita]	19 58½
Conversely. [Vice verſa.]	
12 0 Dist. of ♄ from the head of Ophiuchus [12 0 Dist. ♄ a cap. Ophiuchi]	49 6⅔
Repeated [Repetita]	49 6⅔
Repeated [Repetita]	49 6⅔
1 43 Merid. altit. of ♄, mural [1 43 Altit. merid. ♄ Murali]	28 21⅓
Steel instrument [Chalybeo]	28 21½
Revolving instrument [Volubili]	28 21½
True altitude [Altitudo vera]	28° 21′ 48″
Declination [Declinatio]	11 32 32 M.

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

DIE 20 APRILIS. [20 April]

Distance of ♄ from Spica ♍ [Diſtantia ♄ a Spica ♍]	19 53⅓
Repeated [Repetita]	19 53
Repeated [Repetita]	19 53⅓
Conversely. [Vice verſa.]	

Distance of ♄ from the head of Ophiuchus [Diſtantia ♄ a capite Ophiuchi]	49 10
Repeated [Repetita]	49 10
The same, repeated [Eadem repetita]	49 10
Meridian altitude of ♄, revolving instrument [Altitudo meridiana ♄ Volubili]	28 21½
Brass sextant [Sextante orich.]	28 20⅓
Mural, upper pinnule [Murali, pinnac. ſuper.]	28 22⅚
True altitude [Altitudo vera]	28° 22′ 58″
Declination [Declinatio]	11 31 22 M.

DIE 26 APRILIS. [26 April]
N.B. ♄ *in* ☌ ☉.

11ʰ40ᵐ Dist. of ♄ from Spica ♍ [11ʰ40ᵐ Diſt. ♄ a Spica ♍]	19 26⅔
11 43 Repeated [11 43 Repetita]	19 27
11 45 The same, repeated [11 45 Eadem repetita]	19 27
Let the distance be kept [*Retineatur diſtantia*]	*19 27*
Conversely. [Vice verſa.]	
11 50 Dist. of ♄ from the head of Ophiuchus [11 50 Diſt. ♄ a cap. Ophiuchi]	49 32
11 52 Repeated [11 52 Repetita]	49 32½
11 55 Repeated [11 55 Repetita]	49 32½
Let the distance be kept [*Retineatur diſtantia*]	*49 32⅔*
12 3 Merid. altit. of ♄, revolving instrument [12 3 Altit. ♄ Merid. Volubili]	28 31½
Steel instrument [Chalybeo]	28 32⅔
Mural [Murali]	28 31⅓

Therefore one may keep[1] [*Poteſt itaque retineri*[1]]

merid. alt. of ♄ [*alt.* ♄ *merid.*]	*28 31½*
alt. of the equator [*alt. æquat.*]	*39 54*
Decl. of ♄*, Mer.* [*Decl.* ♄ *Mer.*]	*11 22½*

For the true place of ♄ from the observations of 19 April. [Pro vero loco ♄ ex 19 diej Aprilis obſeruatis.]

Declination of ♄ [Declinatio ♄]	11° 32′ 32″
Distance from Spica ♍ [Diſtantia a Spica ♍]	19 58
	30
From this, by the doctrine of triangles, the ascensional difference from Spica ♍ is given [Hinc ex △$^{\text{lorum}}$ doctrina datur differentia aſcenſionalis a Spica ♍]	20 7 40 add.
Right ascension of Spica [Aſcenſio Recta Spicæ]	196 4

Right asc. of ♄ from Spica [Aſc. R. ♄ ex Spica]	216 11 40
Conversely. [Vice verſa.]	
Dist. of ♄ from the head of Ophiuchus [Diſt. ♄ a capite Ophiuchi]	49 6 40
Ascens. diff. from the head of Oph. [Diff. aſcenſ. a capite Oph.]	42 54 45
Right asc. of Ophiuchus [Aſc. R. Ophiuchi]	259 5
Right asc. of ♄ [Aſc. R. ♄ni]	216 10 15
limited [limitata]	216 10 57
Corresponding longitude [Reſp. Longitudo]	7° 39′ 12″ ♏
Latitude [Latitudo]	2 43 Borea

Ad 20 Aprilis. [For 20 April]

Declination of ♄ [Declinatio ♄]	11 31 22
Dist. of ♄ from Spica [Diſt. ♄ a Spica]	19 53 30
From this the ascens. diff. [Hinc diff. aſcenſ.]	20 3 40
Right asc. of Spica [Aſc. R. Spicæ]	196 4
Right asc. of ♄ from Spica [Aſc. R. ♄ ex Spica]	216 7 40
Conversely. [Vice verſa.]	
Dist. from the head of Ophiuchus [Diſt. a cap. Ophiuchi]	49 10
Ascens. diff. [Diff. aſcenſ.]	42 59 17
Right asc. of ♄ from Ophiuchus [Aſc. R. ♄ ex Ophiucho]	216 5 43
limited [limitata]	216 6 41
True place of ♄ [Verus locus ♄]	7° 34′ 43″ ♏
Latitude [Latitudo]	2 42 45 B.

Ad 26 Aprilis. [For 26 April]

Declination of ♄ [Declinatio ♄]	11 22 30 M.
Distance from Spica [Diſtantia a Spica]	19 23
Ascensional difference [Differentia aſcenſ.]	19 33
Right asc. of ♄ from Spica [Aſc. R. ♄ ex Spica]	215 37
Conversely. [Vice verſa.]	
Dist. of ♄ from the head of Ophiuchus [Diſt. ♄ a cap. Ophiuchi]	49 28½
Ascens. diff. [Diff. aſcenſ.]	43 25⅔
Right asc. of ♄ from Ophiuchus [Aſc. R. ♄ ex Ophiucho]	215 39 22
limited [limitata]	215 38 10
Corresponding true place of ♄ [Reſp. verus locus ♄]	7 5 36 ♏
Latitude [Latitudo]	2 42 10 B.

DIE 27 APRILIS. [27 April]

Merid. altit. of ♄, revolving instrument [Altit. merid. ♄ Volubili]	28 33
Steel instrument [Chalybeo]	28 34¾
Mural [Murali]	28 32½
Distance of ♄ from Spica [Diſtantia ♄ a Spica]	19 20⅔
The same, repeated [Eadem repetita]	19 20⅔
The same, repeated [Eadem repetita]	19 20⅔
Merid. altit. of ♄, revolving instr. [Altit. ♄ merid. Volub.]	28 33
Aberration [Aberratio]	30″
True altit. [Vera altit.]	28 32 30
Alt. of the equator [Alt. æquat.]	39 54
Declination of ♄ [Declinatio ♄]	11 21 30

DIE 28 APRILIS. [28 April]

10ʰ24ᵐ Dist. of ♄ from Spica ♍ [10ʰ24ᵐ Diſt. ♄ a Spica ♍]	19 17
Corrected [Correcta]	19 18
10 26 Dist. repeated [10 26 Diſt. repetita]	19 17
10 28 The same, repeated [10 28 Eadem repetita]	19 17
10 31 Dist. of ♄ from the 3rd of the wing of ♍ [10 31 Diſt. ♄ a 3 alæ ♍]	32 20
10 33 Dist. repeated [10 33 Diſt. repetita]	32 20½
10 35 The same, repeated [10 35 Eadem repetita]	32 20½
Corrected [Correcta]	32 21½

[1] Cf. below, among the observations of the fixed stars for this day. [[1] Cfr. infra inter obſeruationes fixarum hujus diei.]

N.B. ♄ *in* ☍ *of the* ☉. [*N.B.* ♄ *in* ☍ ☉*lis*.]

11 1 Dist. of ♄ from the northern scale-pan [11 1 Diſt. ♄ a lance Borea]	8 57
11 3 Repeated [11 3 Repetita]	8 57
11 6 The same, repeated [11 6 Eadem repetita]	8 57
Corrected [Correcta]	8 57¾
11 10 Dist. of ♄ from the head of Ophiuchus [11 10 Diſt. ♄ a cap. Ophiuchi]	49 32½
11 12 Repeated [11 12 Repetita]	49 32½
11 15 Repeated [11 15 Repetita]	49 32½
Corrected [Correcta]	49 34
12 1 Merid. altit. of ♄, revolving instrument [12 1 Altit. merid. ♄ Volubili]	28 34
Steel instrument [Chalybeo]	28 34⅚
Mural [Murali]	28 33⅚
To be kept [*Retineatur*]	*28 34.*

For the true place of ♄ for 28 April. [Pro vero loco ♄ ad 28 Aprilis.]

Declination of ♄ [Declinatio ♄]	11 20 15 auſt.
Dist. from Spica ♍ [Diſt. a Spica ♍]	19 18
Ascens. diff. [Diff. aſcenſ.]	19 28¼ add.
Right asc. from Spica [Aſc. R. ex Spica]	215 32¼
Conversely. [Vice verſa.]	
Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	8 57¾
Angle of the ascensional difference [Ang. diff. aſcenſ.]	8 23 ſub.
Right asc. of the northern scale-pan [Aſc. R. lancis Boreæ]	223 54 30
Right asc. of ♄ from the northern scale-pan [Aſc. R. ♄ ex lance Bor.]	215 31 30
hence, limited [hinc limitata]	215 31 52
Again. [Rurſus.]	
Dist. of ♄ from the third of the wing of ♍ [Diſt. ♄ a tertia alæ ♍]	32 21 30
Angle of the ascensional difference [Ang. diff. aſcenſ.]	30 11 42 add.
Right asc. of the 3rd of the wing [Aſc. R. 3^{tiæ} alæ]	185 20 12
Right asc. of ♄ from the 3rd of the wing [Aſc. R. ♄ ex 3^{tia} alæ]	215 31 54
Conversely. [Vice verſa.]	
Dist. of ♄ from the head of Ophiuchus [Diſt. ♄ a cap. Ophiuchi]	49 34
Ascens. differ. [Differ. Aſcenſ.]	43 33 13 ſub.
Right asc. of ♄ from the head of Oph. [Aſc. R. ♄ ex capite Oph.]	215 31 47
limited [limitata]	215 31 50
If therefore we assume the right asc. of ♄ at H. 12 completed [Si ergo Aſc. R. ♄ ad H. 12 completam aßumpſerimus]	215 31 50
we shall err imperceptibly. [inſenſibiliter aberrabimus.]	
Therefore the longitude of ♄ is [Eſt ergo Longitudo ♄]	6°58′54″ ♏
Latitude [Latitudo]	2 42 15 B.

N.B. Derivation of the observed place of ♄ in ☍ of the simple ☉. [N.B. Deductio loci obſeruati ♄ in ☍ ſimplicis ☉^{lis}.]

Simple ☉ at Hour 12 [Simplex ☉^{lis} ad Horam 12]	
compl.	1^{s} 6°52′ 1″
♄	7 6 58 54
Difference [Differentia]	6 53
Daily motion of ♄ [Motus diurnus ♄]	4⅚
of the ☉ [☉^{lis}]	59 8
Combined [Compoſit.]	1 3 58

Hence: 1° 3′ 58″ gives 24^{H}; what does 6′53″ give? Corresponding: 2^{H}34^{M}. [Hinc 1° 3′ 58″ dat 24^{H}, quid 6′53″? Reſp. 2^{H}34^{M}.]

Therefore the ☍ of ♄ with the simple ☉ was on Apr. 17, 2^{H}34^{M} after midnight, in civil time and old style, or H. 2 M. 24½ in equated time, ♄ being in ♏ 6° 58⅓′ and the simple ☉ in ♉ 6° 58′ 21″. [Fuit ergo ☍^{tio} ♄ cum ſimplici ☉^{lis} Apr.

17 2ᴴ34ᴹ poſt mediam noctem, tempore ciuili & ſtylo veteri, ſeu H. 2 M. 24½ tempore æquato, ♄ in ♏ 6° 58⅓′, ☉^{lis} ſimplici in ♉ 6° 58′ 21″ exiſtente.]

DIE 30 APRILIS. [30 April]

9ᴴ5ᴹ Dist. of ♄ from the bright star of the Crown [9ᴴ5ᴹ Diſt. ♄ a luc. Coronæ]	41 38
9 7 The same, repeated [9 7 Eadem repetita]	41 38
9 10 The same, repeated [9 10 Eadem repetita]	41 38

N.B. ♄ and the bright star of the Crown have nearly the same longitude; if therefore we add this distance to the complement of the latter's latitude, we shall have the complement of the latitude of ♄. [N.B. Eadem ferme ♄ & lucidæ Coronæ eſt longitudo, ſi ergo diſtantiam hanc illius latitudinis complemento addiderimus, latitudinis ♄ habebimus complementum]

Distance [Diſtantia]	41 38
Aberration of the instr. with refr. [Aberratio inſtr. cum refr.]	2
	41 40
Compl. of the lat. of the bright star of the Crown [Compl. lat. luc. Cor.]	45 37
	87 17
Latitude of ♄ [Latitudo ♄]	2 43
11 40 Merid. altit. of ♄, revolving instrument [11 40 Altit. ♄ merid. Volubili]	28
	36⅙
Steel instrument [Chalybeo]	28 38½
Mural, upper pinnule [Mur. pinnac. ſuper.]	28
	36⅔
Brass sextant [Sextante orichal.]	28 35
12 5 Dist. of ♄ from Spica ♍ [12 5 Diſt. ♄ a Spica ♍]	19 5⅓
Repeated [Repetita]	19 5⅓
Repeated [Repetita]	19 5⅓

Nothing further could be obtained because of approaching clouds. [Nihil vlterius propter nubes aduentantes obtinere licuit.]

DIE 1 MAIJ. [1 May]

11ᴴ2ᴹ Dist. of ♄ from Spica ♍ [11ᴴ2ᴹ Diſt. ♄ a Spica ♍]	19 3½
11 5 The same, repeated [11 5 Eadem repetita]	19 3½
11 7 The same, repeated [11 7 Eadem repetita]	19 3½
Corrected [Correcta]	19 4½
11 12 Dist. of ♄ from the northern scale-pan [11 12 Diſt. ♄ a lance Borea]	9 7½
11 14 The same, repeated [11 14 Eadem repetita]	9 7½
11 17 The same, repeated [11 17 Eadem repetita]	9 7½
True [Vera]	9 8¼
11 57 Merid. alt. of ♄, mural, [11 57 Alt. mer. ♄ Murali,]	

upper [ſuperiori]	28 36½[1]
lower [inferiori]	28 38⅓

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

Revolving instrument [Volubili]	28 38
Steel instrument [Chalybeo]	28 39
To be kept [Retineatur]	28 38½
Declination [Declinatio]	11 16⅓

For the true place of ♄. [Pro vero loco ♄.]

Declination of ♄ [Declinatio ♄ⁱ]	11 16 10 auſt.
Distance from Spica ♍ [Diſtantia a Spica ♍]	19 4 30
Angle of the ascensional difference [Angulus diff. aſcenſ.]	19 14 49 add.
Right ascension of ♄ [Aſc. Recta ♄]	215 18 49
Conversely. [Vice verſa.]	
Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	9 8¼
Angle of the ascensional difference [Angulus diff. aſcenſ.]	8 35 36
Right ascension of ♄ [Aſc. Recta ♄]	215 19
limited [limitata]	215 18 54
Corresponding longitude [Reſp. Longitudo]	6°45′37″ ♏
Latitude [Latitudo]	2 42 Borea

DIE 2 MAIJ. [2 May]

10ʰ20ᵐ Distance of ♄ from Spica ♍ [10ʰ20ᵐ Diſtantia ♄ a Spica ♍]	18 59¾
10 23 The same, repeated [10 23 Eadem repetita]	18 59¾
10 25 The same, repeated [10 25 Eadem repetita]	18 59¾
Corrected [Correcta]	19 0¾
Conversely. [Vice verſa.]	
10 31 Dist. of ♄ from the northern scale-pan [10 31 Diſt. ♄ a lance Borea]	9 11
10 33 The same, repeated [10 33 Eadem repetita]	9 11
10 35 The same, repeated [10 35 Eadem repetita]	9 11
Corrected [Correcta]	9 12
11 31 Merid. altit. of ♄, revolving instr. [11 31 Altit. ♄ merid. Volub.]	28 42⅙
Brass sextant [Sextante orichalcico]	28 38¾
Steel instrument [Chalybeo]	28 39⅚
Mural, upper [Murali, ſuperiori]	28 38¾
lower [inferiori]	28 40
Keep [Retine]	28 40
Declination [Declinatio]	11 14⅙

DIE 3 MAIJ. [3 May]

10ʰ29ᴹ Dist. of ♄ from Spica ♍ [10ʰ29ᴹ Diſt. ♄ a Spica ♍]	18 56½
10 31 Repeated [10 31 Repetita]	18 56½
10 36 Repeated [10 36 Repetita]	18 56½
Conversely. [Vice verſa.]	
10 40 Dist. of ♄ from the northern scale-pan [10 40 Diſt. ♄ a lance Borea]	9 16⅔
10 43 The same, repeated [10 43 Eadem repetita]	9 16⅔
10 45 The same, repeated [10 45 Eadem repetita]	9 16⅔
11 44 Merid. altit. of ♄, revolving instrument [11 44 Altit. ♄ merid. Volubili]	28 42⅓
Steel instrument [Chalybeo]	28 43⅓
Mural, upper pinnule [Murali pinn. ſup.]	28 40⅔
lower [inferiori]	28 41⅔

DIE 28 MAIJ. [28 May]

9ʰ25ᴹ Distance of ♄ from Spica ♍ [9ʰ25ᴹ Diſtantia ♄ a Spica ♍]	18 16
Repeated [Repetita]	18 15½
Repeated [Repetita]	18 15½
Corrected [Correcta]	18 16½
Conversely. [Vice verſa.]	
9 28 Dist. of ♄ from the northern scale-pan [9 28 Diſt. ♄ a lance Borea]	9 41
Repeated [Repetita]	9 39
Repeated [Repetita]	9 39
Corrected [Correcta]	9 40
9 35 Merid. altit. of ♄, revolving instrument [9 35 Altit. merid. ♄ Volubili]	29 11⅔
Steel instrument [Chalybeo]	29 10½
Mural, upper pinnule [Murali pinn. ſuper.]	29 11⅓
lower [inferiori]	29 11½

DIE 29 JUNIJ. [29 June]

In the evening ♄ was observed near the △ of the ☉. [Veſperi obſeruabatur ♄ prope △ ☉ˡⁱˢ.]

N.B. ♄ near the second station. [*N.B. ♄ iuxta ſtationem alteram.*]

10ʰ35ᴹ Dist. of ♄ from Arcturus [10ʰ35ᴹ Diſt. ♄ ab Arcturo]	31 52½
Repeated [Repetita]	31 53

Repeated [Repetita]	31 52½
10 41 from the left knee of Ophiuchus [10 41 a ſiniſtro genu Ophiuchi]	30 55
Repeated [Repetita]	30 55
10 44 Dist. of ♄ from the northern scale-pan [10 44 Diſt. ♄ a lance Borea]	11 39½
Repeated [Repetita]	11 39½

Conversely, from Spica we could not, because of clouds lying there about the horizon. [Vice verſa a Spica non potuimus propter nubes ibidem circa Horizontem verſantes.]

Demonstration of the true place of ♄ from the preceding observations. [Veri loci ♄ ex præcedentibus obſeruationibus demonſtratio.]

	Longit.	Differ.	Latit. B.	Differ.
From observation [Ex obſeru.]	♏ 3°48′14″		2°27′22″	
Prutenic calculation [Calc. Prutenicus]	4 6 30	18′16″P.	2 50	23′P.
Alfonsine [Alphonſ.]	3 50	2 P.	2 42	15 P.

According to our limitation there results: [Iuxta noſtram limitationem prouenit:]

Longitude [Longitudo]	3°45′ 0″ ♏
Latitude [Latitudo]	2 27 0 Borea.

DIE 3 JULIJ, VESPERI. [3 July, evening]

Distance of ♄ from the northern scale-pan [Diſtantia ♄ a lance Borea]	11 41½
The same dist., repeated [Eadem diſt. repetita]	11 41½
The same, repeated [Eadem repetita]	11 41½
Corrected [Correcta]	11 42¾
Dist. of ♄ from the left knee of Ophiuchus [Diſt. ♄ a ſin. genu Ophiuchi]	30 58
Repeated [Repetita]	30 57⅔
Repeated [Repetita]	30 58
The same, repeated [Eadem repetita]	30 58
Corrected [Correcta]	30 59¼

Distance of ♄ from Arcturus [Diſtantia ♄ ab Arcturo]	31 52
Repeated [Repetita]	31 52
Repeated [Repetita]	31 52

Corrected [Correcta]	31 53¼
Afterwards the distance of ♃ and ♄ was taken, when the head of Ophiuchus was almost in the meridian, and their distance was [Capiebatur poſtea diſtantia ♃ & ♄, cum caput Ophiuchi ferme eßet in meridiano, eratque illorum diſtantia]	47 11
The same dist. of ♄ and ♃, repeated [Eadem diſt. ♄ & ♃ repetita]	47 11
The same, repeated [Eadem repetita]	47 11
Corrected [Correcta]	47 12¼

Calculation of ♄ from the preceding observation. [Calculus ♄ ex antecedente obſeruatione.]

Latitude [Latitudo]	2°26′34″	Sept. from Arcturus [Sept. ex Arcturo]
	2 26 34	— from the knee of Oph. [— ex genu Oph.]
True place of ♄ [Verus locus ♄]	3 46 35 ♏.	

DIE 4 JULIJ, VESPERI. [4 July, evening]

Distance of ♄ and ♃ [Diſtantia ♄ & ♃]	47 0½
Repeated twice [Repetita bis]	47 0½
Distance of ♄ from the northern scale-pan [Diſtantia ♄ a lance Borea]	11 40
The same, repeated [Eadem repetita]	11 40
The same, repeated [Eadem repetita]	11 40
Dist. of ♄ from the left knee of Ophiuchus [Diſt. ♄ a ſin. genu Ophiuchi]	30 56
Repeated [Repetita]	30 56
Repeated [Repetita]	30 56
Distance of ♄ from Arcturus [Diſtantia ♄ ab Arcturo]	31 52¾
Repeated [Repetita]	31 52¾
Repeated [Repetita]	31 52¾

Calculation of ♄ from the observation made on 4 July. [Calculus ♄ ex obſeruatione 4 Julij facta.]

Latitude [Latitudo]	2°26′32″	from Arcturus [ex Arcturo]

The same latitude also from the knee of Oph. [etiam eadem latitudo ex genu Oph.]

True place of ♄ [Verus locus ♄]	3 48 19 ♏	2 26 32 S.
Calculation [Calculus]	3 31 41	2 24 40 S.
Differ.	16 38 minus	1 52 minus

DIE 12 JULIJ, VESPERI. [12 July, evening]

$9^{H}29^{M}$ Dist. of ♄ from the northern scale-pan [$9^{H}29^{M}$ Dist. ♄ a lance Borea]	11 40⅓
9 31 Dist. repeated [9 31 Dist. repetita]	11 40⅔
9 33 Repeated [9 33 Repetita]	11 40⅓
Corrected [Correcta]	11 41 35
9 37 Dist. of ♄ from the left knee of Oph. [9 37 Dist. ♄ a fin. genu Oph.]	30 56½
9 39 Repeated [9 39 Repetita]	30 56⅙
9 41 Repeated [9 41 Repetita]	30 56
9 43 The same, repeated [9 43 Eadem repetita]	30 56
Corrected [Correcta]	30 57 15

For the latitude [Pro latitudine]

9 50 Dist. of ♄ from Arcturus [9 50 Dist. ♄ ab Arcturo]	31 52⅓
9 52 Repeated [9 52 Repetita]	31 52⅔
9 55 Repeated [9 55 Repetita]	31 52⅔
Corrected [Correcta]	31 53 45

DIE 13 JULIJ, VESPERI. [13 July, evening]

$8^{H}57^{M}$ Distance of ♄ from Arcturus [$8^{H}57^{M}$ Distantia ♄ ab Arcturo]	31 53½
8 58 Repeated [8 58 Repetita]	31 53½
9 1 The same, repeated [9 1 Eadem repetita]	31 53½
Corrected [Correcta]	31 54¾
9 4 Distance from the northern scale-pan [9 4 Distantia a lance Borea]	11 46⅔
9 5½ Repeated [9 5½ Repetita]	11 41
9 7 Repeated [9 7 Repetita]	11 40½
9 9 Repeated [9 9 Repetita]	11 40½
Repeated dist.[1] [Repet. dist.[1]]	11 41¾
9 12 Dist. of ♄ from the left knee of Oph. [9 12 Dist. ♄ a fin. genu Oph.]	30 52⅓
9 14 Repeated [9 14 Repetita]	30 56⅓
9 16 Repeated [9 16 Repetita]	30 56⅓
Corrected [Correcta]	30 57½

DIE 16 JULIJ, VESPERI. [16 July, evening]

9ᴴ25ᴹ Distance of ♄ from ♃ [9ᴴ25ᴹ Diſtantia ♄ a ♃]	45 15
9 27 Repeated [9 27 Repetita]	45 15
9 29 Repeated [9 29 Repetita]	45 15
Corrected [Correcta]	45 18
The altitude of ♃ was [Erat altitudo ♃]	9 12
9 32 Dist. of ♄ from Arcturus [9 32 Diſt. ♄ ab Arcturo]	32 0
9 34 Repeated [9 34 Repetita]	32 0
9 36 Repeated [9 36 Repetita]	32 0
Corrected [Correcta]	32 1¼
9 39 Dist. of ♄ from the northern scale-pan [9 39 Diſt. ♄ a lance Borea]	11 42½
9 41 Repeated [9 41 Repetita]	11 41½
9 43 Repeated [9 43 Repetita]	11 41½
Limited distance [Limitata diſtantia]	11 42¾
9 45 Dist. of ♄ from the left knee of Oph. [9 45 Diſt. ♄ a ſin. genu Oph.]	30 55
9 48 Repeated [9 48 Repetita]	30 55
9 50 Repeated [9 50 Repetita]	30 55
Limited distance [Limitata diſtantia]	30 56¼

Hence there results [Hinc prouenit]

		Our calculation [Calculus noſter]	Diff.
Place of ♄ [Locus ♄]	3°50¾′ ♏	3°43′23″	7′22″min.
Latitude [Latitudo]	2 20 12 S.	2 19 26	46 min.

DIE 18 JULIJ. [18 July]

Distance of ♄ from ♃ [Diſtantia ♄ a ♃]	45 0
Repeated twice [Repetita bis]	45 0
Corrected [Correcta]	45 3
The altitude of ♃ was [Erat altit. ♃]	11 20

[1] Thus, but it should probably be »retineatur« [to be kept] or »correcta« [corrected]. [[1] Sic, ſed probabiliter debet eße »retineatur« vel »correcta«.]

Dist. of ♄ from the northern scale-pan [Diſt. ♄ a lance Borea]	11 41½
Repeated [Repetita]	11 41½
Repeated [Repetita]	11 41½
Corrected [Correcta]	11 42¾
Distance of ♄ from Arcturus [Diſtantia ♄ ab Arcturo]	31 59½
Repeated [Repetita]	31 59½
Repeated [Repetita]	31 59½
Corrected [Correcta]	32 0¾

Dist. of ♄ from the left knee of Ophiuchus [Diſt. ♄ a ſin. genu Ophiuchi]	30 55½
Repeated [Repetita]	30 55½
Repeated [Repetita]	30 55½
Corrected [Correcta]	30 56¾

Observations of Jupiter [OBSERUATIONES IOUIS.]
DIE 6 JANUARIJ. [6 January]
N.B. ♃ in trine with the Sun, stationary. [N.B. ♃ in △no Solis ſtationarius.]

At H. 4½ the merid. altit. of ♃ was observed with the revolving instrument [H. 4½ obſeruabatur altit. ♃ merid. Volubili]	44 6⅙
Then the distance of ♃ from the heart of ♌ [Deinde diſtantia ♃ a corde ♌]	27 57⅔
Repeated [Repetita]	27 57½
Repeated [Repetita]	27 57⅔
Corrected [Correcte]	27 55⅔
Conversely. [Vice verſa.]	
Distance of ♃ from Spica ♍ [Diſtantia ♃ a Spica ♍]	26 16
Repeated [Repetita]	26 16
Corrected [Correcte]	26 14

A sudden cloud then interrupted the observations. [Subita tum nebula obſeruationes interrumpebat.]

Declination of ♃ [Declinatio ♃]	4° 9′10″B.
Right asc. of ♃ from Regulus [Aſc. R. ♃ ex Regulo]	173 18 6
from Spica [ex Spica]	173 18 32
limited [limitata]	173 18 20

		Calc. Prut.	Alph.
Long.	22 12 40 ♍	22 3 ♍	20 43 ♍
Latit.	1 8 45 B.	1 15 B.	1 29 B.
Everhartus's Ephem. have [Euerharti Ephem. habent]			21 49 ♍ 1 20 B.

From these it is clear that the longitude of ♃ exceeds both calculations, the Prutenic as well as the Alfonsine, although here it does not exceed the Prutenic by more than a sixth part of a degree; from the Alfonsine it is off by G. 1½, while it also exceeds Everhartus's modern and fictitious calculation by M. 24 — from which it is clear what

kind of restoration that is, as also often elsewhere. [*Ex quibus liquet longitudinem* ♃ *excedere vtrumque calculum tam Prutenicum quam Alphonſinum, licet a Prutenico hoc loco non abundet vltra ſextam gradus partem, ab Alphonſino abeſt G. 1½, cum & Euerharti neotericum & fictitium calculum excedat M. 24, vnde liquet qualis ea ſit reſtitutio, vti & alias ſæpius.*]

Likewise in latitude all three calculations are in excess: Copernicus by M. 6, Alfonso by M. 20, and this Everhartus by M^tis 11, as if midway between the others. [*Sic in latitudine abundant omnes tres calculi, Copernicus M. 6, Alphonſus M. 20 & iſte Euerhartus M^tis 11, tanquam medius inter reliquos.*]

From this the annual digression of ♃ *from the Sun, which Copernicus calls the parallax of the Earth's orb, can be examined. This same is to be investigated by several observations.* [*Hinc poterit examinari digreßio* ♃ *annua a Sole, quam Copernicus parallaxin orbis terræ vocat. Hæc eadem pluribus obſeruationibus exploranda.*]

Here the Prutenic calculation comes altogether closest, as regards both longitude and latitude, although it too does not hit the mark precisely enough. [*Omnino proxime accedit hoc loco calculus Prutenicus, tam quoad longitudinem quam latitudinem, licet & is non ſatis præciſe ſcopum attingat.*]

DIE 9 JANUARIJ. [9 January]

Distance of ♃ from the heart of ♌ [Diſtantia ♃ a corde ♌]	28 0⅔
Repeated twice [Repetita bis]	28 0⅔
Corrected [Correcte]	27 58⅔
Conversely. [Vice verſa.]	
Distance of ♃ from Spica ♍ [Diſtantia ♃ a Spica ♍]	26 19
Repeated twice [Repetita bis]	26 19
Corrected [Correcte]	26 17
Meridian altitude of ♃ [Altitudo meridiana ♃]	44 14⅔

Moreover ♃ was on the straight line drawn through the heart of ♌ and the 3rd of the southern wing of ♍, except that it deviated from this toward the south by about the diameter of its own body. [Erat autem ♃ in ea linea recta, quæ ducitur per cor ♌ & 3^tiam auſtrinæ alæ ♍, niſi quod per diametrum ferme ſui corporis ab hac ad auſtrum declinabat.]

Conversely, it was also on a straight line with Arcturus and Vindemiatrix. [Vice verſa erat etiam in linea recta cum Arcturo & Vindemiatrice.]

N. B. It was not possible to take more observations from the sky in the month of January, as also in the following February, because of the unsuitability of the place in which I was still living at Prague. But after His Imperial Majesty had generously bought the Curtian house for my use, and the widow living in it had been satisfied, and I had moved into it on 25 February in the morning, at dawn, the following were observed, with the instruments set up that could be arranged promptly. [N. B. Plures obſeruationes menſe Januario vti & Februario ſequente cœlitus deſumere non licuit ob loci incommoditatem in quo Pragæ adhuc habitaui. Verum poſtquam Cæſarea Ma^ſtas ædes Curtianas in meas vſus

liberaliter emißet & viduæ eas inhabitanti ſatisfactum eßet atque in eas die 25 Februarij mane in Aurora migraſſem, adaptatis inſtrumentis, quæ mature diſponi poterant, ſequentia obſeruata ſunt.]

MEDIA NOCTE PRÆCEDENTE CALENDAS MARTIJ. [At midnight preceding the Kalends (1st) of March]

Distance of ♃ from the heart of ♌ [Diſtantia ♃ a corde ♌]	24 2^1
Repeated [Repetita]	24 0
Repeated [Repetita]	23 59
Repeated among clouds [Repetita inter nubes]	23 59
Put [*Pone*]	*23 59½*
Corrected [Correcte]	23 57
Conversely. [Vice verſa.]	
The dist. of ♃ from Spica ♍ was taken [Capiebatur diſt. ♃ a Spica ♍]	30 17½
Repeated [Repetita]	30 18
Repeated [Repetita]	30 19
Repeated among clouds [Repetita inter nubes]	30 19½
Put [*Pone*]	*30 18½*
Corrected [Correcte]	30 16

This variation and discrepancy in the observations was caused by two hindrances: first, the useless and excessive height of the pedestal; then also the mobility of the fork from which the sextant hangs. A remedy must be applied to these, if the intention is to obtain anything certain in future. [Varietatem hanc & diſcrepantiam obſeruationum cauſabantur duo impedimenta, primo inutilis & nimia altitudo pedeſtalis, tum etiam furcæ, cui ſextans appenditur, mobilitas, quibus medelam adhibere oportet, ſi quid certi in poſterum obtinere animus eſt.]

Meridian altitude of ♃ [Altitudo meridiana ♃]		
With the quadrant [Quadrante]	46 2⅛	
With the sextant [Sextante]	46 5 *better* [*melior*]	

Then rather dense clouds suddenly arose, which prevented the fixed stars from being observed in the meridian. [Oboriebantur tum ſubito nubes denſiuſculæ, quæ fixas impediebant in meridiano obſeruari.]

Demonstration of the true place of ♃ from the preceding observations. [Veri loci ♃ ex præcedentibus obſeruationibus demonſtratio.]

Declination of ♃ [Declinatio ♃]	6° 6′50″B.
Right asc. from Regulus [Aſc. Recta ex Regulo]	169 49 44
from Spica [ex Spica]	169 43 11

limited [limitata]	169 46½
Corresponding, at hour 11.30′, longit. [Reſp. Hora 11.30′ Longit.]	18 12½ ♍
Latit.	1 33½ Mer.

Differ. of the calculation [Differ. calculi]	Longit.	Latit.
Of Copernicus [Copernici]	5′30″plus	0′ 0″
Of Alfonso [Alphonſi]	1°35½′minus	13 30 plus

N.B. Since from the altitude of the Sun observed on the same day, which ought to have been 32° 5′ 14″, it is gathered that the quadrant gave altitudes 3′ smaller than correct, these have been added to the altitude of ♃, and it is thus emended: 46° 5⅓′. [N.B. Quoniam ex altitudine ☉^{lis} eodem die obſeruata, quæ debuit eße 32° 5′ 14″, colligitur quadrantem 3′ minores iuſto præbuiße altitudines, ſunt ea ad altitudinem ♃ addita & eſt ea ſic emendata 46° 5⅓′.]

Declination [Declinatio]	6 9 50
Right asc. from the heart of ♌ [Aſc. Recta ex corde ♌]	169 48 10
from Spica [ex Spica]	169 47 50
limited [limitata]	169 48
Corresponding longitude [Reſp. Longitudo]	18 18 49 ♍
Latitude [Latitudo]	1 36 54M.

Differ. of the calculation [Differ. calculi]	Longit.	Latit.
Of Copernicus [Copernici]	49″minus	3⅖′ minus
Of Alfonso [Alphonſi]	1°41⅝′minus	10′ plus

N.B. Use the preceding calculation instead; for this one, compared with the following ones, shows too great a daily motion. The latitude, too, does not agree with the following ones. [N.B. Vtere potius præcedenti calculo, hic enim ad ſequentia collatus motum diurnum nimis magnum exhibet. Latitudo etiam ſequentibus non correſpondet.]

DIE 3 MARTIJ. [3 March]

Distance of ♃ from the heart of ♌ [Diſtantia ♃ a corde ♌]	23 34
Repeated [Repetita]	23 35½
Repeated [Repetita]	23 34
Conversely. [Vice verſa.]	
Distance of ♃ from Spica ♍ [Diſtantia ♃ a Spica ♍]	30 42½
Repeated twice [Repetita bis]	30 42½

Meridian altitude of ♃ [Altitudo meridiana ♃]	46 9⅚

DIE 4 MARTIJ. [4 March]
N.B. ♃ *near opposition of the Sun.* [*N.B.* ♃ *iuxta* ☍ ☉^{lis}.]

Distance of ♃ from the heart of ☋ [Diſtantia ♃ a corde ☋]	23 25
Repeated twice [Repetita bis]	23 25½
Distance of ♃ from the bright star of the neck [Diſtantia ♃ a lucida Ceruicis]	24 39½
Repeated twice [Repetita bis]	24 40
Distance of ♃ from the 3rd of the wing of ♍ [Diſtantia ♃ a 3^{tia} alæ ♍]	17 0
Repeated twice [Repetita bis]	17 0⅔
Merid. altit. of ♃ [Altit. ♃ merid.]	
With the revolving quadrant [Quadr. Volubili]	46 11⅙
With the brass sextant [Sextante orich.]	46 13
Dist. of ♃ from Spica ♍ [Diſt. ♃ a Spica ♍]	30 49½
Repeated twice [Repetita bis]	30 50

Analysis of the preceding observations. On 3 March. [Præcedentium obſeruationum analyſis. Die 3 Martij.]

Declination of ♃ [Declinatio ♃]	6°14′20″
Declination of the heart of ☋ *at this time* [*Cordis* ☋ *declinatio hoc tempore*]	*13 53½*
Right asc. from the heart of ☋ [Aſc. Recta ex corde ☋]	169 22 39
from Spica [ex Spica]	169 22 10
limited [limitata]	169 22 30
H. 11.30 Longitude [H. 11.30 Longitudo]	17 47 30 ♍
Latitude [Latitudo]	1 31 4 B.

[1] Struck through with lines. [[1] Lineis inducta.]
For 4 March. [Ad diem 4 Martij.]

Declination of ♃ [Declinatio ♃]	6°17′40″
Dist. from the heart of ☋ [Diſt. a corde ☋]	23 23 10
from the third of the wing of ♍ [a tertia alæ ♍]	16 58⅓

Hence there results, as in the preceding: [Hinc prouenit iuxta præcedens]

Right asc. of ♃ from the heart of ☋ [Aſc. R. ♃ ex corde ☋]	169 14 44
from the 3rd of the wing [ex 3^{tia} alæ]	169 13 50

limited [limitata]	169 14 17

Again. [Rurſus.]

Dist. from the bright star of the neck of ♌ [Diſt. a lucida colli ♌]	24 37⅔
from Spica ♍ [a Spica ♍]	30 47⅔
Hence right asc. of ♃ [Hinc Aſc. R. ♃]	
from the bright star of the neck [ex luc. colli]	169 11 55
from Spica [ex Spica]	169 15 37
hence limited [hinc limitata]	169 13 46
Right asc. limited from all sides [Aſc. R. vndique limitata]	169 14
Corresponding, H. 11.30, longit. of ♃ [Reſp. H. 11.30 Longit. ♃]	17 38 30 ♍
Latit.	1 30 50 Bor.

Reduction of the observed place of ♃ to the opposition of the simple Sun. [Diductio loci obſeruati ♃ in oppoſitum ſimplicis ☉lis.]

On 4 March, at H. 11 M. 30 of equated time, under the longitude 35°, the longitude of ♃ ascertained from the observations was 17° 39′ ♍, latit. 1° 31′ Bor. At the same time the simple place of the Sun was 12 38 45 ♓, differ. 5° 0′ 15″. The daily motion of ♃ about 8′. Hence: 1° 7′ 8″ give 1′; what 5° 0′ 15″? [Die 4 Martij H. 11 M. 30 tempore æquato, fuit ſub longitudine 35° depre-henſa ex obſeruationibus ♃ Longit. 17° 39′ ♍, Latit. 1° 31′ Bor. Eodem tempore fuit locus ☉is ſimplex 12 38 45 ♓, differ. 5° 0′ 15″. Motus diurnus ♃ 8′ fere. Hinc 1° 7′ 8″ dant 1′, quid 5° 0′ 15″?]

Corresponding: $4^{D}11^{H}21^{M}$. This interval, added to the earlier observation, produces the time of the opposition of the true place of ♃ with the simple Sun, 8 March $22^{H}51'$, in running time and according to the reformed style; and the true place of ♃ will then be 17° 3′ 10″ ♍. [Reſp. $4^{D}11^{H}21^{M}$. Quod interuallum additum priori obſeruationi producit tempus ☍ veri loci ♃ cum ſimplici ☉lis 8 Martij $22^{H}51'$ tempore labente & iuxta ſtylum reformatum, & erit tum verus locus ♃ 17° 3′ 10″ ♍.]

N.B. It must nevertheless also be carefully seen what the following ☍ observations yield; they will without doubt reveal everything more exactly, since the steel instrument is then to be brought into use. [N.B. Videndum tamen etiam diligenter quid obſeruationes ſequentes ☍ ferant, quæ dubio procul exactius omnia pandent, cum Chalybeus tum ſit ad vſum adhibendus.]

DIE 20 MARTIJ. [20 March]

At H. 8, when the clouds were dispersing a little and yet there was no hope of further clear sky, or of observing ♃ by declination, we recorded it in whatever way we could by a triangle. [H. 8 cum parum dißiparentur nubes & tamen

ſpes non eßet vlterioris ſerenitatis aut de ☋ue per declinationem obſeruando, qualitercunque per △ eum denotauimus.]

First, the distance of ☋ from the heart of ♌ [Primum, diſtantia ☋ a corde ♌]	21 26
Repeated [Repetita]	21 28½
Repeated [Repetita]	21 26
Distance of ☋ from the tail of ♌ [Diſtantia ☋ a cauda ♌]	10 48
Repeated [Repetita]	10 49
Repeated [Repetita]	10 48

Then, as we tried to go further, thickened clouds prevented us. [Conantes tum vlterius nubes condenſatæ prohibuerunt.]

Since ☋ has nearly the same latitude as Regulus, the distance alone, applied to its longitude, will reveal the place. [Quoniam ☋ eandem ferme cum Regulo latitudinem habet, ſola diſtantia eius longitudini applicata locum pandet.]

Longitude of Regulus [Longitudo Reguli]	♌ 24 17
Distance [Diſtantia]	21 26
True place of ☋ [Verus locus ☋]	♍ 15 43

But nevertheless try, by triangles, also from the tail, how it comes out. [Sed tamen per △la etiam a cauda, qualis proueniat, experimentare.]

For the true place of ☋. [Pro vero loco ☋.]

Longitude from Regulus [Longitudo e Regulo]	15 39 ♍.
Latitude [Latitudo]	1°33′ Bor.

DIE 3 APRILIS. [3 April]

9ʰ35ᵐ Dist. of ☋ from the heart of ♌ [9ʰ35ᵐ Diſt. ☋ a corde ♌]	19 44
Repeated twice [Repetita bis]	19 44
Distance from Spica ♍ [Diſtantia a Spica ♍]	34 20½

Once only, and among clouds. [Semel tantum atque inter nubes.]

DIE 4 APRILIS. [4 April]

9ʰ18ᵐ Distance of ☋ from the heart of ♌ [9ʰ18ᵐ Diſtantia ☋ a corde ♌]	19 40½
Repeated twice [Repetita bis]	19 40⅓

Corrected [Correcta]	19 42 50
Conversely. [Vice verſa.]	
9 25 Among clouds. Dist. of ♃ from Spica ♍ [9 25 Inter nubes. Diſt. ♃ a Spica ♍]	34 28⅔
Repeated twice [Repetita bis]	34 28
Corrected [Correcta]	34 30½
Merid. altitude of ♃ with the revolving instrument [Altitudo merid. ♃ Volubili]	47 39⅙
with the steel instrument [Chalybeo]	47 40⅔
with the sextant [Sextante]	47 38⅓[1]
with the Tychonic [Tychonico]	47 38[1]

Declination of ♃ [Declinatio ♃]	7 33⅔ Sept.	
Right asc. [Aſc. Recta]	165 44 34	
True place of ♃ [Verus locus ♃]	13 56 38 ♍	
Latitude [Latitudo]	1 19 34 Sept.	
Our calculation [Calculus noſter]	14°6′30″,	1°31′28″Sept.

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

DIE 6 APRILIS. [6 April]

8ᴴ19⅓ᴹ Distance of ♃ from the heart of ♌ [8ᴴ19⅓ᴹ Diſtantia ♃ a corde ♌]	19 30
8 21½ Repeated [8 21½ Repetita]	19 30½
8 24⅔ Repeated [8 24⅔ Repetita]	19 30½
8 26 Repeated [8 26 Repetita]	19 30½
Corrected [Correcta]	19 32 15

Conversely. [Vice verſa.]

8 32 Dist. of ♃ from the 3rd of the wing of ♍ [8 32 Diſt. ♃ a 3ᵗⁱᵃ alæ ♍]	20 40½
8 34 Repeated [8 34 Repetita]	20 40½
8 37⅓ Repeated [8 37⅓ Repetita]	20 40½
Corrected [Correcta]	20 42 15
10 2½ Merid. altit. of ♃, revolving instrument [10 2½ Altit. merid. ♃ Volubili]	47 43
Steel instrument [Chalybeo]	47 42⅝
Mural [Murali]	47 44
Sextant [Sextante]	47 41

DIE 17 APRILIS. [17 April]

10ʰ 2ᵐ Distance of ♃ from the heart of ♌ [10ʰ 2ᵐ Diſtantia ♃ a corde ♌]	18 40
10 3½ Repeated [10 3½ Repetita]	18 40
10 5⅔ The same, repeated [10 5⅔ Eadem repetita]	18 40

Conversely. [Vice verſa.]

10 8 Dist. of ♃ from Arcturus [10 8 Diſt. ♃ ab Arcturo]	44 51
10 11 Repeated [10 11 Repetita]	44 50⅔
10 13 Repeated [10 13 Repetita]	44 51
10 15½ Merid. altit. of ♃, mural [10 15½ Altit. ♃ merid. Murali]	
first pinnule [pinnac. priori]	48 1⅔
latter [poſteriori]	48 1½
Steel instrument [Chalybeo]	48 0⅓
Brass sextant [Sextante Orich.]	47 58⅓
Revolving instrument [Volubili]	47 58⅓

DIE 18 APRILIS. [18 April]

8ʰ 3ᵐ Distance of ♃ from the heart of ♌ [8ʰ 3ᵐ Diſtantia ♃ a corde ♌]	18 37
Repeated twice [Repetita bis]	18 37

Conversely. [Vice verſa.]

8 7 Distance of ♃ from Spica ♍ [8 7 Diſtantia ♃ a Spica ♍]	35 32½
Repeated twice [Repetita bis]	35 32½
8 43 Merid. altit. of ♃, revolving instrument [8 43 Altit. ♃ merid. Volubili]	48 0½
Sextant [Sextante]	48 1⅔
Steel instrument [Chalybeo]	48 1
Mural [Murali]	48 2⅙

DIE 19 APRILIS. [19 April]

8ʰ22ᵐ Distance of ♃ from the heart of ♌ [8ʰ22ᵐ Diſtantia ♃ a corde ♌]	18 35
8 25 Repeated [8 25 Repetita]	18 35
8 27 The same, repeated [8 27 Eadem repetita]	18 35

Conversely. [Vice verſa.]

8 31 Distance of ♃ from Spica ♍ [8 31 Diſtantia ♃ a Spica ♍]	35 33½
8 34 Repeated [8 34 Repetita]	35 33½
8 36 The same, repeated [8 36 Eadem repetita]	35 33½
9 5 Merid. altit. of ♃, revolving instrument [9 5 Altit. merid. ♃ Volubili]	48 1⅚
Brass sextant [Sext. Orich.]	48 1⅔
Steel instrument [Chalybeo]	48 3
Mural, upper pinnule [Murali pinn. ſuper.]	48 3⅚
True altitude [Vera altitudo]	48 2 50
Declination [Declinatio]	B. 8 8 30

I took this altitude of ♃ most carefully with the revolving instrument and the steel instrument, the plumb-line in no way altered from the earlier ones; and yet the difference between these two instruments is now other than it was before. From this I suspect that there was a fault either in the observation then, or in the counting, because of the confused small lines. [Sumpſi hanc ♃ altitudinem diligentißime Volubili & Chalybeo, perpendiculo nihil a prioribus variato, & tamen alia iam eſt inter duo iſta inſtrumenta differentia quam antea fuit, vnde ſuſpicor aut in obſeruatione vitium tum, aut in numeratione fuiße ob confuſas lineolas.]

DIE 28 APRILIS. [28 April]

$8^{H}19^{M}$ Distance of ♃ from the heart of ♌ [$8^{H}19^{M}$ Diſtantia ♃ a corde ♌]	18 7
8 21 The same, repeated [8 21 Eadem repetita]	18 7
8 23 Repeated [8 23 Repetita]	18 7
Corrected [Correcta]	18 8
8 32 Merid. altit. of ♃, mural [8 32 Altit. ♃ merid. Murali]	
upper pinnule [pinn. ſuper.]	48 10½
lower pinnule [pinn. infer.]	48 11½
Steel instrument [Chalybeo]	48 10⅓
Revolving instrument [Volubili]	48 9½
True altitude [Vera altitudo]	48 10¾

Dist. of ♃, conversely. [Diſt. ♃ vice verſa.]

9 25 Dist. of ♃ from Spica ♍ [9 25 Diſt. ♃ a Spica ♍]	36 1
9 26 Repeated [9 26 Repetita]	36 1
9 27 Repeated [9 27 Repetita]	36 1
Corrected [Correcta]	36 2

DIE 30 APRILIS. [30 April]

N.B. ♃ *near* △ ☉*, in the greatest prosthaphaeresis of the annual orb.* [*N.B.* ♃ *iuxta* △ ☉ *in maxima proſthaphæreſi orbis annui.*]

8ʰ16ᵐ Merid. altit. of ♃, mural [8ʰ16ᵐ Altit. ♃ merid. Murali]	
upper pinnule [pinn. ſuper.]	48 11½
lower [infer.]	48 11⅙
Steel instrument [Chalybeo]	48 11⅔
Revolving instrument [Volubili]	48 10
The Mural is rather to be trusted; therefore let the altitude be retained [Fidendum potius Murali, itaque retineatur altitudo]	48 11⅓
8 45 Dist. of ♃ from the heart of ♌ [8 45 Diſt. ♃ a corde ♌]	18 4
8 47 Repeated [8 47 Repetita]	18 4
8 49 Repeated [8 49 Repetita]	18 4

8 51 Dist. of ♃ from the 3rd of the wing of ♍ [8 51 Diſt. ♃ a 3 alæ ♍]	22 14
8 53 The same, repeated [8 53 Eadem repetita]	22 14
8 56 The same, repeated [8 56 Eadem repetita]	22 14

DIE 1 MAIJ. [1 May]

8ʰ35ᵐ Merid. altit. of ♃, revolving instrument [8ʰ35ᵐ Altit. ♃ merid. Volub.]	48 10⅓[1]
Steel instrument [Chalybeo]	48 12⅙
Mural, upper pinnule [Murali pinnac. ſuper.]	48 10
lower [infer.]	48 11⅔

Rather trust the steel instrument. [*Crede potius Chalybeo.*]

8ʰ49ᵐ Distance of ♃ from the heart of ♌ [8ʰ49ᵐ Diſtantia ♃ a corde ♌]	18 4½
8 51 Repeated [8 51 Repetita]	18 4½
8 54 Repeated [8 54 Repetita]	18 4½
8 57 Repeated [8 57 Repetita]	18 4½
9 0 Repeated [9 0 Repetita]	18 4½
9 3 Repeated [9 3 Repetita]	18 4½

DIE 2 MAIJ. [2 May]

8ʰ19ᵐ Altit. of ♃, revolving instrument [8ʰ19ᵐ Altit. ♃ Volubili]	48 12⅔
Steel instrument [Chalybeo]	48 11⅔
Brass sextant [Sext. Orich.]	48 12

Mural, upper pinnule [Murali pinn. ſuper.]	48 11⅔
lower [infer.]	48 12⅙
Take the altitude [Pone altitudinem]	48 12¼
8 38 Distance of ♃ from the heart of ♌ [8 38 Diſtantia ♃ a corde ♌]	18 2½
8 40 Repeated [8 40 Repetita]	18 2½
8 43 Repeated [8 43 Repetita]	18 2½
8 50 Dist. of ♃ from the 3rd of the wing of ♍ [8 50 Diſt. ♃ a 3 alæ ♍]	22 19
8 53 Repeated [8 53 Repetita]	22 19
8 55 Repeated [8 55 Repetita]	22 19

DIE 3 MAIJ. [3 May]

8ʰ16ᵐ Merid. altit. of ♃, revolving instrument [8ʰ16ᵐ Altit. ♃ merid. Volubili]	48 12
Steel instrument [Chalybeo]	48 12⅔
Mural, upper [Murali, ſuper.]	48 12⅙
lower [infer.]	48 12⅙

N.B. ♃ *in* △ ☉.

9 13 Distance of ♃ from the heart of ♌ [9 13 Diſtantia ♃ a corde ♌]	18 2
9 15 Repeated [9 15 Repetita]	18 2
9 18 Repeated [9 18 Repetita]	18 2

Conversely. [Vice verſa.]

9 22 Dist. of ♃ from the 3rd of the wing of ♍ [9 22 Diſt. ♃ a 3 alæ ♍]	22 22
9 24 Repeated [9 24 Repetita]	22 22
9 27 Repeated [9 27 Repetita]	22 22

DIE 4 MAIJ. [4 May]

Merid. altitude of ♃, revolving instrument [Altitudo ♃ merid. Volubili]	48 13
Steel instrument [Chalybeo]	48 10¾
Mural, both pinnules [Murali, pinn. vtroque]	48 12⅙

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

DIE 28 MAIJ. [28 May]

9ʰ10ᵐ Dist. of ♃ from Regulus [9ʰ10ᵐ Diſt. ♃ a Regulo]	18 33
Repeated twice [Repetita bis]	18 33
Corrected [Correcta]	18 34

Conversely. [Vice verſa.]

9 16 Distance of ♃ from Spica ♍ [9 16 Diſtantia ♃ a Spica ♍]	35 33½
Repeated [Repetita]	35 34
Repeated [Repetita]	35 33½
Corrected [Correcta]	35 34½

For the latitude. [Pro latitudine.]

9 19 Dist. of ♃ from the bright star of the loin of ♌ [9 19 Diſt. ♃ a lucida lumbi ♌]	14 47
Repeated twice [Repetita bis]	14 46
Corrected [Correcta]	14 47

Latitude from the Hip [Latitudo ex Coxa]	1°20′50″B.
from Spica [ex Spica]	1 18 10
Longitude from Regulus [Longitudo ex Regulo]	12 48 48 ♍
from Spica [ex Spica]	12 50 25
Limited and true place [Limitatus & verus locus]	12 49 30 ♍
Limited latitude [Limitata Latitudo]	1 19 30 B.

DIE 13 JULIJ, VESPERI. [13 July, in the evening]

N.B. ♃ in ✶ ☉^{lis} is suited to investigating the latitude. [N.B. ♃ in ✶ ☉^{lis} facit ad latitudinem indagandam.]

8ʰ42ᵐ Distance of ♃ from ♄ [8ʰ42ᵐ Diſtantia ♃ a ♄]	45 41⅓
8 44 Repeated [8 44 Repetita]	45 41
8 45 Repeated [8 45 Repetita]	45 40½
Corrected [Correcta]	45 42
8 47 Repeated [8 47 Repetita]	45 40½
The altit. of ♃ was [Erat altit. ♃]	15 0
8 50 Distance from Arcturus [8 50 Diſtantia ab Arcturo]	41 31
8 52 Repeated [8 52 Repetita]	41 30½
8 54 Repeated [8 54 Repetita]	41 30½
Corrected [Correcta]	41 34½

The altit. of ♃ was [Erat altit. ♃]	14 32

From the preceding observations there results: [Ex præcedentibus obſeruationibus prouenit:]

H. 9 True place of ♃ [?] [H. 9 Verus locus ♃ [?]]	18° 5′31″ ♍
Our calculation gives [Calculus noſter dat]	18 5 19 ♍
Latitude [Latitudo]	1 19 15 B.
The calculation gives [Calculus dat]	0 59 44
	diff. 20′

DIE 16 JULIJ, VESPERI. [16 July, in the evening]

$9^{H}18^{M}$ Dist. of ♃ from Arcturus [$9^{H}18^{M}$ Diſt. ♃ ab Arcturo]	41 15
9 20 Repeated [9 20 Repetita]	41 15
9 22 Repeated [9 22 Repetita]	41 15
Corrected [Correcta]	41 20
The altit. of ♃ was [Altit. ♃ erat]	10 40

DIE 18 JULIJ, VESPERI. [18 July, in the evening]

Distance of ♃ from Arcturus [Diſtantia ♃ ab Arcturo]	41 0½
Repeated twice [Repetita bis]	41 0½
Corrected [Correcta]	41 4½
The altit. of ♃ was [Erat altit. ♃]	13 20

From these observations there results the place of ♃: [Ex his obſeruationibus prouenit locus ♃ :]

H. 9 True place of ♃ [H. 9 Verus locus ♃]	18°54′41 ♍
Our calculation gives [Calculus noſter dat]	18 45 0 ♍
Latitude [Latitudo]	1 22 45 Borea
The calculation gives [Calculus dat]	0 59 47 Bor.

Observations of Mars [OBSERUATIONES MARTIS.]
DIE 10 OCTOBRIS, MANE. [10 October, in the morning]

H. 3½ Dist. of ♂ from the lower head of ♊ [H. 3½ Diſt. ♂ ab infer. Capite ♊]	25 0⅙
Distance repeated [Diſtantia repetita]	25 0
repeated [repetita]	25 0⅙
Dist. of ♂ from the bright star in the foot of ♊ [Diſt. ♂ a lucido pede ♊]	39 29
Distance repeated twice [Diſtantia repetita bis]	39 29⅙
Distance of ♂ from Procyon [Diſtantia ♂ a Procyone]	27 44⅓
The same distance repeated twice [Eadem diſtantia repetita bis]	27 44⅔

Conversely. [Vice verſa.]

Distance of ♂ from the heart of ♌ [Diſtantia ♂ a corde ♌]	12 2½
Distance repeated twice [Diſtantia repetita bis]	12 2½

The altitude of Mars at the beginning of the observations was G. 25½. [Martis altitudo in initio obſeruationum erat G. 25½.]

Because of great exhalations from the earth and small clouds that had arisen, ♂ had to be abandoned. [Ob magnas e terra exhalationes & nubeculas ſubortas ♂ fuit relinquendus.]

DIE 11 OCTOBRIS, MANE. [11 October, in the morning]

H. 4½ Dist. of ♂ from the lower head of ♊ [H. 4½ Diſt. ♂ ab infer. capite ♊]	25 33⅚
Distance repeated [Diſtantia repetita]	25 34
repeated [repetita]	25 33⅚

Conversely. [Vice verſa.]

Distance of ♂ from the heart of ♌ [Diſtantia ♂ a corde ♌]	11 23
Distance repeated twice [Diſtantia repetita bis]	11 23⅙

For the latitude. [Pro latitudine.]

Dist. of ♂ from Procyon [Diſt. ♂ a Procyone]	28 12
Distance repeated twice [Diſtantia repetita bis]	28 12⅓
Dist. of ♂ from the bright star of the neck of ♌ [Diſt. ♂ a lucida ceruicis ♌]	13 22
Distance repeated [Diſtantia repetita]	13 22
Distance repeated [Diſtantia repetita]	13 22

Observations of Venus [OBSERUATIONES VENERIS.]
DIE 13 MARTIJ. [13 March]

H. 7½ Dist. of ♀ from the left foot of Androm. [H. 7½ Diſt. ♀ a ſin. pede Androm.]	28 9⅓
Repeated twice [Repetita bis]	28 8⅓
7 36 Dist. of ♀ from Aldebaran [7 36 Diſt. ♀ ab Aldebaran]	33 28
Repeated twice [Repetita bis]	33 28

Sirius was then on the meridian. [Erat tum Syrius in meridiano.]

7 45 Distance of ♀ from the bright star of ♈ [7 45 Diſtantia ♀ a lucida ♈]	9 26½
Repeated [Repetita]	9 26½
Repeated [Repetita]	9 27

Demonstration of the true place of ♀ from the preceding observations. [Veri loci ♀ris ex obſeruationibus præcedentibus demonſtratio.]

Complement of the latitude of ♀ from the bright star of ♈ and Aldeb. [Complementum Latitudinis ♀ ex Luc. ♈ & Aldeb.]	89°25′9″

But since the knowledge of the true place must be reached through the latitude and the distance of ♀ from Aldebaran, it will be worth the effort to investigate it also from the foot of Andromeda, so that it may be more certain. [Verum quoniam per Latitudinem & diſtantiam ♀ris ab Aldebaran in veri loci cognitionem perveniendum eſt, operæ precium erit etiam ex Andromedæ pede eam, vt certior ſit, inquirere.]

From this the latitude comes out as 34′40″ northern. If, therefore, we assume a latit. of 34′45″, we shall err imperceptibly. [Latitudo hinc provenit 34′40″ Borea. Si ergo aßumamus Latit. 34′45″, inſenſibiliter aberrabimus.]

Difference of longit. from Aldebaran [Differentia Longit. ab Aldebaran]	32°54′50″
There results [Prouenit]	
Longitude of ♀ [Longitudo ♀ris]	♉ 1°17⅔′
Northern latitude [Latitudo Borea]	0 34 45

But since no portable instruments were then at hand with which the altitude of ♀ above the horizon could have been taken, it will be necessary to investigate it a posteriori, the true place being now known, lest perhaps, being subject to

refraction, it has introduced some error into the observations. [Quoniam vero nulla tum portatilia inſtrumenta ad manus erant, quibus ♀ altitudo ſupra horizontem potuißet accipi, neceßarium erit, vt ex poſteriori, vero loco iam cognito, illam inquiramus, ne forte refractioni obnoxia aliquid erroris obſeruationibus ingeßerit.]

In the triangle αβγ, therefore, there is given: [In $\triangle^{lo}$ igitur αβγ datur]

αγ	39°55′30″	
γβ	77 29 29	compl. of decl. [compl. decl.]
αγβ	67 58	

αβ is sought: 66 21; its compl. 23 39. Therefore the altitude of ♀ not yet subject to refraction. [Quæritur αβ 66 21 huius compl. 23 39. Ergo Altitudo ♀ refractioni nondum obnoxia.]

Diagram. A small three-sided figure with curved sides, set at the right of the left column beside the lines "In $\triangle^{lo}$ igitur αβγ datur" to "tudo ♀ refractioni nondum obnoxia." Its vertices are lettered α (top left), γ (top right) and β (bottom); the sign ♀ stands beside β, to its right.

- α (top left vertex): α
- γ (top right vertex): γ
- β (bottom vertex): β
- ♀ (beside β, to the right): ♀ (Venus)

DIE 20 MARTIJ. [20 March]

When, after sunset, some clear sky shone out, we attended to ♀ with as much diligence as could be applied. [Cum poſt Solis occaſum aliqualis affulgeret ſerenitas, ♀ri quanta fieri potuit diligentia attendimus.]

7^{H} 0^{M} Distance of ♀ from Aldebar. [7^{H} 0^{M} Diſtantia ♀ ab Aldebar.]	25 26
Repeated [Repetita]	25 27½
Repeated [Repetita]	25 26½
Repeated [Repetita]	25 26
7 20 Distance of ♀ from the bright star of ♈ [7 20 Diſtantia ♀ a lucida ♈]	11 40

Very thick clouds were then rising. [Oriebantur tum craßæ admodum nubes.]

Repeated among clouds [Repetita inter nubes]	11 42
Repeated twice [Repetita bis]	11 40½

Procyon was then on the meridian. [Procyon tum erat in meridie.]

For the true place of ♀ for the day 20 March. [Pro vero loco ♀ ad diem 20 Martij.]

Northern latitude of ♀ [Latitudo ♀ Borea]	0°57′ 8″
Longitude [Longitudo]	♉ 9 ♊ 45

DIE 6 APRILIS. [6 April]

7ʰ27ᴹ Dist. of ♀ from the lower head of ♊ [7ʰ27ᴹ Diſt. ♀ ab infer. cap. ♊]	48 42
7 29 Repeated [7 29 Repetita]	48 42½
The altitude was then [Altitudo tunc erat]	28 30
7 33⅔ Altitude [7 33⅔ Altitudo]	27 40
Dist. from the bright star of the side of Perseus [Diſt. a luc. lateris Perſei]	28 5
7 35⅓ Repeated [7 35⅓ Repetita]	28 5
7 36½ Repeated [7 36½ Repetita]	28 5
7 38 Dist. from the bright shoulder of Orion [7 38 Diſt. a lucido humero Orion.]	29 52½
The altitude of ♀ was then [Erat tunc altitudo ♀]	27 0
7 40½ The distance repeated [7 40½ Repetita diſtantia]	29 52⅔
7 42 Repeated [7 42 Repetita]	29 52⅔
The altitude of ♀ was then [Erat tunc altitudo ♀]	26 40

DIE 13 APRILIS. [13 April]

7ʰ24ᴹ Distance of ♀ from Procyon [7ʰ24ᴹ Diſtantia ♀ a Procyone]	24 29
Repeated twice [Repetita bis]	24 29
Altitude of ♀ [Altitudo ♀]	26 30
7 27 Distance of ♀ from Capella [7 27 Diſtantia ♀ a Capella]	23 23⅓
Repeated twice [Repetita bis]	23 23½
Altitude of ♀ [Altitudo ♀]	25 40
7 29 Dist. of ♀ from the lower head of ♊ [7 29 Diſt. ♀ ab infer. cap. ♊]	40 40½
Repeated [Repetita]	40 40½
Altitude [Altitudo]	25 20
7 51 Distance of ♀ from Aldeb. [7 51 Diſtantia ♀ ab Aldeb.]	8 20⅓
Repeated [Repetita]	8 20⅓
Altitude [Altitudo]	24 20

DIE 16 APRILIS. [16 April]

7ʰ50ᴹ Distance of ♀ from Capella [7ʰ50ᴹ Diſtantia ♀ a Capella]	21 8½

7 52 Repeated [7 52 Repetita]	21 8
7 55 Repeated [7 55 Repetita]	21 8½

Conversely. [Vice verſa.]

8 1 Dist. of ♀ from Procyon [8 1 Diſt. ♀ a Procyone]	43 39
8 2⅔ Repeated [8 2⅔ Repetita]	43 39
8 5 Repeated [8 5 Repetita]	43 39
Altitude of ♀ [Altitudo ♀]	24 10
8 12 Dist. from the lower head of ♊ [8 12 Diſt. ab infer. cap. ♊]	37 33
8 13½ Repeated [8 13½ Repetita]	37 33
8 15 Repeated [8 15 Repetita]	37 33

DIE 18 APRILIS. [18 April]

$7^{H}52^{M}$ Dist. of ♀ from Procyon [$7^{H}52^{M}$ Diſt. ♀ a Procyone]	41 42⅔
7 53½ Repeated [7 53½ Repetita]	41 43
7 55 Repeated [7 55 Repetita]	41 43
7 57 Distance from Capella [7 57 Diſtantia a Capella]	20 34⅚
7 58 Repeated [7 58 Repetita]	20 35
7 59½ Repeated [7 59½ Repetita]	20 35
8 2 Dist. of ♀ from the lower head of ♊ [8 2 Diſt. ♀ ab infer. cap. ♊]	35 21
8 3½ Repeated [8 3½ Repetita]	35 21½
8 5 Repeated [8 5 Repetita]	35 21½

DIE 19 APRILIS. [19 April]

Distance of ♀ from Capella [Diſtantia ♀ a Capella]	20 22
Repeated twice [Repetita bis]	20 22½
$7^{H}40^{M}$ Dist. of ♀ from Procyon [$7^{H}40^{M}$ Diſt. ♀ a Procyone]	40 50
7 42 Repeated [7 42 Repetita]	40 50
7 45 Repeated [7 45 Repetita]	40 50
7 48 Dist. of ♀ from the lower head of ♊ [7 48 Diſt. ♀ ab infer. cap. ♊]	34 20
7 50 Repeated [7 50 Repetita]	34 20
7 55 Repeated [7 55 Repetita]	34 20

DIE 28 APRILIS. [28 April]

$7^{H}50^{M}$ Dist. of ♀ from Capella [$7^{H}50^{M}$ Diſt. ♀ a Capella]	20 57⅔

7 53 Repeated [7 53 Repetita]	20 57⅔
Repeated [Repetita]	20 57⅔
True distance [Vera diſtantia]	20 58⅔
8 2 Dist. of ♀ from the lower head of ♊ [8 2 Diſt. ♀ ab infer. cap. ♊]	24 46
8 5 Repeated [8 5 Repetita]	24 46
8 7 Repeated [8 7 Repetita]	24 46
Corrected [Correcta]	24 47

8 10 Dist. of ♀ from Procyon [8 10 Diſt. ♀ a Procyone]	32 50
8 13 Repeated [8 13 Repetita]	32 50
8 15 Repeated [8 15 Repetita]	32 50
Corrected [Correcta]	32 51

DIE 30 APRILIS. [30 April]

8ʰ24ᵐ Distance of ♀ from Capella [8ʰ24ᵐ Diſtantia ♀ a Capella]	21 37
8 26 Repeated [8 26 Repetita]	21 37½
8 28 Repeated [8 28 Repetita]	21 37½
8 31 Dist. of ♀ from Procyon [8 31 Diſt. ♀ a Procyone]	21 10½
8 33 Repeated [8 33 Repetita]	21 10½
8 35 Repeated [8 35 Repetita]	21 10½
8 38 Dist. of ♀ from the lower head of ♊ [8 38 Diſt. ♀ ab infer. cap. ♊]	22 40
8 40 Repeated [8 40 Repetita]	22 40
8 42 Repeated [8 42 Repetita]	22 40

DIE 1 MAIJ, VESPERI. [1 May, in the evening]

8ʰ21ᵐ Distance of ♀ from Capella [8ʰ21ᵐ Diſtantia ♀ a Capella]	22 1⅓
8 23 Repeated [8 23 Repetita]	22 1⅓
8 25 Repeated [8 25 Repetita]	22 1⅓
8 29 Dist. of ♀ from Procyon [8 29 Diſt. ♀ a Procyone]	30 25
8 31 Repeated [8 31 Repetita]	30 25
8 33 Repeated [8 33 Repetita]	30 25
8 39 Dist. of ♀ from the lower head of ♊ [8 39 Diſt. ♀ ab infer. cap. ♊]	21 39
8 41 Repeated [8 41 Repetita]	21 39
8 44 Repeated [8 44 Repetita]	21 39

DIE 3 MAIJ. [3 May]

N.B. ♀ is tending toward the greatest distance from the ☉. [*N.B.* ♀ *tendit ad maximam remotionem a* ☉.]

8ʰ36ᵐ Distance of ♀ from Capella [8ʰ36ᵐ Diſtantia ♀ a Capella]	22 58
8 38 Repeated [8 38 Repetita]	22 58
8 40 Repeated [8 40 Repetita]	22 58
The altitude was [Erat altitudo]	24 31
8 50 Dist. of ♀ from Procyon [8 50 Diſt. ♀ a Procyone]	28 21½
8 53 Repeated [8 53 Repetita]	28 21½
8 55 Repeated [8 55 Repetita]	28 21½
Altitude [Altitudo]	23 10
8 59 Dist. of ♀ from the lower head of ♊ [8 59 Diſt. ♀ ab infer. cap. ♊]	19 38
9 1 Repeated [9 1 Repetita]	19 38
9 4 Repeated [9 4 Repetita]	19 38
The altitude was [Erat altitudo]	22 28

DIE 9 MAIJ. [9 May]
♀ at greatest elongation from the Sun. [♀ *in maxima digreßione a Sole.*]

8 17 Distance of ♀ from Capella [8 17 Diſtantia ♀ a Capella]	26 19⅔
8 19 Repeated [8 19 Repetita]	26 19⅔
8 21 Repeated [8 21 Repetita]	26 19⅔
Corrected [Correcta]	26 20
8 25 Dist. of ♀ from the lower head of ♊ [8 25 Diſt. ♀ ab infer. cap. ♊]	13 47
8 27 Repeated [8 27 Repetita]	13 47
Altitude [Altitudo]	25½
8 29 The same repeated [8 29 Eadem repetita]	13 47
True [Vera]	13 47½
8 31 Distance of ♀ from the heart of ♌ [8 31 Diſtantia ♀ a corde ♌]	49 58
8 33 Repeated [8 33 Repetita]	49 58
8 34½ Repeated [8 34½ Repetita]	49 58
Corrected [Correcta]	49 59
The altitude was [Erat altitudo]	25 0
Distance from Procyon [Diſtantia a Procyone]	24 44½
Repeated [Repetita]	24 44½
Corrected [Correcta]	24 45

For the latitude. [Pro latitudine.]

8 46 Dist. of ♀ from the other shoulder of Erichthonius [8 46 Diſt. ♀ ab altero humero Erichtonij]	20 42
8 48 Repeated [8 48 Repetita]	20 42
8 50 Repeated [8 50 Repetita]	20 42
Corrected [Correcta]	20 42½

At that moment the castle clock was striking exactly the 9th hour. [Tunc ſonabat horologium arcis exacte horam 9.]

The altitude of ♀ was then [Erat tunc altitudo ♀]	22 50

Demonstration for the true place of ♀ from the observations made on 9 May. [Pro vero loco ♀ris ex obſeruationibus 9 Maij habitis demonſtratio.]

Latitude of ♀ from Procyon [Latitudo ♀ ex Procyone]	2°32′45″B.
from the shoulder of Erichthonius [ex hum. Ericht.]	2 27 12
Longitude from Regulus [Longitudo ex Regulo]	♋ 4 19 18
true place of ♀. [verus locus ♀.]	

But since Procyon is not so well placed toward the pole as the right shoulder of Erichthonius, we shall do more correctly if, for a 3rd part, we keep closer to this latter. The limited latitude of ♀ will therefore be 2° 29′ Bor. [Sed quoniam Procyon non ita bene verſus polum diſpoſita eſt atque dexter humerus Erichtonij, rectius fecerimus, ſi pro 3tia parte huic poſtremæ adhærebimus propinquius. Erit igitur latitudo ♀ limitata 2° 29′ Bor.]

DIE 11 MAIJ, VESPERI. [11 May, in the evening]

9ʰ48ᵐ Dist. of ♀ from the right shoulder [9ʰ48ᵐ Diſt. ♀ a dextro hum.]	21 40
9 50 Repeated [9 50 Repetita]	21 40
9 53 Repeated [9 53 Repetita]	21 40
Corrected [Correcta]	21 40½
The altitude of ♀ was then [Erat tunc altitudo ♀]	27 0
9 58 Distance of ♀ from Capella [9 58 Diſtantia ♀ a Capella]	27 37
Repeated [Repetita]	27 37
10 1 Repeated [10 1 Repetita]	27 37
Corrected [Correcta]	27 37½
The altitude of ♀ was then [Erat altitudo ♀ tunc]	25 40
10 4 Distance of ♀ from the heart of ♌ [10 4 Diſtantia ♀ a corde ♌]	48 1⅔
10 7 Repeated [10 7 Repetita]	48 1⅔
10 9 Repeated [10 9 Repetita]	48 1⅔
Corrected [Correcta]	48 2⅔
The altitude of ♀ was then [Erat tunc altitudo ♀]	25 1

For the true place of ♀ for 11 May. [Pro vero loco ♀ris ad d. 11 Maij.]

Longitude from the heart of ♌ [Longitudo a corde ♌]	♋ 6°16′53″

DIE 14 MAIJ. [14 May]

Distance of ♀ from Capella [Diſtantia ♀ a Capella]	29 37⅔
Repeated twice [Repetita bis]	29 37⅔
Corrected [Correcta]	29 38⅙
The altitude of ♀ was then [Erat tunc altitudo ♀]	26 10
Dist. of ♀ from the right shoulder of Erichthonius [Diſt. ♀ a dextro hum. Ericht.]	23 17½
Repeated twice [Repetita bis]	23 17½
Corrected [Correcta]	23 18
The altitude of ♀ was then [Erat tunc altitudo ♀]	25 12
$8^{H}59^{M}$ Dist. of ♀ from the lower head of ♊ [$8^{H}59^{M}$ Diſt. ♀ ab inf. cap. ♊]	16 15
9 2 Repeated [9 2 Repetita]	16 15
9 5 Repeated [9 5 Repetita]	16 15
Corrected [Correcta]	16 15½
The altitude of ♀ was then [Erat tunc ♀ altitudo]	23 40
9 8 Dist. of ♀ from the heart of ♌ [9 8 Diſt. ♀ a corde ♌]	45 10
9 9 Repeated [9 9 Repetita]	45 10
9 10 Repeated [9 10 Repetita]	45 10
Corrected [Correcta]	45 10½
The altitude of ♀ was then [Erat tunc ♀ altitudo]	23 5

DIE 28 MAIJ. [28 May]

$9^{H}\ 0^{M}$ Dist. of ♀ from the northern head of ♊ [$9^{H}\ 0^{M}$ Diſt. ♀ a Bor. capite ♊]	9 55½
Repeated [Repetita]	9 55½
Repeated [Repetita]	9 56
Corrected [Correcta]	9 56½
9 4 Distance from Regulus [9 4 Diſtantia a Regulo]	32 52
Repeated [Repetita]	32 53
Repeated [Repetita]	32 52
Corrected [Correcta]	32 53

For the true place of ♀ for 28 May. [Pro vero loco ♀ ad d. 28 Maij.]

Latitude [Latitudo]	2°56′23″Sept.
Longitude from the upper head of ♊ [Longitudo a ſup. cap. ♊]	22 6 54 ♋

DIE 10 OCTOBRIS. [10 October]

H. 4½ Dist. of ♀ from the lower head of ♊ [H. 4½ Diſt. ♀ ab inf. cap. ♊]	45 30½
Distance repeated [Diſtantia repetita]	45 30⅓

Distance repeated [Diſtantia repetita]	45 30½
♀ from Procyon [♀ a Procyone]	42 53
Distance repeated twice [Diſtantia repetita bis]	42 53

The altitude of ♀ was 17°. [♀ Altitudo erat 17 Graduum.] Because of clouds and mists we could not take more. [Ob nubes & nebulas plura capere non potuimus.]

DIE 11 OCTOBRIS, MANE. [11 October, in the morning]

Distance of ♀ from the lower head of ♊ [Diſtantia ♀ ab infer. cap. ♊]	44 26
Distance repeated twice [Diſtantia repetita bis]	44 26½
Distance of ♀ from Procyon [Diſtantia ♀ a Procyone]	43 53
Distance repeated twice [Diſtantia repetita bis]	43 53

Observations of Mercury [OBSERUATIONES MERCURIJ.]

DIE 29 APRILIS, VESPERI. [29 April, in the evening]

☿ was barely visible; we noted it after a fashion, as follows. [☿ parum apparuit, illum denotauimus qualitercunque vt ſequitur.]

Distance of ☿ from Capella [Diſtantia ☿ a Capella]	25 41
Altitude [Altitudo]	7⅙
Distance repeated [Repetita diſtantia]	25 40
Altitude [Altitudo]	7
Repeated [Repetita]	25 41½

Conversely. [Vice verſa.]

Distance of ☿ from Procyon [Diſtantia ☿ a Procyone]	53 14
Altitude [Altitudo]	6 46
Distance repeated [Diſtantia repetita]	53 13
Altitude of ☿ [Altitudo ☿]	6⅓
Distance repeated [Repetita diſtantia]	53 12⅓

Then it ceased to appear, for the air was very impure near the horizon. [Apparere tum deſijt, erat enim aër valde impurus circa Horizontem.]

From this[1] the longit. of ☿ comes out [Hinc[1] fit Longit. ☿]	29°50′♉
According to Copernicus [Iuxta Copernicum]	29 14 ♉ diff. 36′ M.

According to Alfonso X [Iuxta Alphonſum]	0 51 II diff. 61′ P.

Observations of the fixed stars [OBSERUATIONES STELLARUM FIXARUM.]

DIE 4 JANUARIJ. [4 January]

Altit. of the pole star on the merid. [Altit. Polaris in Merid.]	
old quadr. [vet. Quadr.]	52 57⅚
with the sextant [Sextante]	52 57
[Corresponding altitude of the pole] [[Reſp. altitudo Poli]]	50 6 10

Merid. altit. [Altit. Merid.]	
of the bright star of ♈ [Lucidæ ♈]	61 27⅔
Declin.	21 33
	39 54 40
	50 5 20

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

DIE 6 JANUARIJ, VESPERI. [6 January, in the evening]

To test the sextant, the distance between Aldebaran and the bright star of ♈ was observed several times 35 34 [Pro examinando Sextante obſeruabatur diſtantia inter Aldeboran & lucidam ♈ aliquoties 35 34]

So the sextant gives distances two minutes larger than is right, *as was also noted above.* [Duobus ergo minutis Sextans diſtantias maiores iuſto præbet, *pro vt ſupra etiam annotatum.*]

DIE 8 JANUARIJ. [8 January]

Merid. altit. of Arcturus [Altit. Merid. Arcturi]	61 15
Decl.	21 18½
Altit. of the equat. [Altit. Æquat.]	39 56½
Elevation of the pole [Eleuatio Poli]	50 3½

So the quadrant gives altitudes one minute larger than is right. [*Ergo Quadrans vno minuto altitudines iuſto maiores præbet.*]

DIE 9 JANUARIJ. [9 January]

The uppermost in the loins of ♌ [Suprema in lumbis ♌]

on the merid. [in Merid.]	62 40½
Merid. altit. of the tail of ♌ [Altit. Merid. caudæ ♌]	56 43
Declin.	16 49
Altit. of the equat. [Altit. Æquat.]	39 54
Merid. altit. of the first of the wing of ♍ [Altit. Merid. primæ alæ ♍]	43 55
of the 3rd of the wing [3^{tiæ} alæ]	40 40
Declin. B.	0 46⅓
Altit. of the equat. [Altit. Æquat.]	39 53⅔
Altit. of the pole [Altit. Poli]	50 6⅓

So the quadrant gave two minutes less here. [Ergo Quadrans duobus minutis præbuit hic minus.]

Merid. altit. of Spica ♍ [Altit. Merid. Spicæ ♍]	30°54′20″
Declin.	9 1 12
Alt. of the equat. [Alt. Æquat.]	39 55 32
Elev. of the pole [Eleu. Poli]	50 4 28

This agrees with the elevation of the pole observed before; yet it is strange that the quadrant is correct here, since, though not moved at all, it gave 2′ less than is right at the 3rd of the wing. [Quod cum obſeruata antea Poli eleuatione conſentit, mirum tamen quod hic quadrans ſe recte habeat, cum tamen nihil motus in 3^{tia} alæ 2′ iuſto minus dederit.]

DIE 3 MARTIJ. [3 March]

To test the sextant, the distance between the heart of ♌ and the tail was taken [Pro explorando Sextante ſumebatur diſtantia inter cor ♌ & caudam]

	24 37½
Repeated twice [Repetita bis]	24 38
Merid. alt. of the middle of the loin of ♌ [Alt. Merid. mediæ lumbi ♌]	57 31½
Merid. altit. of the tail of ♌ [Altit. Merid. caudæ ♌]	56 44
Merid. altit. of the first of the wing of ♍ [Altit. Merid. primæ alæ ♍]	43 57⅔

DIE 4 MARTIJ. [4 March]

Merid. altit. of Procyon [Altit. Merid. Procyonis]	46 6⅓
of the heart of ♌ [Cordis ♌]	53
	46⅚
Dist. between the tail of ♌ and the heart of ♌ [Diſt. inter caudam ♌ & cor ♌]	24 41
Repeated twice [Repetita bis]	24 41
Dist. between the heart of ♌ and the lower head of ♊ [Diſt. inter cor ♌ & inf. cap. ♊]	37 2

Repeated twice [Repetita bis]	32 2
Merid. altit. of the southern scale-pan [Altit. merid. lancis auſtr.]	25
	35⅙

DIE 13 MARTIJ. [13 March]

Merid. alt. of Procyon, by the revolving instrument [Alt. Merid. Procyonis Volub.]	46 7
of the heart of Hydra, by the revolving instrument [cordis hydræ Volub.]	32
	57⅓
with the sextant [Sextante]	32 59

DIE 20 MARTIJ. [20 March]

Merid. altit. of Procyon, carefully [Altit. Merid. Procyonis diligenter]	
with the Mural or Tychonic [Murali ſeu Tychonico]	46 3⅙
with the revolving instrument [Volubili]	46 7⅔
with the steel instrument [Chalybeo]	46 7⅓
with the sextant [Sextante]	46 5½

These altitudes agree with one another moderately well, the steel and the revolving especially, which differ by no more than ⅓; the sextant, however, as is its habit, gives 2′ less, and the Tychonic also needs further adjustment as regards the perpendicular, for its plane agreed well enough with the meridian that had been found. We shall nevertheless also test what altitude of the equator follows. [Altitudines hæ mediocriter inter ſe conueniunt, Chalybeus præſertim & Volubilis, qui non vltra ⅓ diſcrepant, Sextans tamen pro more ſuo 2′ præbet minus & Tychonicus etiam vlteriori diſpoſitione quo ad perpendiculum indiget, planum enim illius ſatis cum meridiana inuenta conueniebat. Experiemur tamen etiam qualis altitudo æquatoris ſequatur.]

Altitude of Procyon, observed [Altitudo Procyonis obſeruata]	
and limited [& limitata]	46 7½
Declination [Declinatio]	6 12
Altit. of the equat. [Altit. Æquat.]	39 55½
Elevation of the pole [Eleuatio Poli]	50 4 30

This agrees exactly with the earlier one. [Quod exquiſite cum priori conuenit.]

DIE 21 MARTIJ, VESPERI. [21 March, in the evening]

To test the other trigonal sextant, recently adapted for use again, the distance between the heart of ♌ and the tail was taken. [Pro examinando Sextante Trigonico altero nuper ad vſum rurſus adaptato ſumebatur diſtantia inter cor ♌ & caudam.]

Distance [Diſtantia]	24 35½
Repeated twice [Repetita bis]	24 35½
It should have been [Debuit eße]	24 39¾
Merid. altit. of the heart of Hydra [Altit. merid. cordis hydræ]	
with the revolving instrument [Volubili]	32 58½
with the steel instrument [Chalybeo]	32 59
with the Tychonic [Tychonico]	32 57½
with the sextant [Sextante]	32 57

DIE 3 APRILIS. [3 April]

9ʰ29ᵐ Regulus was crossing the meridian, having an altit. [9ʰ29ᵐ Tranſibat Regulus per meridianum habens altit.]	
with the revolving instrument [Volubili]	53 49⅙
with the sextant [Sextante]	53 48⅔
with the steel instrument [Chalybeo]	53 49⅓
with the Mural [Murali]	53 47½
Let the altitude be taken as [Aßumatur altitudo]	53 49⅙
Declination [Declinatio]	13 53 30
Altit. of the equat. [Altit. Æquat.]	39 55 40
Elevation of the pole [Eleuatio Poli]	50 4 20

This differs by only ⅙ of a minute from the earlier one, 50 4 30. [Quod ⅙ tantum minuti a priori 50 4 30 diſcrepat.]

DIE 4 APRILIS. [4 April]

Merid. altit. of the heart of ♌ [Altit. Merid. cordis ♌]	
with the revolving instrument [Volubili]	53 49
with the steel instrument [Chalybeo]	53 49½
The alt. should be [Alt. debet eße]	53 48
Merid. altit. of the 3rd of the wing of ♍ [Altit. Merid. 3ᵗⁱᵃᵉ alæ ♍]	
with the steel instrument [Chalybeo]	40 41⅙

with the Mural [Murali]	40 40½
Lowest altit. of the pole star [Altit. Polaris minima]	
with the revolving instrument [Volubili]	47 16½
with the steel instrument [Chalybeo]	47 15⅙
Merid. altit. of Spica ♍ [Altit. Merid. Spicæ ♍]	
with the revolving instrument [Volubili]	30 54⅓
with the steel instrument [Chalybeo]	30 53
with the Mural [Murali]	30 53⅓

To test the sextant, after ♄ had been observed, the distance between Arcturus and the bright star of Lyra was taken [Pro explorando Sextante ſumebatur poſt obſeruatum ♄ Diſtantia inter Arcturum & lucidam Lyræ]

	58 48⅓
It should be [Debet eße]	58 50 40

only once, and among clouds. [ſemel tantum atque inter nubes.]

Between Arcturus [Inter Arcturum]	
and the bright star of the Crown [& lucid. Coronæ]	19 23
Repeated twice [Repetita bis]	19 23
It should be [Debet eße]	19 25½
Distance of the pole star [*Diſtantia Polaris*]	
from the pole at this time [*a Polo hoc tempore*]	*2 50 45*
with the steel instrument [*Chalybeo*]	*47 15 10*
	50 5 55
By the steel instr., altit. of the heart of ♌ [*Per Chalyb. Altit. Cordis ♌*]	*53 49½*
Declination [*Declinatio*]	*13 53 30*
	39 56 0
Altit. of the pole from the heart [*Altit. Poli ex Corde*]	*50 4 0*
from the pole star [*ex Polari*]	*50 6 0*
True altitude [*Vera Altitudo*]	*50 5 0*
With the revolving instrument, alt. of the pole star [*Volubili, Alt. Polaris*]	*47 16 30*
	50 7 15
Heart of ♌, with the revolving instrument [*Cor ♌ Volubili*]	*53 49*
Altit. of the equat. [*Altit. Æquat.*]	*39 55 30*
Altit. of the pole from the heart [*Altit. Poli ex corde*]	*50 4 30*
from the pole star [*ex Polari*]	*50 7 15*
Differ.	*2 45*
Mean [*Media*]	*50 5 52*

which is still more than is right. [*quod adhuc iuſto plus.*]

Altit. of Spica by the revolving instrument [Altit. Spicæ per Volubilem]	30 54 20
Declination [Declinatio]	9 1 12
Altit. of the equat. [Altit. Æquat.]	39 55 32
Elev. of the pole from Spica [Eleu. Poli ex Spica]	50 4 28
From the pole star [Ex Polari]	50 7 15
Differ.	2 47
Elevation of the pole, limited [Eleuatio Poli limitata]	50 5 51

If the elevations of the pole taken from the altitude of Spica and of the pole star by the steel instrument are compared with each other, a slight difference is found. So let us retain, for the planets too, the meridian altitudes taken by the steel instrument. [Si eleuatio Poli ex altitudine Spicæ & Polaris per Chalybeum ſumpta conferatur ad inuicem, exiguum difcrimen deprehenditur. Retineamus ergo & in planetis altitudines Meridianas per Chalybeum acceptas.]

DIE 6 APRILIS. [6 April]

To test the sextant there was taken [Pro explorando Sextante capiebatur]	
the distance of the heart of ♌ and [Diſtantia cordis ♌ &]	
the lower head of ♊ [infer. capitis ♊]	36 58
Repeated [Repetita]	36 58
Repeated [Repetita]	36 58½
Repeated twice [Repetita bis]	36 58⅓
True dist. from the Epist. book [Vera diſt. ex Epiſt. libro]	36 59⅔
So here [Præbet ergo hic]	
the sextant gives less [Sextans minus]	1⅓
8^{H} 5⅓^{M} Merid. altit. of the heart of Hydra [8^{H} 5⅓^{M} Altit. Merid. Cordis Hydræ]	
with the revolving instrument [Volubili]	32 58⅔
with the Mural [Murali]	32 58⅔
with the steel instrument [Chalybeo]	32 58½
with the sextant [Sextante]	32 56⅙
8 41 Mer. alt. of the heart of ♌ [8 41 Alt. Mer. cordis ♌]	
by the revolving instrument [Volub.]	53 49
with the steel instrument [Chalybeo]	53 49⅙
It should be [Deberet eße]	53 48

Heart of ♌ [*Cor* ♌]	*53 49*	*47 15 45*
	13 53 30	*2 50 45*
	39 55 30	*50 6 30*
	50 4 30	*50 4 30*

So the alt. of the pole would be [*Eßet itaque Alt. Poli*]	50 5½
Merid. altit. of the middle of the neck of ♌ [Altit. Merid. Mediæ ceruicis ♌]	
with the revolving instrument [Volubili]	61 45⅔ [?]
with the steel instrument [Chalybeo]	61 45⅔ [?]

To test the sextant, after ♃ had been observed, the dist. was taken between [Pro examinando Sextante poſt obſeruatum ♃ capiebatur diſt. inter]	
the heart of ♌ and the tail of ♌ [cor ♌ & caudam ♌]	24 38
Repeated [Repetita]	24 37⅔
Repeated twice [Repetita bis]	24 38
True [Vera]	24 39 45
Error of the sextant [Error Sextantis]	1 45
To test the sextant, the dist. was afterwards taken between the heart of ♌ [Pro explorando Sextante poſt capiebatur diſt. inter cor ♌]	
and the 3rd of the wing [& 3^{tiam} alæ]	40 20½
Repeated twice [Repetita bis]	40 20½
11^{H}28^{M} Lowest altit. of the pole star [11^{H}28^{M}Altit. Polaris minima]	
with the revolving instrument [Volubili]	47 15¾
with the steel instrument [Chalybeo]	47 15⅚
12 15 Mer. alt. of Spica ♍ [12 15 Alt. mer. Spicæ ♍]	
by the revolving instrument [Volub.]	30 54½
with the steel instrument [Chalybeo]	30 54⅔
with the Mural [Murali]	30 54
with the sextant [Sextante]	30 52½

Examination of the meridian altitudes taken this night, for determining the elevation of the pole more exactly. [Examinatio Altitudinum Meridianarum hac nocte habitarum pro Poli eleuatione exactius cognoſcenda.]

Merid. altit. of the heart of Hydra [Altit. Merid. cordis hydræ]	32 58 30
Southern declin. [Declin. Merid.]	6 57
Altit. of the equat. [Altit. Æquat.]	39 55 30
Of the pole [Poli]	50 4 30
Merid. altit. of the heart of ♌ [Altit. Merid. cordis ♌]	53 49
Northern declin. [Declin. Sept.]	13 53 30
Altit. of the equat. [Altit. Æquat.]	39 55 30

Of the pole [Poli]	50 4 30
Merid. altit. of the middle of the neck of ♌ [Altit. Merid. Med. Ceruicis ♌]	61 45⅔
Declin.	21 50
Altit. of the equat. [Altit. Æquat.]	39 55 40
Of the pole [Poli]	50 4 20
Merid. altit. of Spica ♍ [Altit. Merid. Spicæ ♍]	30 54 30
Declin.	9 1 12
Altit. of the equat. [Altit. Æquat.]	39 55 42
Of the pole [Poli]	50 4 18
Lowest altit. of the pole star [Altit. Polaris minima]	47 15 50
Dist. from the pole [Diſt. a Polo]	2 50 45
Elev. of the pole [Eleu. Poli]	50 6 35
Elev. of the pole from the southern [stars] [Eleu. Poli ex Auſtr.]	50 4 30
True and corrected elev. [Eleu. vera & correcta]	50 5 30

DIE 12 APRILIS. [12 April]

Merid. altit. of the heart of ♌ [Altit. cordis ♌ Merid.]	
with the revolving instrument [Volubili]	53 47⅙
with the steel instrument [Chalybeo]	53 46½
with the sextant [Sextante]	53 46
with the Mural, single pinnule [Simplici pinn. Murali]	53 49
with the ruler [Regula]	53 50⅓
with the wooden sextants, with one [Sext. ligneis { vno]	53 47⅔
with the other [altero]	53 47½

The sky was not really clear, and the Moon, close to the star, greatly troubled the sight with its rays; in particular, gliding onto the mural painting, it forced the apertures to be made larger than is right, so that little trust should be placed in this. [Non erat bene ſerenum & luna radijs ſuis valde viſum infeſtabat ſtellæ propinqua, præſertim picturæ muralis allabens, cogebat foramina iuſto ampliora facere, vt huic parum ſit fidendum.]

Lowest altit. of the pole star [Altit. Polaris minima]	
with the revolving instrument [Volubili]	47 16⅓
with the steel instrument [Chalybeo]	47 14⅔
with the wooden sextant [ligneo Sextante]	47 15½
Merid. altit. of Spica ♍ [Altit. Merid. Spicæ ♍]	
with the steel instrument [Chalybeo]	30 52⅙
with the brass sextant [Sextante orich.]	30 52
with the revolving instrument [Volubili]	30 53½
with the Mural, single pinnule [Murali pinnac. ſimplici]	30 53⅓
with the ruler [Regula]	30 54⅔

To test the sextant. [Pro examinando Sextante.]

Between Arcturus and the tail of ♌ [Inter Arcturum & caudam ♌]	35 24
Distance repeated [Diſtantia repetita]	35 24
The true distance is [Vera diſtantia eſt]	35 24 30

Examination of the preceding observations in altitudes, for the pole. [*Examinatio antecedentium obſeruationum in altitudinibus pro Polo.*]

	Volubilis	*Chalybeus*	*Sextans*
Alt. of the heart of ♌ [*Alt.cord.*♌]	*53 47 10*	*53 46 30*	*53 46 0*
Declin.	*13 53 30*	*13 53 30*	*13 53 30*
Alt. of the equat. [*Alt. æquat.*]	*49 53 40*	*49 53 0*	*49 52 30*
Of the pole [*Poli*]	*50 6 20*	*50 7 0*	*50 7 30*
Pole star [*Polaris*]	*46 16 20*	*47 14 40*	*47 15 30*
Dist. from the pole [*Diſt. a Polo*]	*2 50 45*	*2 50 45*	*2 50 45*
Alt. of the pole [*Alt. Poli*]	*50 7 5*	*50 5 25*	*50 6 15*
Comparison [*Collatio*]	*50 6 20*	*50 7 0*	*50 7 30*
Diff.	*0 0 45*	*0 2 25*[1]	*0 0*[1] *15*
Mean [*Med.*]	*50 6 42*	*50 6 37*	*50 6 22*
		50 6 42	*50 6 42*
		5	*20*
Mean [*Med.*]		*50 6 40*	*50 6 32*
Elevation of the pole, limited [*Eleuatio Poli limitata*]			*50 6 30*

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

From this the altitude of the pole, variously limited, comes out at 50 6½; before, it was 50 5½. The mean between the two observations, the earlier and this one, as regards the altitude of the pole, is 50 6. This also agrees well enough with the observation made with the sextants newly brought into use, as is evident. [*Hinc prouenit Poli altitudo varie limitata 50 6½, prius erat 50 5½. Medium inter vtramque obſeruationem priorem & hanc quoad Poli altitudinem eſt 50 6. Quod etiam concordat ſatis cum obſeruatione per Sextantes nouiter adhibitos facta, vt patet.*]

Altit. of the heart of ♌ [*Altit. cordis* ♌]	
with both sextants [*per vtrumque Sextant.*]	*53 47 35*
Declination [*Declinatio*]	*13 53 30*
Altit. of the equat. [*Altit. Æquat.*]	*39 54 5*
Altit. of the pole [*Altit. Poli*]	*50 5 55*
Altit. of the pole star [*Altit. Polaris*]	*47 15 30*
Dist. from the pole [*Diſt. a Polo*]	*2 50 45*
Altit. of the pole [*Altit. Poli*]	*50 6 15*
Earlier [*Prior*]	*50 5 55*
Pole, limited [*Polus limitatus*]	*50 6 5*

So 50ᵍ 6′ can be assumed without fail. [*Poteſt itaque infallibiliter aſsumi 50ᵍ 6′.*]
DIE 13 APRILIS. [13 April]

7ᴴ40ᴹ Mer. alt. of the heart of Hydra [7ᴴ40ᴹ Alt. Mer. cordis hydræ]	
with the Mural, single pinnule [Murali, pinn. ſimplici]	32 59⅔
the ruler [regula]	33 0⅔
with the steel instrument [Chalybeo]	32 57
with the brass sextant [Sextante orich.]	32 58½
with the revolving instrument [Volubili]	32 58⅚
8 9¾ Merid. altit. of the heart of ♌ [8 9¾ Altit. Merid. cordis ♌]	
with the Mural, pinnule [Murali pinn.]	53 49⅙
the ruler [regula]	53 50½
with the steel instrument [Chalybeo]	53 47⅚
with the brass sextant [Sextante orich.]	53 47⅚
with the revolving instrument [Volubili]	53 48½
with the wooden sextant [Sextante ligneo]	53 48

Moderately clear. [Mediocriter ſerenum.]

Merid. altit. of the bright star of the neck of ♌ [Altit. Merid. lucidæ ceruicis ♌]	
with the steel instrument [Chalybeo]	61 44⅔
with the revolving instrument [Volubili]	61 46⅓

It was not quite clear then. [Non erat tum bene ſerenum.]

10ᴴ Merid. altit. of the tail of ♌ [10ᴴ Altit. Merid. caudæ ♌]	
with the revolving instrument [Volubili]	56 44⅙
with the steel instrument [Chalybeo]	56 42⅓
with the Mural [Murali]	56 42
Lowest altit. of the pole star, with the steel instrument [Altit. Polaris min. Chalybeo]	47 15
with the revolving instrument [Volubili]	47 17

With the wooden sextant I could not. [Ligneo Sextante non potui.]
It was not quite clear. [Non erat bene ſerenum.]

11ʰ36ᵐ Merid. altit. of Spica ♍ [11ʰ36ᵐ Altit. Merid. Spicæ ♍]	
with the steel instrument [Chalybeo]	30 53⅔
with the revolving instrument [Volubili]	30 55
with the Mural [Murali]	30 53⅚

1 28 To test the sext., the dist. was taken between Arct. and [1 28 Pro examinando Sext. capiebatur Diſt. inter Arct. &]	
the head of Ophiuchus [cap. Ophiuchi]	48 5
Repeated twice [Repetita bis]	48 5
True distance [Vera diſtantia]	48 3

Alt. of the heart of ♌ [Alt. cord. ♌]	*53 48 20*	*53 48*	*53 47 50*
by the revolving instrument [Volub.]	*13 53 30*	*13 53 30*	*13 53 30*
	39 54 50	*39 54 30*	*39 54 20*
	50 5 10	*50 5 30*	*50 5 40*

The steel instr. is more correct [Chalyb. rectius ſe habet]

	47 15	
	2 50 45	
Truer pole [Verior polus]	*50 5 45*	

DIE 16 APRILIS. [16 April]

8ʰ17ᵐ Mer. alt. of the heart of ♌ [8ʰ17ᵐ Alt. Mer. cordis ♌]	
with the Mural [Murali]	53 46⅔
with the other pinnule [alt. pinn.]	53 46⅚
with the steel instrument [Chalybeo]	53 46½
with the brass sextant [Sext. orich.]	53 47
with the revolving instrument [Volubili]	53 48½
8 21 Merid. alt. of the bright star of the neck of ♌ [8 21 Alt. Merid. lucidæ ceruicis ♌]	
with the steel instrument [Chalybeo]	61 44⅓
with the revolving instrument [Volubili]	61 46½

To test the sextant. [Pro explorando Sextante.]

Dist. of the heart of ♌ and the lower head of ♊ [Dist. cordis ♌ & infer. cap. ♊]	36 58
Repeated [Repetita]	36 57⅔
Repeated twice [Bis repetita]	36 58
Add to the distances [Distantijs adde]	1⅔
Lowest alt. of the pole star [Alt. polaris minima]	
with the steel instrument [Chalybeo]	47 14¾
with the revolving instrument [Volubili]	47 16⅓
11ʰ23ᵐ Merid. alt. of Spica ♍ [11ʰ23ᵐ Alt. Merid. Spicæ ♍]	
with the revolving instrument [Volubili]	30 53⅚
with the steel instrument [Chalybeo]	30 52¼
with the brass sextant [Sext. orich.]	30 52½
with the Mural [Murali]	30 52⅓

DIE 17 APRILIS. [17 April]

9ʰ10ᵐ Alt. of the bright star of the loin of ♌ [9ʰ10ᵐ Alt. luc. lumbi ♌]	
by the revolving instrument [Volub.]	62 34⅚
with the steel instrument [Chalybeo]	62 35
9 37 Mer. alt. of the tail of ♌ [9 37 Alt. Mer. caudæ ♌]	
by the revolving instrument [Volub.]	56 41⅚
with the steel instrument [Chalybeo]	56 42⅓
with the Mural, prior pinnule [Murali priori pinnac.]	56 42½
posterior pinnule [Posteriori pinnac.]	56 42½
10 36 Lowest alt. of the pole star [10 36 Alt. Polaris minima]	
with the revolving instrument [Volubili]	47 12⅓
with the steel instrument [Chalybeo]	47 14

It was not quite clear. [Non erat bene serenum.]
DIE 18 APRILIS. [18 April]

7ʰ48ᵐ Mer. alt. of the heart of ♌ [7ʰ48ᵐ Alt. Mer. cordis ♌]	
with the Mural [Murali]	53 50[1]
with the steel instrument [Chalybeo]	53 47⅔[1]
with the brass sextant [Sext. orich.]	53 48⅔
with the revolving instrument [Volubili]	53 46⅚

To test the sextant. [Pro explorando Sextante.]

Distance of the heart of ♌ [Diſtantia cordis ♌]	
from the lower head of ♊ [ab infer. cap. ♊]	37 0
Repeated twice [Repetita bis]	37 0
$10^{H}7^{M}$ Lowest alt. of the pole star [$10^{H}7^{M}$ Alt. Polaris minima]	
with the revolving instrument [Volubili]	47 15
with the steel instrument [Chalybeo]	47 14½
Truer [Verior]	47 15
11 15 Mer. alt. of Spica ♍ [11 15 Alt. Mer. Spicæ ♍]	
with the Mural [Murali]	30 52⅝
with the steel instrument [Chalybeo]	30 52½
with the brass sextant [Sext. orich.]	30 51⅓
with the revolving instrument [Volubili]	30 52⅝

DIE 19 APRILIS. [19 April]

$8^{H}2^{M}$ Mer. alt. of the heart of ♌ [$8^{H}2^{M}$ Alt. Mer. cordis ♌]	
with the revolving instrument [Volubili]	53 46⅝
with the brass sextant [Sext. orich.]	53 46½
with the steel instrument [Chalybeo]	53 48⅝
with the Mural, upper pinnule [Murali pinn. ſuper.]	53 47½
the other, lower [altero infer.]	53 48⅔

On the steel instrument it could not be counted conveniently, because the lines were so confused. [In Chalybeo numerari commode non potuit ob lineas adeo confuſas.]

8 11 Merid. alt. of the bright star of the neck [8 11 Alt. Merid. lucidæ ceruicis]	
with the steel instrument [Chalybeo]	61 44⅝
with the revolving instrument [Volubili]	61 44⅙
Lowest altit. of the pole star [Altit. Polaris minima]	
with the revolving instrument [Volubili]	47 13⅝
with the steel instrument [Chalybeo]	47 15
with the wooden sextant [Sext. ligneo]	47 13½

Here too I took the pole star with what care could be applied, and one can see the same difference between the revolving instrument and the steel instrument as there was in ♃, namely 1⅙. It is therefore consistent that it was so in Regulus too; but let us nevertheless see what ♍ Spica gives. [Polarem etiam hic qua diligentia fieri potuit accepi, & videre eſt eandem differentiam inter Volubilem & Chalybeum, quæ in ♃ fuit, nempe 1⅙, conſentaneum itaque eſt & in Regulo ſic fuiße; ſed tamen videamus quid ♍ Spica præbeat.]

Merid. altit. of Spica ♍ [Altit. Merid. Spicæ ♍]	
with the revolving instrument [Volubili]	30 52⅔
with the steel instrument [Chalybeo]	30 52½
with the Mural [Murali]	30 52⅔

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

The cause of this agreement I certainly do not know. I know that it was observed correctly on both, and I saw that the plumb-lines were correct both before and after. It is remarkable that it was so yesterday too; perhaps there is something in those slopes. [Conuenientiæ huius cauſam certe ignoro, recte vtrinque obſeruatum ſcio & perpendicula ſe recte & ante & poſt habuiße vidi. Mirum & heri ſic fuiße, forſan habet aliquid in decliuibus iſtis.]

DIE 20 APRILIS. [20 April]

$8^{H}0^{M}$ Merid. alt. of the heart of ♌ [$8^{H}0^{M}$ Alt. Merid. cordis ♌]	
with the revolving instrument [Volubili]	53 46
with the brass sextant [Sext. orich.]	53 49⅔
with the Mural [Murali]	53 48
8 10 Mer. alt. of the bright star of the neck [8 10 Alt. Mer. luc. ceruicis]	
by the revolving instrument [Volub.]	61 42⅔
10 29 Lowest alt. of the pole star [10 29 Alt. Polaris minima]	
by the revolving instrument [Volub.]	47 13
with the wooden sextant, one [Sext. ligneo vno]	47 15
the other [altero]	47 14½
Merid. altit. of Spica ♍ [Altit. Merid. Spicæ ♍]	
with the revolving instrument [Volubili]	30 51⅔
with the brass sextant [Sext. orich.]	30 49½
with the Mural, upper pinnule [Murali pinnac. ſuper.]	30 52⅔

DIE 21 APRILIS. [21 April]

$9^{H}15^{M}$ Mer. alt. of the tail of ♌ [$9^{H}15^{M}$ Alt. Mer. caudæ ♌]	
with the revolving instrument [Volubili]	56 43
with the steel instrument [Chalybeo]	56 42½
with the Mural, lower pinnule [Murali inf. pinn.]	56 43½
10 23 Lowest alt. of the pole star [10 23 Alt. Polaris min.]	
by the revolving instrument [Volub.]	47 14½
with the steel instrument [Chalybeo]	47 14⅙
with the wooden sextant [Sext. ligneo]	47 14⅓
the other [altero]	47 15

DIE 26 APRILIS. [26 April]

Mer. alt. of the southern scale-pan [Alt. Mer. Lancis Auſtr.]	
with the revolving instrument [Volubili]	25 36⅚
with the steel instrument [Chalybeo]	25 37⅔
with the Mural [Murali]	25 36⅙

At this time the declination of the southern scale-pan should have been 14 18; subtracted from the alt. of the equator, 39 54, it gives 25 36, which agrees most nearly with the Mural. [*Debuit hoc tempore eſſe declinatio lancis auſtrinæ 14 18, quæ ſublata ab alt. æquatoris 39 54 dat 25 36, quod cum Murali proxime conſentit.*]

To test the sextant. [Pro explorando Sextante.]

Dist. between Arcturus and [Diſt. inter Arcturum &]		
the head of Oph. [caput Oph.]	48 7	
Repeated twice [Bis repetita]	48 7	
True distance [Diſtantia vera]	48 3	
Difference [Differentia]	4 sub. [4 ſub.]	

Altit. of the northern scale-pan, with the revolving instrument [Altit. Lancis Bor. Volubili]	32 3⅚
with the Mural [Murali]	32 4½

The steel instrument could not be taken because of clouds. [Chalybeus propter nubes capi non potuit.]

At this time the declination of the northern scale-pan of ♎ should have been 7 49 30; taken from the equator, 39 54 0, it gives the alt. 32 4 30, which again agrees with the Mural. [*Debuit hoc tempore eſſe declinatio Borealis Lancis ♎ 7 49 30, quæ ablata ab æquatore 39 54 0 dat alt. 32 4 30, quod rurſus cum Murali conſentit.*]

DIE 27 APRILIS. [27 April]

Merid. alt. of the southern scale-pan [Alt. Merid. Lancis Auſtr.]	
with the revolving instrument [Volubili]	25 36½
with the steel instrument [Chalybeo]	25 37⅔

DIE 28 APRILIS. [28 April]

To test the sextant. [Pro explorando Sextante.]

Distance between the heart of ♌ [Diſtantia inter cor ♌]

and the tail of ♌ [& caudam ♌]	24 39⅛
Repeated [Repetita]	24 39⅓
Repeated [Repetita]	24 39½
True distance [Vera diſtantia]	24 39¾
$10^{H}15^{M}$ Lowest alt. of the pole star [$10^{H}15^{M}$ Alt. Polaris min.]	
by the revolving instrument [Volub.]	47 13½
with the steel instrument [Chalybeo]	47 14⅚

Afterwards I noticed that the plumb-line towards the north was not quite correct on the revolving instrument, but that, in respect of this, nearly ½ less had been taken. [Poſtea animaduerti perpendiculum verſus Boream non ita recte ſe habere in Volubili, ſed reſpectu huius minus ferme ½ acceptum fuiße.]

10 42 Merid. alt. of Spica [10 42 Alt. Merid. Spicæ]	
with the revolving instrument [Volubili]	30 52⅓
with the steel instrument [Chalybeo]	30 54⅓
with the Mural, upper pinnule [Murali ſup. pinnac.]	30 52⅔

30	*52*	*30*	
9	*1*	*30*	
39	*54*	*0*	

therefore it is correct. [*ergo recte ſe habet.*]
To test the sextant. [Pro examinando Sextante.]

Dist. between Spica [Diſt. inter Spicam]	
and the northern scale-pan [& Lancem Bor.]	27 33½
Repeated twice [Bis repetita]	27 33½

Again, to test the sextant. [Iterum pro explorando Sextante.]

Dist. between the heart of ♌ [Diſt. inter cor ♌]	
and Spica ♍ [& Spicam ♍]	54 0
Repeated twice [Repetita bis]	54 0
Dist. between the tail of ♌ [Diſt. inter caudam ♌]	
and Spica ♍ [& Spicam ♍]	35 1
Repeated twice [Repetita bis]	35 1

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

Dist. between the bright star of the neck of ♌ [Diſt. inter luc. ceruic. ♌]	
and Spica ♍ [& Spicam ♍]	55 7½
Repeated twice [Repetita bis]	55 7½
$12^{H}10^{M}$ Mer. alt. of the southern scale-pan [$12^{H}10^{M}$ Alt. Mer. lancis Auſtrinæ]	
with the revolving instrument [Volubili]	25 36½
with the steel instrument [Chalybeo]	25 36¾
with the Mural [Murali]	25 36

The Mural agrees more correctly. [*Muralis rectius conſentit.*]

DIE 29 APRILIS. [29 April]

Lowest altit. of the pole star, with the wooden sextant [Altit. Polaris min. Sext. ligneo]	47 15

DIE 30 APRILIS. [30 April]

To test the sextant. [Pro explorando Sextante.]

Dist. between the heart of ♌ [Diſt. inter cor ♌]	
and the lower head of ♊ [& inf. cap. ♊]	36 58½
Repeated twice [Bis repetita]	36 58⅔
$11^{H}50^{M}$ Alt. of the southern scale-pan [$11^{H}50^{M}$ Alt. lancis Auſtr.]	
by the revolving instrument [Volub.]	25 36
with the steel instrument [Chalybeo]	25 36⅓
with the Mural, upper pinnule [Murali pinn. ſup.]	25 35¾
with the brass sextant [Sext. orich.]	25 34⅓

DIE 1 MAIJ. [1 May]

$9^{H}10^{M}$ Alt. of the tail of ♌ [$9^{H}10^{M}$ Alt. Caudæ ♌]	
with the Mural, upper [Murali ſup.]	56 40
lower pinnule [pinn. infer.]	56 41⅔
with the steel instrument [Chalybeo]	56 43
with the revolving instrument [Volubili]	56 41⅚
10 40 Alt. of Spica ♍, with the Mural [10 40 Alt. Spicæ ♍ Mur.]	
upper pinnule [pinn. ſuper.]	30 49⅔
lower pinnule [pinn. infer.]	30 47⅚[1]
with the steel instrument [Chalybeo]	30 53
with the revolving instrument [Volubili]	30 51
12 6 Merid. alt. of the southern scale-pan [12 6 Alt. Merid. Lancis Auſtr.]	
with the revolving instrument [Volubili]	25 36⅔
with the steel instrument [Chalybeo]	25 36⅔
with the Mural, lower [Murali infer.]	25 36⅔

12 28 Merid. alt. of the northern scale-pan [12 28 Alt. merid. Lancis Bor.]	
with the revolving instrument [Volubili]	32 4½
with the steel instrument [Chalybeo]	32 4¾
with the Mural, lower [Murali infer.]	32 4⅔
upper pinnule [pinnac. ſuper.]	32 1½

DIE 2 MAIJ. [2 May]

$8^{H}47^{M}$ Mer. alt. of the tail of ♌ [$8^{H}47^{M}$ Alt. Mer. caudæ ♌]	
with the revolving instrument [Volubili]	56 43⅔
with the steel instrument [Chalybeo]	56 43½
with the Mural, upper pinnule [Murali pinn. ſup.]	56 42

Uncertain, because it had passed somewhat. [Incerta quia nonnihil præterierat.]

To examine the sextant. [Pro examinando Sextante.]

Dist. between the heart and the tail of ♌ [Diſt. inter cor & caudam ♌]	24 38⅓
Repeated twice [Repetita bis]	24 38⅓
10 9 Lowest altit. of the pole star [10 9 Altit. Polaris min.]	
by the revolving instrument [Volub.]	47 16⅓
with the steel instrument [Chalybeo]	47 15
10 15 Merid. alt. of Spica [10 15 Alt. Merid. Spicæ]	
by the revolving instrument [Volub.]	30 54⅓
with the steel instrument [Chalybeo]	30 52⅔
with the Mural, upper pinnule [Murali pinn. ſup.]	30 51½
lower [infer.]	30 52⅔
with the brass sextant [Sext. orich.]	30 50⅙

For the elevation of the pole. [Pro Poli eleuatione.]

Lowest altit. of the pole star, by the revolving instrument [Altit. Polaris minima Volub.]	47 16 20
Dist. from the pole [Diſt. a Polo]	2 50 45
Elevation from the pole star [Eleuatio ex Polari]	50 7 5
Conversely, alt. of Spica [Vice verſa Alt. Spicæ]	
by the revolving instrument [Volub.]	30 54 20
Declination [Declinatio]	9 1 12
Alt. of the equator [Alt. Æquat.]	39 55 32
Elev. of the pole from Spica [Eleu. Poli ex Spica]	50 4 28
Difference [Differentia]	2 37
Aberration of the instrument [Aberratio inſtrum.]	1 18

True elevation of the pole [Vera eleuatio Poli]	50 5 46

When the steel instrument was to be turned round, the plumb-line broke, so that it was not possible to see whether it was correct or otherwise towards the north. [Chalybeus cum eßet circumagendus, rumpebatur perpendiculum, vt videre non licuerit, recte vel ſecus boream verſus ſe habuerit.]

11ʰ39ᴹ Alt. of the southern scale-pan [11ʰ39ᴹ Alt. lancis Auſtr.]	
by the revolving instrument [Volub.]	25 38¾
with the steel instrument [Chalybeo]	25 36⅓
with the Mural, upper pinnule [Murali pinn. ſuper.]	25 35⅓
lower [infer.]	25 36½

DIE 3 MAIJ. [3 May]

8ʰ44ᴹ Altit. of the tail of ♌ [8ʰ44ᴹ Altit. caudæ ♌]	
with the revolving instrument [Volubili]	56 43½
with the steel instrument [Chalybeo]	56 43½
with the Mural, upper pinnule [Murali pinn. ſuper.]	56 43⅙
lower [infer.]	56 43⅙

To examine the sextant.[1] [Pro examinando Sextante[1].]

Dist. between the lower head of ♊ [Diſt. inter infer. cap. ♊]	
and the heart of ♌ [& cor ♌]	36 59⅔
Repeated twice [Repetita bis]	36 59⅔

This distance agrees exactly with the one recorded in the Book of Letters. [Conuenit hæc diſtantia exacte cum ea quæ annotatur in libro Epiſtolarum.]

[1] After the observations of Venus. [Poſt obſeruationes Veneris.]

[2] After the observations of Jupiter. [Poſt obſeruationes Iovis.]

To test the sextant.[2] [Pro explorando Sextante[2].]

Dist. between the heart of ♌ [Diſt. inter cor ♌]	
and Spica ♍ [& Spicam ♍]	54 1½
Repeated twice [Bis repetita]	54 1½
9ʰ48ᴹ Lowest alt. of the pole star [9ʰ48ᴹ Alt. Polaris min.]	
with the revolving instrument [Volubili]	47 15¾

with the steel instrument [Chalybeo]	47 14⅚
10 22 Merid. alt. of Spica ♍ [10 22 Alt. Spicæ ♍ merid.]	
with the revolving instrument [Volubili]	30 54
with the steel instrument [Chalybeo]	30 52⅔
with the Mural, upper [Murali ſuper.]	30 51⅔
lower [infer.]	30 52⅓
11 52 Merid. alt. of the southern scale-pan [11 52 Alt. Merid. lancis Auſtr.]	
with the revolving instrument [Volubili]	25 37½
with the steel instrument [Chalybeo]	25 37⅓
with the Mural, upper pinnule [Murali pinn. ſuper.]	25 35⅓
lower [infer.]	25 36⅙

Inquiry into the elevation of the pole from some of the preceding observations. [Ex antecedentibus aliquot obſeruationibus Poli eleuationis inquiſitio.]

19 Aprilis, volubili. [19 April, with the revolving instrument]

Lowest altitude of the pole star [Altitudo Polaris minima]	47 13 50
Dist. from the pole [Diſt. a Polo]	2 50 45
Elevation of the pole from the pole star [Eleuatio Poli ex Polari]	50 4 35
Greatest altitude of Spica [Altitudo Spicæ maxima]	30 52 40
Declination [Declinatio]	9 1 12
	39 53 52
Elevation of the pole from Spica [Eleuatio Poli ex Spica]	50 6 8
Elevation, limited [Eleuatio limitata]	50 5 21

20 Aprilis. [20 April]

Altitude of Regulus [Altitudo Reguli]	53 46
Declination [Declinatio]	13 53 30
Altit. of the equator [Altit. Æquat.]	39 52 30
Elevation of the pole [Eleuatio Poli]	50 7 30
Altitude of the pole star [Altitudo Polaris]	47 13 0
	2 50 45
	50 3 45
Elevation of the pole, limit. [Eleuatio Poli limit.]	50 5 37

21 Aprilis. [21 April]

Altit. of the tail of ♌, with the revolving instrument [Altit. caudæ ♌ Volubili]	56 43
Declination [Declinatio]	16 49

	39 54
Elevation of the pole [Eleuatio Poli]	50 6
Lowest altit. of the pole star [Altit. Polaris minima]	47 14 30
Dist. from the pole [Diſt. a Polo]	2 50 45
	50 5 15
Elevation of the pole, limit. [Eleuatio Poli limit.]	50 5 38

28 APRILIS. [28 April]

Lowest altit. of the pole star [Altit. Polaris minima]	47 14
	2 50 45
Elevation of the pole [Eleuatio Poli]	50 4 45
Altitude of Spica [Altitudo Spicæ]	30 52 20
Declination [Declinatio]	9 1 12
Altit. of the equator [Altit. Æquat.]	39 53 32
Altit. of the pole [Altit. Poli]	50 6 28
Elev. of the pole, limit. [Eleu. Poli limit.]	50 5 37

2 MAIJ [2 May]
was observed most carefully [diligentißime obſeruabatur]

Meridian altit. of Spica [Altit. Spicæ meridiana]	30 54 20
Declination [Declinatio]	9 1 12
Altit. of the equator [Altit. Æquat.]	39 55 32
Elev. of the pole [Eleu. Poli]	50 4 28
Lowest altit. of the pole star [Altit. Polaris minima]	47 16 20
Dist. from the pole [Diſt. a Polo]	2 50 45
Elev. of the pole [Eleu. Poli]	50 7 5
Elev. of the pole, limit. [Eleu. Poli limit.]	50 5 46

DIE 3 MAIJ. [3 May]

Lowest altit. of the pole star [Altit. Polaris minima]	47 15 45
	2 50 45
	50 6 30
Altit. of Spica [Altit. Spicæ]	30 54
	9 1 12
Altit. of the equator [Altit. Æquat.]	39 55 12
	50 4 48
Elevation of the pole, limited [Eleuatio Poli limitata]	50 5 39

The Mural's meridian altitudes give 50 6⅙; but since, being fixed, it cannot be tested here towards the north, if we take the elevation of the pole of Prague as 50° 5′ 45″, we shall err imperceptibly. [Muralis meridianæ altitudines præbent 50 6⅙, ſed quoniam fixus hic Boream verſus explorari non poteſt, ſi eleuationem Poli Pragenſis aßumpſerimus 50° 5′ 45″, inſenſibiliter aberrabimus.]

DIE 4 MAIJ. [4 May]

Merid. alt. of the tail of ♌ [Alt. Merid. caudæ ♌]	
by the revolving instrument [Volub.]	56 43½
with the steel instrument [Chalybeo]	56 42⅓
with the Mural, upper pinnule [Murali pinn. ſuper.]	56 42⅚
lower [infer.]	56 44

DIE 9 MAIJ. [9 May]

To test the sextant. [Pro explorando Sextante.]

Dist. between the lower head of ♊ [Diſt. inter infer. cap. ♊]	
and the tail of ♌ [& caudam ♌]	36 59
Repeated twice [Bis repetita]	36 59
True [Vera]	36 59⅔

N.B. The exact declin. at the end of May [*N.B. Ad finem Maij declin. exacta*]	
of Spica ♍ [*Spicæ* ♍]	*9 1 20*
of the pole star [*Stellæ Polaris*]	*2 50 42*

according to the observations made earlier in Denmark. [*iuxta obſeruata in Dania prius facta.*]

DIE 12 MAIJ, VESPERI. [12 May, in the evening]

The lowest altit. of the pole star was observed [Obſeruabatur Altit. Polaris minima]	
with the revolving instrument [Volubili]	47 15
with the steel instrument [Chalybeo]	47 15⅙

	47 15	*47 15 10*
	2 50 45	*2 50 45*
Alt. of the pole [*Alt. Poli*]	*50 5 45*	*50 5 55*

Mean of the two [*Medium vtriusque*]	*50 5 50*
On 3 May, Spica with the steel instrument [*Die 3 Maij Spica Chalybeo*]	*30 53*
	9 1 15
Altit. of the equator [*Altit. Æquat.*]	*39 54 15*
of the pole [*Poli*]	*50 5 45*
Take the alt. of the pole at Prague [*Pone alt. Poli Pragæ*]	*50 5 45*

DIE 14 MAIJ. [14 May]

N.B. Towards the end of May [*N.B. Iuxta finem Maij*]	
Declin. of Spica ♍ [*Declin. Spicæ* ♍]	*9 1 20*
Comp. of the pole star [*Comp. Polaris*]	*2 50 42*
$9^{H}29^{M}$ Lowest mer. alt. of the pole star [$9^{H}29^{M}$ Alt. Polaris Mer. min.]	
by the revolving instrument [Volub.]	47 15
with the steel instrument [Chalybeo]	47 15⅓
9 52 Merid. alt. of Spica ♍ [9 52 Alt. Merid. Spicæ ♍]	
with the Mural, upper pinnule [Murali pinn. ſup.]	30 51¾
lower [infer.]	30 52⅙
with the steel instrument [Chalybeo]	30 53⅙
with the revolving instrument [Volubili]	30 53

	with the steel instrument [*Chalybeo*]	*with the revolving instrument* [*Volubili*]
Alt. of Spica [*Alt. Spicæ*]	*30 53 10*	*30 53*
Declin.	*9 1 20*	*9 1 20*
Alt. of the equator [*Alt. Æquat.*]	*39 54 30*	*39 54 20*
Alt. of the pole [*Alt. Poli*]	*50 5 30*	*50 5 40*
The pole star [*Polaris ſtella*]	*47 15 15*	*47 15 0*
	2 50 42	*2 50 42*
From the pole star [*E Polari*]	*50 5 57*	*50 5 42*
From Spica [*E Spica*]	*50 5 30*	
Mean [*Medium*]	*50 5 43*	

DIE 15 MAIJ. [15 May]

Mer. alt. of the 3rd of the wing of ♍ [Alt. Mer. $3^{tiæ}$ alæ ♍]	
with the revolving instrument [Volubili]	40 40½
with the steel instrument [Chalybeo]	40 40⅚
with the Mural, upper pinnule [Mur. pinn. ſuper.]	40 40⅔
$9^{H}50^{M}$ Lowest alt. of the pole star [$9^{H}50^{M}$ Alt. Polaris min.]	
with the revolving instrument [Volubili]	47 15

with the steel instrument [Chalybeo]	47 15¼

Hence the pole comes out, limited, [*Prouenit hinc limitate Polus*]	*50 5*
	35
But earlier the same from Spica [*At prius eadem e Spica*]	*50 5*
	45
If, therefore, we take the mean, the error will be imperceptible, so that it is [*Si itaque medium acceperimus, inſenſibiliter aberrabitur, vt ſit*]	*50 5*
	40

	with the revolving instrument [Volubili]	with the steel instrument [Chalybeo]
Alt. of the 3rd of the wing of ♍ [Alt. 3^{tiæ} alæ ♍]	40 40 30	40 40 50
Declin.	0 46 3	0 46 3
Altit. of the equator [Altit. Æquat.]	39 54 27	39 54 47
Elev. of the pole [Eleu. Poli]	50 5 33	50 5 13
Altit. of the pole star [Altit. Polaris]	47 15	47 15 15
	2 50 42	2 50 42
Elev. of the pole [Eleu. Poli]	50 5 42	50 5 57
From the 3rd of the wing [Ex 3^{tia} alæ]	50 5 33	50 5 13
Mean [Medium]	50 5 37	50 5 35

DIE 21 MAIJ. [21 May]

9^{H}10^{M} Lowest merid. altit. of the pole star [9^{H}10^{M} Altit. Merid. Polaris min.]	
with the steel instrument [Chalybeo]	47 15
with the revolving instrument [Volubili]	47 15
9 27 Merid. altit. of Spica ♍ [9 27 Altit. Merid. Spicæ ♍]	
with the revolving instrument [Volubili]	30 53
with the Mural, upper pinnule [Murali pinn. ſup.]	30 52⅔
with the steel instrument [Chalybeo]	30 52⅚
11 17 Merid. altit. of the northern scale-pan [11 17 Altit. Merid. Lancis Bor.]	
with the revolving instrument [Volubili]	32 4⅓
with the steel instrument [Chalybeo]	32 4⅙
with the Mural, upper [Murali ſuper.]	32 4

DIE 28 MAIJ. [28 May]

To examine the sextant. [Pro examinando Sextante.]

Between Spica and [Inter Spicam &]	
the northern scale-pan [lancem Boream]	27 32¾
Repeated [Repetita]	27 32¾
True distance [Vera diſtantia]	27 34
Mer. alt. of the northern scale-pan [Alt. Mer. lancis Boreæ]	
with the revolving instrument [Volubili]	32 4⅙
with the steel instrument [Chalybeo]	32 3¼
with the Mural, upper pinnule [Murali pinn. ſup.]	32 4

DIE 4 JUNIJ. [4 June]

$2^{H}34^{M}$ the bright star of the Vulture was crossing [$2^{H}34^{M}$ tranſibat Lucida Vulturis]	
the merid., having the altitude [per merid. habens altitudinem]	
with the revolving instrument [Volubili]	47 48⅙
with the steel instrument [Chalybeo]	47 48⅓
with the Mural, upper pinnule [Murali pinn. ſuper.]	47 48⅓
lower [infer.]	47 48½

Declination of the Vulture now [*Declinatio Vulturis nunc*]	*7 53 20*
Altitude observed [*Altitudo obſeruata*]	*47 48 20*
Altit. of the equator [*Altit. Æquat.*]	*39 55 0*
of the pole [*Poli*]	*50 5 0*
Altit. of the pole star by the steel instrument [*Altit. Polaris per Chalyb.*]	*47 15 15*
Dist. from the pole [*Diſt. a Polo*]	*2 50 45*
Alt. of the pole [*Alt. Poli*]	*50 6 0*
Earlier it was [*Prius erat*]	*50 5 0*
True altitude [*Altitudo vera*]	*50 5 30*
Take, therefore, the altitude of the pole from the bright star of the eagle and the pole star, limited [*Pone itaque altitudinem Poli ex aquilæ lucida & Polari limitatam*]	*50 5 30*

DIE 29 JUNIJ. [29 June]

To test the sextant. [Pro explorando Sextante.]

Between Lyra and [Inter Lyram &]	
the bright star of the Crown [lucidam Coronæ]	39 40½
Repeated twice [Bis repetita]	39 41
It ought to have been [Debebat eße]	39 42¼

To the observed distances, therefore, 1¼ must be added for them to be true. [Diſtantijs itaque obſeruatis addendum eſt 1¼ vt veræ habeantur.]

DIE 18 JULIJ. [18 July]

Shortly before midnight [Paulo ante mediam noctem]	
the bright star of the Vulture was crossing [tranſibat Lucida Vulturis]	
the merid., having the altitude [per merid. habens altitudinem]	
with the revolving instrument [Volubili]	47 47½
with the Mural [Murali]	47 47¾
with the steel instrument [Chalybeo]	47 48½
Altit. observed [Altit. obſeruata]	47 47 40
Declin. of the Vulture [Declin. Vulturis]	7 53 20
Altit. of the equator [Altit. Æquat.]	39 54 20
Elevation of the pole [Eleuatio Poli]	50 5 40

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

H. 3. To test the sextant, the distance was taken between Aldeb. and [H. 3. Pro explorando Sextante capiebatur diſtantia inter Aldeb. &]	
the lower head of ♊ [infer. caput ♊]	45 5
Distance repeated [Diſtantia repetita]	45 4
Repeated twice [Repetita bis]	45 3⅚
The same distance repeated [Eadem diſtantia repetita]	45 3⅚
It should be [Debet eße]	45 5½

DIE 11 OCTOBRIS. [11 October]

To examine the sextant there was taken [Pro examinando Sextante capiebatur]	
Dist. between Aldeb. and Procyon [Diſt. inter Aldeb. & Procyon.]	46 20⅓
The same repeated twice [Eadem repetita bis]	46 20⅓

On[1] 13 October M.D. Tycho Brahe, having accompanied Lord a Mincowiz to dinner with the Most Illustrious Lord a Rosenberg, sat on, holding back his

urine beyond the point of delay. As the drinking was somewhat freer, and he felt the tension of his bladder, he put his health second to courtesy. Having returned home, he could no longer pass urine. At this onset of the illness the Moon was in opposition to Saturn and in quadrature to Mars, in Taurus, and Mars was in the place that Tycho had fixed for himself as his rising degree. After five sleepless days had passed, the urine at last came, barely, with the most severe torment, and even so it was impeded. Continual sleeplessness followed, an internal fever, and little by little delirium, his manner of diet, from which he could not be kept, aggravating the illness. Thus on 24 October, after the delirium had abated for some hours, his nature overcome, he died most peacefully amid the consolations, prayers and tears of his own people. [Die[1] 13 Octobris M.D. Tycho Brahe Dominum a Mincowiz ad cœnam Illuſtrißimi Domini a Roſenberg comitatus, retentâ præter moram urinâ conſedit. Cum paulo largius biberetur, ſentiretque veſicæ tenſionem, valetudinem civilitati poſthabuit. Domum reverſus urinam reddere amplius haud potuit. Erat hoc initio morbi Luna in oppoſito Saturni et quadrato Martis, in Tauro, et Mars eo loco quem ſibi Tycho Orientem gradum conſtituerat. Transactis quinque diebus inſomnibus, cum gravißimo cruciatu, vix tandem urina proceßit, et nihilominus impedita. Inſomnia ſequebantur perpetua, febris interna, et paulatim delirium: ratione victus, a qua prohiberi non poterat, malum exaſperante. Ita die 24 Octobris, poſtquam delirium aliquot horis remiſißet, victâ naturâ, inter conſolationes, preces et lacrumas ſuorum placidißime expiravit.]

From this time, therefore, the series of celestial observations was broken off, and an end was put to the records of thirty-eight years. [Ab hoc itaque tempore ſeries obſervationum cœleſtium interrupta eſt, finisque impoſitus triginta octo annorum annotationibus.]

On the night that was his last, in delirium, all of which was most gentle, he repeated these words very often, like one who weaves a poem: [Nocte, quam ultimam habuit, per delirium, quæ omnia ſuavißima fuere, creberrime hæc verba iteravit, quaſi qui carmen texit:]

LET ME NOT SEEM TO HAVE LIVED IN VAIN. [NE FRUSTRA VIXISSE VIDEAR.]

This, beyond doubt, he wished to add to his works as a colophon, and with these words to dedicate them to the memory and the use of posterity. [Quem proculdubio ceu colophonem operibus ſuis addere, eaque his verbis poſteritatis memoriæ et uſibus dedicare voluit.]

[1] Written in the hand of Johannes Kepler. [Manu Ioannis Kepleri conſcripta.]

APPENDICES AD OBSERUATIONES ANNI 1601. [Appendices to the observations of the year 1601]

I. TABULA PRO RADIO MINORI. [I. Table for the smaller Radius]

P	G	M	S												
1	0	13	30	26	5	49	24	51	11	18	0	76	16	36	24
2		27	10	27	6	2	36	52		31		77		48	36

P	G	M	S												
3		40	30	28		15	48	53		44		78	17	0	48
4		53	50	29		29	0	54		57		79		13	0
5	1	7	30	30		42	12	55	12	10		80		25	12
6		21		31		55	48	56		23	36	81		37	24
7		34	30	32	7	9	12	57		36	24	82		49	36
8		47	50	33		22	36	58		49	12	83	18	1	48
9	2	1		34		36	0	59	13	2	0	84		14	0
10		14	45	35		49	24	60		14	48	85		26	12
11		28		36	8	2	24	61		27	36	86		38	
12		41	30	37		15	36	62		40	24	87		50	
13		55		38		28	48	63		53	12	88	19	2	
14	3	8	30	39		42	0	64	14	6	0	89		14	
15		22		40		55	12	65		18	48	90		26	
16		35		41	9	8		66		31	12	91		38	
17		48		42	9	21		67		43	48	92		50	
18	4	2		43	9	34		68		56	24	93	20	2	
19		16		44	9	47		69	15	9	0	94		14	
20		29	24	45	10	0		70		21	36	95		26	
21		42	38	46		13		71		34	12	96		38	12
22		56	12	47		26		72		46	48	97		49	48
23	5	9	36	48		39		73		59	24	98	21	1	24
24		23		49		52		74	16	12	0	99		13	0
25		36	24	50	11	5		75		24	36	100		24	36

II. OBSERUATIONES ALIQUOT PLANETARUM ♄, ♃, ♀ A DAVIDE FABRICIO FACTÆ ANNO 1601. [II. Some observations of the planets ♄, ♃, ♀ made by David Fabricius in the year 1601]

OBSERUATIONES SATURNI. [Observations of Saturn]

DIE 21 JANUARIJ, DIE ☿. [21 January, day of ☿]

Morning, hour 6. About □ ♄ and ☉. [Mane hora 6. Circa □ ♄ & ☉.]

♄ from Spica [♄ a Spica]	22 19½
from the northern scale-pan [a Lance boreali]	7 7
from Arcturus [ab Arcturo]	35 1 nearly [fere]
from the head of Ophiuchus [a Capite Ophiuchi]	47 38
♄ meridian altitude [♄ Altitudo meridiana]	23 49
Merid. alt. of the northern scale-pan [Alt. merid. Lancis Bor.]	28 32

DIE 11 FEBRUARIJ, DIE ☿. [11 February, day of ☿]

For △ ♄ and ☉. [Pro △ ♄ & ☉.]

H. 5 A.M. ♄ from Spica ♍ [H. 5 A. M. ♄ a Spica ♍]	22 35ex.[1]
from Arcturus [ab Arcturo]	35 4½ex.

from the head of Ophiuchus [a Cap. Ophiuchi]	47 24 ex.
♄ from the bright star in the right shoulder of Oph. [♄ a clara in hum. dext. Oph.]	45 20

DIE 17 FEBRUARIJ ♂, MANE. [17 February, ♂, morning]

Hour 5½ ♄ from Spica [Hora 5½ ♄ a Spica]	22 31 ex.
from Arcturus [ab Arcturo]	35 1 ex.
from the head of Ophiuchus [a Cap. Ophiuchi]	47 25
from the left haunch of Oph. [a Clune ſin. Oph.]	24 47 f.

4 APRILIS DIE ♄. [4 April, day of ♄]
For ☍ ♄ and ☉. Between 1 and 2 A.M. [Pro ☍ ♄ & ☉. Inter 1 & 2 A. M.]

♄ from Spica [♄ a Spica]	20 22
from Arcturus [ab Arcturo]	33 45
from the head of Ophiuchus [a Capite Ophiuchi]	48 48

[1] That is, an exact observation. [Id eſt, exacta obſeruatio.]

10 APRILIS DIE ♀ MANE. [10 April, day of ♀, morning]

Hour 3 ♄ and Arcturus [Hora 3 ♄ & Arcturus]	33 31
♄ and Spica [♄ & Spica]	19 57

11 APRILIS VIGILIA PASCHÆ. [11 April, Easter Eve]
Morning, hour 1 A.M., day of ♄. [Mane hora 1 A. M. die ♄.]

♄ from Arcturus [♄ ab Arcturo]	33 30
from the tail of ♌ [a Cauda ♌]	51 51½
the head of Ophiuchus [Capite Ophiuchi]	49 10
Spica	19 54½

21 APRILIS DIE ♂. [21 April, day of ♂]
For ☍ ♄ and ☉. [Pro ☍ ♄ & ☉.]

Hour 12 P.M. ♄ from Spica [Hora 12 P. M. ♄ a Spica]	19 4½
from the northern scale-pan [a Lance bor.]	9 10 p.pl.

the southern scale-pan [Lance auſtrali]	3 35 f.
the tail [Cauda]	51 4
the head of Ophiuchus [Capite Ophiuchi]	49 44½
Merid. altit. of ♄ [Altit. merid. ♄]	25 6½
Merid. altit. of the tail of ☋ [Altit. merid. caudæ ☋]	53 11

An exact observation. This last observation is to be trusted as much as possible, since the ☍ of the Sun was near, within three days. [Exacta obſeruatio. Huic vltimæ obſeruationi quam maxime fidendum, ſi quidem propinqua erat ☍ Solis intra triduum.]

OBSERUATIONES IOUIS. [Observations of Jupiter]

DIE 2 JANUARIJ. [2 January]

I observed through clouds. [Per nubes obſeruaui]

☊ from Arcturus [☊ ab Arcturo]	39 50 ex.
from the neck of ☋ [a collo ☋]	29 0 approximately [circiter]

The sky was overcast for almost 6 whole weeks (wonderful to say). [Fuit cœlum obſcurum per totas fere 6 ſeptimanas (mirabile dictu).]

DIE 21 JANUARIJ, MANE. [21 January, morning]

H. 6 ☊ from Arcturus [H. 6 ☊ ab Arcturo]	39 19½
from Regulus [a Regulo]	27 0
from the tail of ☋ [a Cauda ☋]	12 0

☍ ☊ ☉.

3 MARTIJ DIE ♂ VESPERI. [3 March, day of ♂, evening]

Hour 7 ☊ from the tail of ☋ [Hora 7 ☊ a cauda ☋]	10 46
Regulus [Regulo]	22 16
the head of Hydra [capite Hydræ]	34 0

N.B. 5 days before, ☊ *was in* ☍ *of the mean place of the* ☉. [*N.B.* ☊ *ante 5 dies fuit in* ☍ *medij loci* ☉.]

DIE 13 MARTIJ, DIE ♀. [13 March, day of ♀]

Hour 7 P.M. ☊ from Regulus [Hora 7 P. M. ☊ a Regulo]	21 1
the tail of ☋ [cauda ☋]	10 48 f

the head of Hydra [capite Hydræ]	33 11

♃ *having passed* ☌ ☉ *by 14 days.* [♃ *prætergreßus* ☌ ☉ *per dies 14.*]
△ ♃ ☉.
21 APRILIS DIE ♂ VESPERI. [21 April, day of ♂, evening]

Hour 9 P.M. ♃ from Arcturus [Hora 9 P. M. ♃ ab Arcturo]	45 20
from Regulus [a Regulo]	18 6
♃ from the bright star of the loin of ♌ [♃ a lucida lumbi ♌]	
or the northern 3 at the end [vel boreali 3 in fine]	
of the asterism of ♌ [afterismi ♌]	14 47
♃ from the tail of ♌ [♃ a cauda ♌]	11 29½
Merid. altit. of ♃ [Altit merid. ♃]	44 40½

OBSERUATIONES VENERIS. [Observations of Venus]
Pro digreßione maxima A° 1601. [For the greatest elongation, A° 1601]
21 APRILIS DIE ♂. [21 April, day of ♂]
Hour 8½ p. Merid., at alt. of ♀ 30 or 25 Gr. [Hora 8½ p. Merid. in alt. ♀ 30 vel 25 Gr.]

♀ from Capella [♀ a Capella]	22 3
Procyon [Procyone]	30 22½
the southern head of ♊ [Mer. Capite ♊]	21 40½

DIE 23 APRILIS. [23 April]
Hour 8½ P.M. [Hora 8½ P. M.]

♀ from Capella [♀ a Capella]	22 58½
Procyon [Procyone]	28 51½
the southern head of ♊ [Mer. Cap. ♊]	19 39½

Observations of Seven Comets [OBSERUATIONES SEPTEM COMETARUM]

appearing in the years from Christ [APPARENTIUM ANNIS A CHRISTO]

1	1577
2	1580

3	1582
4	1585
5	1590
6	1593
7	1596

At Hven in Denmark, where the pole is elevated P. 55 M. 54½, longitude ♄ 37 [HVENNÆ DANIÆ VBI POLUS ELEUATUR P. 55 M. 54½ LONGITUDO ♄ 37][11]

TB

At Uraniborg [VRANIBURGJ]

Note. All the distances observed and recorded in this book of the Comet of the year 77 I have limited in their place, partly on account of the parallax of the instrument, partly on account of a certain deviation of the instrument that sometimes coincided. For at that time I did not have larger and more certain instruments ready. [Nota. Diſtantias omnes obſeruatas & in hoc libro Cometæ anni 77 annotatas ſuo loco limitaui, partim ob inſtrumenti parallaxin, partim ob quandam inſtrumenti deuiationem interdum coincidentem. Non enim tunc maiora & certiora inſtrumenta parata habebam.]

Table of the parallax of the sextant which I used in these observations. [Tabula parallaxeos ſextantis, quo in his obſeruationibus vſus ſum.]

° ′ ″	° ′ ″
1° 1′ 9″	16° 18′ 15″
2° 2′ 17″	17° 19′ 22″
3° 3′ 25″	18° 20′ 28″
4° 4′ 34″	19° 21′ 34″
5° 5′ 44″	20° 22′ 40″
6° 6′ 53″	21° 23′ 45″
7° 8′ 2″	22° 24′ 50″
8° 9′ 10″	23° 25′ 54″
9° 10′ 19″	24° 26′ 57″
10° 11′ 27″	25° 27′ 59″
11° 12′ 36″	26° 29′ 1″
12° 13′ 44″	27° 30′ 3″
13° 14′ 52″	28° 31′ 5″
14° 16′ 0″	29° 32′ 7″
15° 17′ 7″	30° 33′ 8″

In all the following observations made with the Sextant I subtracted the due parallax. [In omnibus obſeruationibus ſequentibus per Sextantem ſubtraxi debitam parallaxin.]

[11] The sign after LONGITUDO is printed as a barred *h* (♄) in the display type; it is left as printed.

Observation of the Comet which I first saw at Hven in the year 1577, on 13 November[1] [OBSERUATIO COMETÆ QUEM PRIMUM CONSPEXI HUENÆ ANNO 1577, NOUEMBRIS DIE 13[1].]

This Comet was seen by certain sailors on 9 November. From this I conjecture that it began on 10 November, in the Ecliptic, in the 21st degree of ♐. [Viſus eſt hic Cometes a quibusdam nautis die 9 Nouembris. Vnde ego conijcio, ipſum incepiße die 10 Nouembris in Ecliptica in 21 parte ♐.]

On the day stated above, immediately after sunset, I unexpectedly observed the Comet appearing towards the west between the Sun and the new Moon. I at once took its distance from ☾, P. 18 M. 50, the hour being the 5th after noon (It was hour 5½). [Die præſcripto ſtatim poſt occaſum Solis obſeruaui ex improuiſo Cometam apparentem verſus occaſum inter Solem & Lunam nouam, cuius ſtatim diſtantiam a ☾ accepi P. 18 M. 50, hora exiſtente 5ta pomeridiana (Fuit hora 5½).]

Then, turning to the appearance of the Comet itself, I found its colour to be a livid whiteness in the head, such as it is the property of the star of ♄ to give out, a gloomy light; its tail appeared somewhat ruddier, and lay exactly in the part opposite the Sun. [Dein ad ipſam Cometæ habitudinem conuerſus, deprehendi colorem eius liuida albedine in capite, qualis eſt ſtellæ ♄ triſte lumen producere, cauda ipſius paulo rubicundiore apparente, & in partem Soli aduerſam exquiſite exiſtente.]

The size of the diameter of the head was 7 M. or 8. [Quantitas diametri capitis erat 7 M. aut 8.]

The tail of the Comet, moreover, appeared drawn out as far as the horns of ♉, and that in an arc, in such a way that, if the upper part of the tail were produced into the stars of the tail of the same, it would make a certain arc in this manner. [Cauda vero Cometæ protracta apparebat vsque in cornua ♉ idque arcualiter eo modo, vt, ſi in caudæ eiusdem ſtellas ſuperior caudæ pars produceretur, arcum quendam in hunc modum efficeret.]

Diagram. A small line drawing set at the left of the text block, beside the next two entries. It shows a sheaf of long, slightly curved hatched strokes, broad and fringed in a dense tuft at its right end and narrowing towards the left; from its left end a dashed line continues leftward towards two star marks standing one above the other at the far left (a small dot below the lower one). Two further star marks stand just above the left part of the sheaf. No letters, figures or other labels are drawn.

At hour 5½ ἐν πλάτει [Greek: ἐν πλάτει (en platei, "in breadth")] with the Radius I found its distance from the brighter star of the Flying Vulture 26 50. [Hora 5½ ἐν πλάτει per Radium deprehendi eius diſtantiam a lucidiori Vulturis volantis 26 50]

A little later I also found its distance from the lower and more southern horn of Capricorn 21 40. [Paulo poſt etiam diſtantiam ipſius ab inferiori meridionaliorique cornu Capricorni deprehendi 21 40]

Into which the upper extremity of the tail was also produced, the tail itself meanwhile being, between the Comet's head, slightly humped towards the Zenith (It was hour 6). [In quam etiam caudæ extremitas ſuperior producebatur, ipſa interim cauda inter Cometæ caput parum gibboſa exiſtente verſus Zenith (Fuit hora 6).]

Around this time, when I completed these observations, the southern head of ♊ was rising. [Oriebatur circa hoc tempus, quo has obſeruationes perfeci, caput ♊ meridionalis.]

At that time, moreover, the place of the Comet's head was on the straight line which is drawn between the two outermost ones in the left wing of Cygnus, through the bright star of the Flying Vulture; and that on the borders of the Milky Way, where it stretches out into two branches. [Erat autem tunc temporis locus capitis Cometæ in linea recta, quæ ducitur inter binas extremas in ſiniſtra ala Cygni, per Vulturis volantis lucidam, idque in limitibus viæ lacteæ, vbi ea in duos ramos porrigitur.]

From these observations the longitude of the Comet's head is gathered on the globe to be in 7 G. ♑, and its latitude northern, 8 P. 35 M. [Ex his obſeruationibus colligitur in globo longitudo capitis Cometæ in 7 G. ♑, latitudo vero ſeptentrionalis 8 P. 35 M.]

But when the middle part between the lower shoulder of Orion and the belt was rising, the head of the hairy star seemed, by conjecture, to set; clouds, however, came between and prevented certainty on this matter. [Cum vero pars media inter humerum inferiorem Orionis & balteum oriebatur, viſum eſt crinitæ caput per coniecturam occidere, interuenientibus tamen nubibus & huius rei certitudinem prohibentibus.]

A certain man affirmed that on the previous evening he had seen a certain unknown glare towards the west and, because its cause was unknown, had thought it was a fire. From this I judge that this hairy star was present on the previous evening too, but nearer the Sun, and for that reason had appeared less. [Affirmabat quidam ſe priori veſpere fulgur quoddam ignotum verſus occaſum vidiße, & propter ignoratam cauſam exiſtimaße fuiße incendium. Vnde exiſtimo hanc crinitam etiam priori veſpere extitiße, propiorem tamen Soli, ideoque minus apparuiße.]

DIE 14 NOUEMBRIS. [14 November]

Hour 4 M. 50. Between the body of the Comet and the limb of ☾ nearest to it, with the Radius [Hora 4 M. 50 Inter corpus Cometæ & limbum ☾ ipſi proximum per Radium]	26 25	
Between the Flying Vulture and the hairy star [Inter Vulturem volantem & crinitam]	23 45	the hour being the 5th [hora exiſtente 5ta]

Between the lower of the horns of ♍ and the hairy star [Inter inferiorem cornuum ♍ & crinitam]	18½	the hour being 5½ [hora exiſtente 5½]
Between the star of ♄, moreover, and the hairy star [Inter ♄ni vero ſtellam & crinitam]	10 12	the hour being 5¾ [hora exiſtente 5¾]

The tail of the Comet, however, no longer stretched into yesterday's place, so that the uppermost point of its end touched the lower star of the horns of ♍, but the in- [Cauda vero Cometæ non amplius porrigebatur in heſternum locum, ita vt ſupremitas finis eius tangeret inferiorem ſtellam cornuum ♍, verum in-]

[1] From codex N. Cf. T. IV p. 11 ff. [[1] E codice N. Cfr. T. IV p. 11 ſqq.]

-ferior part of the extremity of the tail touched the uppermost star of the horns of ♍, the same being curved a little, as before. [ferior pars extremitatis caudæ attingebat ſupremam ſtellam cornuum ♍ eadem incuruata parum exiſtente vt prius.]

With the astronomical sextant I found between the lower one in the horn of ♍ and the head of the hairy star [Per ſextantem aſtronomicum deprehendi inter inferiorem in cornu ♍ & crinitæ caput]	p. 18 M. 50	at hour 6⅙ [hora 6⅙]
When the hour was 6⅓, however, I found with the Sextant the distance of the same hairy star from the brighter star of the Flying Vulture [Hora vero exiſtente 6⅓ deprehendi per Sextantem eiusdem crinitæ diſtantiam a lucidiori Vulturis volantis]	23½	
Then, when the head of the hairy star seemed to set, tending towards the west, while the girdle of Orion was already then making for its rising, the head of the hairy star was distant from the Flying Vulture, with the Radius [Deinde cum caput crinitæ occidere videbatur, tendens ad occaſum, cingulo vero Orionis iam tum ortum petente, diſtabat caput crinitæ a Vulture volante per Radium]	22 50	

From these the longitude of the star is gathered in 9 g. ♍, with a northern latitude of exactly 10°, distant from its earlier place by exactly three degrees, tending through the Zenith towards the east. [Ex his colligitur longitudo ſtellæ in 9 g. ♍ cum latitudine ſeptentrionali 10 exquiſite graduum, diſtans a priori loco partibus exquiſite tribus, tendens per Zenith in orientem.]

DIE 15 NOUEMBRIS. [15 November]

Hour 5ta M. 3	It was, with the radius, between the Comet and the bright star of the Vulture [Erat per radium inter Cometam & Vulturis lucidam]	p. 20 30
Hour 5 13	With the Sextant, the parallax removed, I found the same distance [per Sextantem, ablata parallaxi inueni eandem diſtantiam]	20 30

	At that time, moreover, the Comet was almost in one vertical circle with the bright star of the Vulture. [Erat autem tunc temporis Cometa cum Vulturis lucida fere in vno verticali circulo.]	
H. 5 25	I observed the Comet at that altitude and Azimuth which are assigned in the Quadrant. Of these, nothing certain[1]. [obſeruaui Cometam in illa altitudine & Azimut, quæ in Quadrante ſunt aßignata. De his nihil certi[1].]	
5 43	Between the lower horn of ♑ and the body of the Comet, degrees [Inter inferius cornu ♑ & Cometæ corpus partes]	17 0
	(There must be an error here; put 16½.) [(Oportet hic eße errorem, pone 16½).]	

The extremity of the Comet's tail stretched towards the stars in the cloth of the left hand of ♒; the lower part of the tail, moreover, was distant from the more northern horn of ♑ by an interval equal to the distance of the same two stars in the horns of Capricorn. [Extremitas caudæ Cometæ porrigebatur verſus ſtellas in linteo ſiniſtræ manus ♒, diſtabat vero inferior pars caudæ a ſeptentrionaliori cornu ♑ æquali interuallo cum diſtantia earundem duarum ſtellarum in cornubus Capricorni.]

The colour of the Comet still seemed overlaid with a pale and livid whiteness; the tail, however, the nearer it was to the head, the brighter it was, and at its end it showed a dark livid hue. It was, moreover, pointed, in this manner. [Color Cometæ viſus eſt adhuc pallida & liuida albedine obſitus, cauda vero quo propior capiti eo erat lucidior, in fine obſcurum liuorem præ ſe ferens. Erat autem acuminata in hunc modum.]

Diagram. A small line drawing set across the middle of the text block. At its left end is a small tuft of dots and short strokes; from it a sheaf of long hatched strokes runs to the right, broad near the tuft and narrowing to a point that ends at a star mark. A second star mark stands a little lower and to the right, and after it the label "manus ♒".

• Right, after the lower star mark: "manus ♒" — hand of ♒

DIE 20 NOUEMBRIS. [20 November]

Since on the preceding days it was not clear on the horizon of Hven — the 18th being very dark and misty, and on the 19th a storm of winds and rains raging — on the 20th day, the breeze having become lighter around noon, I adjusted the clock to the shadow of the meridian line and found the Altitude of the Sun at noon $12^{P}25'$. In the evening, however, after the setting of ☉, although it was not altogether clear, I nevertheless observed these things carefully enough. [Quoniam præcedentibus diebus in horizonte Huenenſi non fuit ſerenum, die 18 admodum obſcuro & nebuloſo exiſtente, 19 vero tempeſtate ventorum & pluuiarum ſæuiente, 20 vero die circa meridiem minori aura facta, horologium adaptaui ad lineæ meridianæ vmbram Solisque in meridie Altitudinem deprehendi $12^{P}25'$. Veſperi autem poſt ☉ occaſum, etſi non vsque adeo erat ſerenum, tamen hæc ſatis diligenter obſeruaui.]

Hour 5 M. 15. The Comet's head was distant from the bright star of the Vulture, exactly, 11 6, by both Instruments. [Hora 5 M. 15 Diſtabat Cometæ caput a lucida Vulturis exquiſite 11 6 per vtrumque Inſtrumentum.]

And since because of the clouds it was not possible to observe another star with which it would make a triangle nearby, I observed at the same instant that the straight line which was drawn from Lyra through the Vulture left the Comet towards the west by a space of about one degree, in that interval which was of the lines near the Comet. A little later, however, when the clearer air showed the star in the mouth of Pegasus, I found that it was distant from the Comet, in degrees, exactly [Et quoniam propter nubes aliam ſtellam obſeruare non licuit, cum qua prope faceret triangulum, obſeruaui in eodem inſtanti, quod linea recta, quæ ducebatur a Lyra per Vulturem, relinquebat Cometam verſus occaſum ad ſpatium fere vnius gradus, in ea intercapedine, quæ erat linearum prope Cometam, paulo autem poſt, vbi ſerenior aura ſtellam in ore Pegaſi monſtrauit, deprehendi quod eadem diſtaret a Cometa partibus exquiſite]

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

27½. When, however, the working of both considerations had been carried out, the place of the Comet falls in almost the same place. [27½. Habita vero praxi vtriusque conſiderationis cadit locus Cometæ in eundem fere locum.]

The tail of the Comet, moreover, raised itself higher, like the body itself; for if it had been drawn out, it would show a line far above the Moon. As far as sight goes, among the thin clouds it seemed to incline towards the lower star in the wing of Pegasus; this consideration, however, was not exact enough, but taken ἐν πλάτει, because of the clouds. [Cauda vero Cometæ ſe, veluti ipſum corpus, altius attollebat, nam ſi protracta fuißet, longe ſupra Lunam monſtraret lineam, quo ad viſum inter raras nubes videbatur vergere verſus inferiorem ſtellam in ala Pegaſi, hæc tamen conſideratio non erat ſatis exquiſita, ſed ἐν πλάτει ſumta, propter nubes.]

Afterwards, up to the setting of the Comet, I was not able to observe anything more, because of the clouds that came between. [Poſtea vsque ad occaſum Cometæ nihil amplius mihi licuit obſeruare propter interuenientes nubes.]

DIE 21 NOUEMBRIS [21 November]

These things I observed. [hæc obſeruaui.]

		P. M.	
6½[H]	Between the Comet and the bright star of the Vulture [Inter Cometam & Vulturis lucidam]	10 45	with the Radius [per Radium]
6 40[M]	Between the nostril of Pegasus and the head of the Comet [Inter narem Pegaſi & caput Cometæ]	25 15	
	The tail, moreover, stretched towards the extreme star of the wing of Pegasus, if it were understood to be produced that far. [Cauda vero porrigebatur verſus extremam alæ Pegaſi, ſi eo producta intelligeretur.]		
6 48	The Comet from the bright star of the Vulture [Cometa a lucida Vulturis]	10 46	nearly as before [fere vt prius]

		P. M.	
6 53	Between the nostril of Pegasus and the Comet [Inter narem Pegaſi & Cometam]	25 13	exactly [exacte]
7 0	The head of the Comet was distant from the lower and first one in the wing of Pegasus, towards the west [Diſtabat caput Cometæ ab inferiori & prima in ala Pegaſi verſus occaſum]	45 40	
	That one, moreover, is the one which stands next to the neck of Pegasus. [Eſt autem ea, quæ iuxta collum Pegaſi exiſtit.]		
7 10	The head of the Comet was distant from the tail of Cygnus [Diſtabat Cometæ caput a cauda Cygni]	45 53	
	And all these with the Radius. [Atque hæc omnia per Radium.]		

DIE 23 NOUEMBRIS [23 November]

These things I observed, the clock having been corrected at the setting of ☉. [hæc obſeruaui, rectificato horologio ad occaſum ☉.]

$4^{H}56^{M}$	Between the Vulture and the Comet [Inter Vulturem & Cometam]	11 2	but consider the following with the Sextant [ſed conſidera ſequentia per Sextantem]
5 3	Between the extreme one of the nostril of Pegasus and the Comet [Inter extremam naris Pegaſi & Cometam]	21 1	
5 9	The Comet was distant from the star in the left hand of Antinous [Diſtabat Cometa a ſtella in ſiniſtra manu Antinoi]	4 32	

It stretched its tail into that little star which is in the upper forehead of Equuleus, where it also seemed to end, the rays of the Moon perhaps preventing its further appearance. It was, moreover, curved a little from the head towards the said star, lifting its convex part towards the Zenith, so that, if it were imagined to be drawn out from the head through that star, it would fall into the star which is in the forehead of Pegasus. [Caudam porrigebat in eam ſtellulam, quæ eſt in ſuperiori fronte Equiculi, vbi etiam terminari videbatur, radijs forte lunaribus vlteriorem eius apparentiam impedientibus. Erat autem a capite verſus dictam ſtellam paulum incuruata, conuexam partem in Zenith tollens, adeo vt, ſi a capite per iſtam ſtellam protrahi fingeretur, caderet in eam ſtellam, quæ eſt in fronte Pegaſi.]

7^{H} 0^{M}	Between the left shoulder of ♒ and the Comet [Inter ſiniſtrum humerum ♒ & Cometam]	18 0	
7 10	Between the Vulture and the Comet [Inter Vulturem & Cometam]	11 3	nearly as above [fere vt lupra]
7 20	Between the nostril of Pegasus and the Comet, and I observed this twice, [Inter narem Pegaſi & Cometam idque bis obſer-]	20 44	with the Radius [per Radium]

7 25	so that, when the second observation was made, I found [uaui, ita vt ſecunda obſeruatione facta reperirem]	20 45
	or rather [vel potius]	20 46

But all these observations I made with the astronomical Radius, in which both the parallax of the eye and the errors of the instrument, if there were any, are to be guarded against. [At has omnes obſeruationes perfeci per Radium aſtronomicum, in quibus & parallaxis oculi & inſtrumenti errores ſi qui fuerint cauendi ſunt.]

The colour of the Comet, moreover, was white, yet not clear but rather pale, nor as bright as that of the stars. The tail especially, the nearer it was to the head, showed a dark ruddiness, such as a flame struggling out through smoke usually has; at the end, however, just as the tail was thinner, so these things too appeared more thinly. [Color autem Cometæ fuit albus, non tamen clarus, ſed pallidior, neque ita lucidus vt ſtellarum. Cauda vero præſertim, quo erat capiti vicinior, obſcuram rubedinem præ ſe ferebat, qualis ſolet eße flammæ per fumum eluctantis, in fine vero quemadmodum cauda rarior erat ſic & hæc rarius apparebant.]

The following I observed on the same evening with the astronomical Sextant. [Sequentia eodem veſperi per Sextantem aſtronomicum obſeruaui.]

$5^{H}30^{M}$	Between the Comet and the nostril of Pegasus [Inter Cometam & narem Pegaſi]	20 58	(otherwise 21 4) [(al. 21 4)]
5 37	Between the bright star of the Vulture and the Comet [Inter Vulturis lucidam & Cometam]	10 57	(otherwise 11 1) [(al. 11 1)]
5 45	Between the Comet and the star in the left hand of Antinous [Inter Cometam & ſtellam in ſiniſtra manu Antinoi]	4 35	(4 37)
6 15	Between the nostril of Pegasus and the head of the Comet [Inter narem Pegaſi & Cometæ caput]	20 54	
6 32	Between the Comet and the already mentioned hand of Antinous [Inter Cometam & Antinoi prædictam manum]	4 37	
7 56	Between the nostril of Pegasus and the Comet [Inter narem Pegaſi & Cometam]	20 50	
8 23	Between the same [Inter easdem]	20 48	
8 35	Between the same [Inter easdem]	20 46	
8 45	Between the Vulture and the Comet [Inter Vulturem & Cometam]	11 22	
	But this observation is not altogether certain, because the Comet was then inclining towards its setting, thin and rather white clouds coming between.[1] [Sed hæc obſeruatio non vſque adeo certa quia Cometa tunc vergebat in occaſum interuenientibus tenuibus & albioribus nubibus[1].]		

From the last considerations, made with the Sextant, it is clear that the Comet, from H. 5 M. 30 to H. 8 M. 35 — that is, over 3 hours and about 5 minutes — advanced in its circle towards the head of Pegasus by only 12′ [ſcrupulis 12]; whereas, taking account of the daily motion, which can be gathered from all the preceding observations to be 3°, so that 7½ min. of proper motion would belong to one hour, it ought accordingly, over those 3 hours, to have been brought nearer to the said little star of Pegasus by more than 23′. From this it is gathered that the increase of the star's parallax over those three hours retarded its apparent progress towards the head of Pegasus by 11′. [Ex poſtremis conſiderationibus per Sextantem factis, patet quod Cometa ab H. 5 M. 30 in H. 8 M. 35 per 3 videlicet horas & 5 circiter minuta progreßus ſit in ſuo circulo verſus Pegaſi caput ſaltem ſcrupulis 12, cum tamen habita ratione motus diurni, qui ex omnibus antecedentibus obſeruationibus colligi poteſt 3 graduum, ita vt vni horæ competeret 7½ min. in motu proprio, atque adeo per 3 illas horas debebat propior admoueri ſtellulæ dictæ Pegaſi plus 23 minutis; vnde colligitur quod incrementum parallaxeos ſtellæ in ijs tribus horis retardauerit progreßum apparentem verſus caput Pegaſi 11 minutis.]

(There is an error here, because only 5′ belong to one hour, and to 3 hours M. 15, which nearly agrees with the observation.) [(Error eſt hic, quia vni horæ competunt ſaltem 5 minuta, & 3 horis M. 15 quod fere conuenit cum obſeruatione).]

This star therefore has a parallax, a perceptible one; but how great it is, we shall gather from what follows. [Habet itaque hæc ſtella parallaxin, ſenſibilem at quanta ea ſit, ex ſequentibus colligemus.]

The same is also evident from the star of Antinous: from H. 5 M. 45 to H. 6 M. 32, over 47 minutes of time, the Comet moved forward from it by only 2′, whereas in the meantime, according to the daily motion, it ought to have moved forward by nearly 4½ minutes[2]; and this reasoning agrees with the note above. For if 3 hours vary in the motion by 11′ because of the parallax, then 47 minutes of time vary by 3′, this observation made by the star of Antinous agreeing with the one that was made by the nostril of Pegasus. I used these stars in particular for this reason, moreover: because the Comet's path passed through the said star of Antinous nearly towards the one which is in the nostril of Pegasus; and although there is some difference in that respect, yet it will be able to cause nothing in this matter, because of so great a distance of the nostril of Pegasus from the Comet. The same may also be tested by other observations. [Idem etiam patet per ſtellam Antinoi a qua ab H. 5 M. 45 in H. 6 M. 32 per 47 minuta temporis promota eſt ſaltem minuta 2, cum interea iuxta motum diurnum debebat promota eße minutis fere 4½[2], atque hæc ratiocinatio conuenit cum ſuperiori annotatione. Nam ſi 3 horæ variant in motu ob parallaxin 11 minuta, tunc 47 minuta temporis variant 3 minuta, conſentiente hac obſeruatione per Antinoi ſtellam facta cum ea quæ per narem Pegaſi fiebat. Vſus autem ob id ſum his præſertim ſtellis, quia via Cometæ tranſibat per dictam Antinoi ſtellam fere verſus eam, quæ eſt in nare Pegaſi, & licet aliqua ea in parte ſit differentia,

tamen ea hac in re nihil cauſare poterit propter tantam naris Pegaſi a Cometa diſtantiam; idem etiam per alias obſeruationes experiri licet.]

Moreover, that consideration with the Radius, from H. 5 M. 3 up to H. 7 M. 25, gives a motion of 17′, such as it also nearly ought in fact to have been (namely 18); and these nearly agree. If, everything being refined, it gives a motion of 15′, whereas in fact it ought to have advanced 18′, the difference is 3′, whereas by the earlier proportion it ought to have been 7′. But whether some error crept into the first observation with the Radius I am in doubt; and where it lies, whether here or elsewhere, will become known, God willing, from the following observations. [Præterea conſideratio illa per Radium ab H. 5 M. 3 vsque in H. 7 M. 25 præbet motum 17′, qualis etiam fere (nempe 18) reuera eße debebat, atque hæc fere conſentiunt ſi limatis omnibus præbet motum 15 minutorum, cum reuera debebat promoueri 18 minutis, differentia eſt 3 minutorum, cum tamen habita priori proportione debebat eße 7 minutorum, verum vtrum in prima obſeruatione per Radium error aliquis irrepſerit hæſito & vbi is lateat, an hic vel alibi, ex ſequentibus obſeruationibus Deo volente innoteſcet.]

(Note. I assumed that the daily motion of the Comet on these days was 3°, whereas in fact it is found to be only about 2°, so that the hourly motion is 5′; and by this you will verify what we have written here.) [(Nota. Ego poſui quod motus diurnus Cometæ in his diebus fuerit 3 partium, cum reuera ſaltem reperiatur partium circiter 2, vt ſit horarius motus 5 minutorum, atque per hoc verificabis ea quæ hic ſcripſimus).]

Nevertheless, having regard to that observation which was made with the Radius from the star of Antinous at H. 5 M. 9, up to the one which was made to the same fixed star with the Sextant at H. 6 M. 32 — one hour and 23 minutes intervening — it will be found that the Co- [Verumtamen habito reſpectu eius obſeruationis, quæ facta eſt per Radium a ſtella Antinoi H. 5 M. 9 vſque ad eam quæ facta eſt ad eandem fixam per Sextantem H. 6 M. 32 interiecta vna hora & minutis 23 inuenietur Co-]

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

[2] First written: 6, then changed to: 5½, finally to: only 4½. [[2] Primum ſcriptum: 6, deinde mutatum in: 5½, denique in: ſolis 4½.]

-met advanced in its circle and path in the meantime by 5′, whereas in fact, according to the daily motion, it ought to have advanced by 10′; so that the difference caused by the retardation of the parallax is 5′, which 1 hour and 23 minutes also produce proportionally, if, according to the earlier note, 11′ belong to three hours. This reasoning, therefore, also agrees with the preceding ones, and only some discrepancy appears in the immediately preceding comparison, which, however, is doubtful, because the first observation with the Radius to the nostril of Pegasus is not certain enough. (It ought to have been only 7 min.) [meta progreßus in ſuo circulo & via interea temporis 5 minutis, cum tamen reuera iuxta motum diurnum debebat 10 minutis progredi, vt ſit differentia cauſata ex remoratione parallaxeos 5 minutorum, quam etiam proportionaliter 1

hora & 23 minuta efficiunt, ſi tribus horis iuxta priorem annotationem 11 minuta competunt. Conſentit itaque & hæc ratiocinatio cum antecedentibus & ſolum videtur diſcrepantia quædam in proxime antecedenti collatione, quæ tamem dubia eſt, ob primam obſeruationem per Radium ad narem Pegaſi non ſatis certam. (Debebat ſaltem 7 min.).]

DIE 25. [The 25th]

		P. M.	
$5^{H}40^{M}$	Between the extreme star of the nostril of Pegasus and the Comet [Inter extremam naris Pegaſi & Cometam]	17 22½	(otherwise 17 28) [(aliter 17 28)]
5 52	The Comet was distant from the hand of Antinous [Diſtabat Cometa ab Antinoi manu]	8 18	(8 20)
6 0	Between the Comet and the Vulture [Inter Cometam & Vulturem]	12 36	(otherwise corr. [(aliter corr.]
6½	The Comet was distant from Scheat of Pegasus [Diſtabat Cometa a Scheat Pegaſi]	42 0	12 40)

But it was not possible to conclude this exactly enough, because of the clouds coming between; it is fitting, however, always to observe this distance, because the Comet's course tends towards the said star in the breast of Pegasus. [Sed ſatis exquiſite id concludere non licuit propter interuenientes nubes; conuenit autem ſemper obſeruare hanc diſtantiam, quia Cometæ curſus tendit verſus dictam ſtellam in pectore Pegaſi.]

The tail, however, seemed to incline towards the star which is next to the nostrils of Pegasus, which others call the mouth of Pegasus. [Cauda vero viſa eſt vergere verſus eam, quæ eſt iuxta nares Pegaſi, quam alij os Pegaſi appellant.]

DIE 28. [The 28th]

	P. M.
When the eastern horn of ♈ was in the Meridian, [Cum cornu ♈ orientale eßet in Meridiano,]	
it was, between the head of the Comet and the mouth of Pegasus [erat inter caput Cometæ & os Pegaſi]	12 44
The bright foot of Andromeda being in the Meridian, [Exiſtente pede Andromedæ lucido in Meridiano,]	
between Scheat of Pegasus and the Comet [inter Scheat Pegaſi & Cometam]	35¼

A straight line, however, drawn from the Comet through the mouth of Pegasus left the bright and first star of the neck of Pegasus towards the Zenith, to sight, by 2°. But these observations were not exact enough, because of the little clearness and the winds blowing too strongly, and then also because of the... am distance of the stars. [Linea vero recta ducta a Cometa per os Pegaſi relinquebat lucidam & primam colli Pegaſi verſus Zenith ad viſum 2^{bus} gradibus. Sed hæ obſeruationes non erant ſatis exquiſitæ propter paucam ſerenitatem & ventos nimium flantes tum etiam propter... am diſtantiam ſtellarum.]

DIE 29 NOUEMBRIS. [29 November]

		P. M.	
			(One must put at hour 6 [(Oportet ponere hora 6]
$5^{H}53^{M}$	Between the hand of Antinous and the Comet [Inter Antinoi manum & Cometam]	14 18	Antinous and C. 14 30) [Antinoi & C. 14 30)]
6 6	Between the Comet and the nostril of Equuleus [Inter Cometam & narem Equiculi]	3 50	True, add. 5, 14 23 [Vera add. 5, 14 23]
6 15	Between the mouth of Pegasus and the Comet [Inter os Pegaſi & Cometam]	11 25	(True 11 29) [(Vera 11 29)]
6 33	The Comet and the star of Antinous [Cometa & Antinoi ſtella]	14 21	
6 40	Between the bright star of the breast of Pegasus and [Inter lucidam pectoris Pegaſi &]		
	the Comet, with the Radius [Cometam per Radium]	35 45	

The extremity of the tail seemed to end exactly in the star of the mouth of Pegasus, and to be curved, so that the upper part of the convexity nearly touched the little star in the mouth of Equuleus. For those two stars next to the mouth of Equuleus were nearly touching the upper part of the tail, distant at its middle by scarcely ⅓ of a degree. [Extremitas caudæ videbatur exquiſite terminari in ſtella oris Pegaſi & incuruata eße ita vt ſuperior pars convexitatis contingeret fere ſtellulam in ore Equiculi. Erant enim illæ duæ ſtellæ iuxta os Equiculi contingentes fere ſuperiorem partem caudæ, in eius medio diſtantes vix ⅓ gradus.]

		P. M.	
			(but at hour 6 it was 16 & 38, [(ſed hora 6 fuit 16 & 38,]
$6^{H}58^{M}$	Between the Eagle and the Comet [Inter Aquilam & Cometam]	16 36	Corresponding 16 41) [Reſp. 16 41)]
7 6	From the forehead of Equuleus to the Comet [A fronte Equiculi ad Cometam]	4 53	
7 13	Between the Comet and the hand of Antinous [Inter Cometam & manum Antinoi]	14 23	
7 37	Between the Comet and the mouth of Pegasus [Inter Cometam & os Pegaſi]	11 26	
7 50	Between the hand of Antinous and the Comet [Inter Antinoi manum & Cometam]	14 22	

But the star of Antinous was approaching its setting, so that because of the thickness of the air it appeared less, and this observation was not exact enough. [Sed Antinoi ſtella appropinquabat occaſui, adeo vt propter aëris denſitatem minus apparuerit ſatisque exquiſita non fuerit hæc obſeruatio.]

		P. M.	
$8^{H}17^{M}$	Between the mouth of Pegasus and the Comet [Inter os Pegaſi & Cometam]	11 19	but in breadth [ſed ἐν πλάτει]

		P. M.	
8 58		11 20	
9 10		11 20	
9 33		11 21	
9 11	I observed the distance of the Comet from the breast of Pegasus [Obſeruaui diſtantiam Cometæ a pectore Pegaſi]	35 36	with the Radius [per Radium]

Earlier, however, at H. 6 M. 40, the same was P. 35 M. 45; the difference is only 9′ over a space of 2½ hours, which agrees with the daily motion. The daily motion of the Comet is P. 1 M. 30, the hourly 3¾ min. [Superius vero H. 6 M. 40 erat eadem P. 35 M. 45, differentia eſt ſaltem 9 minutorum ſpacio 2½ horarum, quod conuenit cum motu diurno. Motus diurnus Cometæ eſt P. 1 M. 30, horarius 3¾ min.]

DIE 30 NOUEMBRIS. [30 November]

The azimuth of the Comet, which is its distance from the equinoctial setting, and the complement from the Meridian, as we have also counted the azimuth in all the following. [Azimuth Cometæ, quod eſt diſtantia ipſius ab occaſu æquinoctiali, & complementum a Meridiano, vt in omnibus etiam ſequentibus Azimuth numerauimus.]

	H. M.	Azimuth G. M.	Altitude [Altitudo] G. M.
I.	5 26	53 38	36 10
II.	6 24	37 25	30 32
III.	6 50	30 37	27 23
IIII.	7 37	19 48	21 30
V.	7 54	15 41	19 4
VI.	8 13	11 42½	16 39
VII.	8 58½	2 52	10 8

But trust rather the last two, because of the instrument being more verified and the time from the rising of the ☾, and then also because of the nearness of the horizon; the only error can be in the meridian line. [Sed confide potius duabus vltimis propter magis verificatum inſtrumentum & tempus ex ortu ☾ tum etiam propter vicinitatem horizontis, ſolus error eße poteſt in linea meridiana.]

In the meantime, moreover, I also observed these. [Interea vero & hæc obſeruaui.]

$5^{H}34^{M}$	Between the Comet and the mouth of Pegasus [Inter Cometam & os Pegaſi]	10 15	I think it good [puto eße bonam]
5 43	Between the Comet and the hand of Antinous, falling in a straight line with the three stars of the Vulture [Inter Cometam & manum Antinoi cadentem in linea recta cum tribus ſtellis Vulturis]	15 46	(take 15 51) [(pone 15 51)]
5 50	Between the bright star of the Vulture and the Comet [Inter Vulturis lucidam & Cometam]	17 38	

6 35	Between the hand of Antinous and the Comet [Inter Antinoi manum & Cometam]	15 40	but I doubt it (I put at hour 6 [ſed dubito (poſui hora 6] the Eagle and the Comet 17 47) [Aquilam & Cometam 17 47)]

Moreover the head of the Comet appeared exactly in the straight line which is drawn through the mouth of Pegasus to the middle and brighter one of the neck of Pegasus. (It must be that it had not yet exactly touched this line.) The extremity of the tail, however, still touched the mouth of Pegasus, yet in such a way that the lower and more southern extreme part of the tail seemed to touch the mouth of Pegasus; but the tail was nevertheless a little more extended. The last two Az. corrected. [Apparuit autem caput Cometæ exquiſite in linea recta, quæ ducitur per os Pegaſi in mediam & lucidiorem colli Pegaſi. (Oportet eum nondum exquiſite hanc lineam attigiße). Caudæ vero extremitas adhuc os Pegaſi attingebat, ita tamen vt inferior & meridionalior caudæ pars extrema os Pegaſi attingere videretur, ſed paulo tamen erat cauda protenſior. Duo vltima Az. correcta.]

N.B. In all the azimuths one must add 28′. [N.B. In omnibus Azimuth addere oportet 28′.]

		P. M.	
6^H45^M	Between the Comet and Scheat of Pegasus [Inter Cometam & Scheat Pegaſi]	34 26	with the Radius (at hour 7, 34 25) [per Radium (hora 7, 34 25)]
7 0	Between the mouth of Pegasus and the Comet [Inter os Pegaſi & Cometam]	10 16	((10 19. At hour 6 I set down as distant [((10 19. Hora 6 poſui diſtare] from the mouth of Pegasus P. 10 M.24) [ab ore Pegaſi P. 10 M.24)]
7 8	Between the hand of Antinous and the Comet [Inter Antinoi manum & Cometam]	15 40	
8 0	Between the mouth of Pegasus and the Comet [Inter os Pegaſi & Cometam]	10 13	
8 22	Between the Comet and the mouth of Pegasus [Inter Cometam & os Pegaſi]	10 12	with the Radius [per Radium]

The upper part of the convexity touched exactly the little stars of the nostrils of Equuleus; the head of the Comet, however, was a little nearer to them than yesterday, namely in the third part of the distance of the head from the nostril of Pegasus, i.e. by 3½° in breadth. [Superior pars conuexitatis exquiſite tangebat ſtellulas narium Equiculi, caput tamen Cometæ erat illis paulo propius quam heri in tertia ſcilicet parte diſtantiæ capitis a nare Pegaſi, i. e. partibus 3½ ἐν πλάτει.]

		P. M.	
$8^{H}46^{M}$	Between the Comet and the brighter one in the forehead of Equuleus [Inter Cometam & lucidiorem in fronte Equiculi]	4 27	
9 15	Between the Comet and the mouth of Pegasus, with the Sextant [Inter Cometam & os Pegaſi per Sextantem]	10 11	
	with the Radius [per Radium]	10 10	trust these [confide his]

Note. The daily motion of the Comet is now not faster than P. 1⅓ from the 29th to the 30th, but into the following day it seems to advance only about 1 gr. 10 m. [Nota. Motus diurnus Cometæ iam non eſt celerior P. 1⅓ a die 29 in 30, in ſequentem vero diem videtur ſaltem progredi 1 gr. 10 m. circiter.]

DECEMBRIS DIE 1. [1 December]

With the clock corrected to the setting of the ⊙. [Horologio correcto ad occaſum ⊙.]

$5^{H}18^{M}$	Between the Comet and the mouth of Pegasus [Inter Cometam & os Pegaſi]	9 30	
	with the Radius, but in breadth because of the rather thin clouds. [per Radium, ſed ἐν πλάτει propter nubes rariuſculas.]		
5 30	Between the Vulture and the Comet [Inter Vulturem & Cometam]	18 47	with the Radius [per Radium]

A straight line drawn from the bright star of the Vulture through the Comet, however, left the nostril of Pegasus, in its place, towards the Zenith by nearly one degree. [Linea vero recta ducta a lucida Vulturis per Cometam relinquebat narem Pegaſi in ſuo loco verſus Zenith vno fere gradu.]

The Comet, moreover, was nearly, as yesterday evening, in the straight line drawn through the nostril of Pegasus to the middle of the neck (but yesterday evening it had not fully reached this line, and this it had gone past more). [Erat autem fere vt heri veſperi Cometa in linea recta ducta per narem Pegaſi in medium colli (ſed heri veſperi non plene attigerat hanc lineam & hoc magis præterierat).]

The tail inclined towards the place which is between the first star of the neck of Pegasus, called Markab, and those two placed in the middle of the neck. For it was raised a little above the mouth of Pegasus in its lower part, more than yesterday, and seemed to curve itself as if towards the middle one of the neck of Pegasus. [Cauda vergebat in locum qui eſt inter ſtellam primam colli Pegaſi, Marcab dictam, & binas illas in medio colli poſitas. Erat enim parum eleuata ſuper os Pegaſi inferiori parte magis quam heri & videbatur ſe incuruare quaſi verſus mediam colli Pegaſi.]

$7^{H}10^{M}$	Between the Comet and the mouth of Pegasus, with the Sextant [Inter Cometam & os Pegaſi per Sextantem]	9 14
	with the Radius [per Radium]	9 15
9 6	Between Scheat of Pegasus and the Comet [Inter Scheat Pegaſi & Cometam]	33 5
9 12	Between the mouth of Pegasus and the Comet [Inter os Pegaſi & Cometam]	9 10
9 18	Between the right shoulder of Aquarius and the Comet [Inter humerum dextrum Aquarij & Cometam]	
	with the Radius [per Radium]	17 30
9 30	Between the Comet and the mouth of Pegasus [Inter Cometam & os Pegaſi]	9 8
	And all these with the Radius. [Atque hæc omnia per Radium.]	

From hour 7⅙ to hour 9½, therefore, over 2^{h} 20^{m}, the Comet advanced by 6′; according to the daily motion 6′ belong, so that that difference is imperceptible; for which reason the parallax draws the Comet back imperceptibly, so that almost none appears. [Ab hora itaque 7⅙ in horam 9½, per 2 horas 20 minuta, promotus eſt Cometes minutis 6; iuxta motum diurnum competunt 6 minuta, vt ſit illa differentia inſenſibilis, quapropter parallaxis inſenſibiliter retrahit Cometam, vt nulla fere appareat.]

DECEMBRIS DIE 2. [2 December]

Note. The clock was not corrected for two days, but the following noon will correct it. [Nota. Horologium in duobus diebus non fuit correctum, ſed meridies ſequens emendabit.]

Around H. 7½ I saw that the head of the Comet was very near the little star placed next to the mouth of Equuleus — which of these it was, you will work out from the globe by what follows — yet in such a way that by its motion towards Pegasus it had gone beyond that little star by more than the diameter of the ☾, by about 40′, to sight. [Vidi iuxta H. 7½ quod Cometæ caput erat valde propinquum ſtellulæ iuxta os Equiculi poſitæ, vtra harum fuerit, ratiocinaberis ex globo per ſequentia, ita tamen vt exceßerit ſtellulam iſtam ſuo motu verſus Pegaſum plus diametro ☾ 40 fere minutis ad viſum.]

The tail, however, inclined towards the star which alone appears in the middle of the neck of Pegasus, and seemed to end near the same, curved, however, as before, towards the Zenith of the head. [Cauda vero vergebat verſus ſtellam quæ ſola apparet in medio colli Pegaſi & prope eandem terminari videbatur, incuruata tamen vt prius verſus Zenith capitis.]

The Flying Vulture, moreover, and the nostril of Pegasus were, together with the Comet, nearly in one straight line, except that the Comet went beyond this line towards the Zenith of the head by about 20′ at most. [Erat vero Vultur volans & naris Pegaſi vna cum Cometa fere in vna linea recta, niſi quod Cometa lineam hanc excederet verſus Zenith capitis ad 20 fere minuta ad ſummum.]

$7^{H}49^{M}$	With the clock corrected no otherwise than I said, [Horologio non aliter correcto quam dixi,]		(doubtful, it may be [(dubia, fieri poteſt]
	between the mouth of Pegasus and the Comet [inter os Pegaſi & Cometam]	7 15	that it should be 8 15 [quod debet eße 8 15]

But in all these there is no exact certainty, because of clouds coming between from time to time. [Sed in omnibus his non eſt exquiſtta certitudo propter ſubinde interuenientes nubes.]

DECEMBRIS DIE 9. [9 December]

With the clock corrected by the setting of the ☉, I observed these. [Horologio correcto per occaſum ☉, hæc obſeruaui.]

		P. M.
5^{H} 0^{M}	Between the mouth of Pegasus and the Comet [Inter os Pegaſi & Cometam]	4 25
5 10	I observed with the Radius between Scheat of Pegasus and the Comet [Obſeruaui per Radium inter Scheat Pegaſi & Cometam]	25 45
7 40	I found the same distance with the Sextant [Eandem diſtantiam inueni per Sextantem]	25 15

Which one to trust, I hesitate, because the observation was not repeated (the Sextant is to be trusted). I also observed some Azimuths and Altitudes on the same evening, but because of the instrument having been moved and the unknown position of the Meridian they were doubtful. [Vtri fidendem, hæſito ob non iteratam obſeruationem (fidendum eſt Sextanti). Obſeruaui etiam eodem veſperi aliquot Azimuth & Altitudines, ſed propter motum inſtrumentum & ignotum Meridiani ſitum erant dubiæ.]

The tail of the Comet inclined towards the first one of the second magnitude which is in the neck of Pegasus, extended nearly as far as that; but because of the curvature the extremity seemed to be between the said star and the middle one of the neck. [Cauda Cometæ vergebat verſus primam ſecundæ magnitudinis, quæ eſt in collo Pegaſi fere eo vſque protracta, ſed propter incuruationem viſa eſt extremitas eße inter dictam ſtellam & mediam colli.]

DECEMBRIS DIE 10. [10 December]

$5^{H}25^{M}$	Between the head of the Comet and the mouth of Pegasus, exactly as yesterday [Inter caput Cometæ & os Pegaſi, exquiſite vt heri]	4 25	
5 40	Between the Comet and Scheat of Pegasus [Inter Cometam & Scheat Pegaſi]	24 25	with the Radius [per Radium]
6 0	Between the first, larger one of the neck of Pegasus and the Comet [Inter primam colli Pegaſi maiorem & Cometam]	21 10	

The middle one of the right wing of Cygnus and the mouth of Pegasus were in one straight line with the Comet, and the right shoulder of ♒ nearly

coincided. [Erant in vna linea recta media dextræ alæ Cygni & os Pegaſi cum Cometa, fereque coincidebat dexter humerus ≈.]

The tail, however, seemed to curve towards the one which is the first in the neck of Pegasus, of the second magnitude; but a straight line drawn from the head of the Comet through the middle of the tail, straight on — it fell above the said star of Pegasus by a space of 3°. The tail of the Comet, moreover, ended a little above the two in the neck of Pegasus which are of the fourth magnitude, and that in the line which is drawn from them towards the tail of Cygnus. The extremity of the tail, moreover, was distant from the brighter one in the middle of the neck of Pegasus by about 4°. [Cauda vero videbatur ſe incuruare verſus eam, quæ eſt prima in collo Pegaſi ſecundæ magnitudinis, ſed linea recta ducta a capite Cometæ per medium caudæ in directum, ea cecidit ſupra dictam ſtellam Pegaſi ad ſpacium 3 graduum, finiebatur autem cauda Cometæ paulo ſupra binas in collo Pegaſi quæ ſunt quartæ magnitudinis, idque in ea linea quæ ducitur ab ijs verſus caudam Cygni. Diſtabat autem extremitas caudæ a lucidiori in medio colli Pegaſi 4 circiter partibus.]

Observations of the Comet from the Winter Solstice [OBSERUATIONES COMETÆ A SOLSTITIO HYBERNO.]

DECEMBRIS DIE 12. [12 December]

		P. M.	
6^{H} 0^{M}	P. M. Between the Comet and the mouth of Pegasus [P. M. Inter Cometam & os Pegaſi]	4 50	
	Between Scheat of Pegasus and the Comet [Inter Scheat Pegaſi & Cometam]	23 20	with the Radius [per Radium]

The tail would incline towards the middle of the square of Pegasus, if it were imagined extended that far. [Cauda vergeret verſus medium quadrati Pegaſi, ſi eo vſque protracta imaginaretur.]

I noticed, moreover, that the head of the Comet was in the straight line which is drawn through both the more southern stars of the □ of Pegasus, namely the first of the neck and the extreme one of the wing. [Animaduertebam inſuper quod caput Cometæ erat in ea linea recta, quæ ducitur per vtraſque meridionaliores ſtellas de □ Pegaſi, videlicet colli primam & extremam alæ.]

It was distant, moreover, with the Radius from the first of the neck 20 12, the hour being 6¾. [Diſtabat autem per Radium a prima colli 20 12 hora exiſtente 6¾]

DECEMBRIS DIE 13. [13 December]

$5^{H}40^{M}$	Between Scheat of Pegasus and the Comet [Inter Scheat Pegaſi & Cometam]	22 39	
7 18	The same distance [Eadem diſtantia]	22 26	
7 25	Between the first of the neck of Pegasus and the Comet [Inter primam colli Pegaſi & Cometam]	19 22	(but it has not been repeated. I [(ſed non eſt repetita. Ego]

	that one is of the □ of Pegasus, of the 2nd magnitude. [illa eſt de □ Pegaſi 2^{dæ} magnitudinis.]		set down 19 30) [poſui 19 30)]
7 30	Between the mouth of Pegasus and the Comet [Inter os Pegaſi & Cometam]	5 16	with the Radius [per Radium]

		P. M.	
7 40	Between Scheat of Pegasus and the Comet [Inter Scheat Pegaſi & Cometam]	22 8	
7 45	The same [Eadem]	22 10	
8 25		22 8	
8 58		22 5	
9 25	The same [Eadem]	22 0	(All these observations are with the Sextant) [(Omnes hæ obſeruationes ſunt per Sextantem)]

The true corresponding hourly motion is 2′ 20″. [Motus horarius verus competens eſt 2′ 20″.]

I also observed some Azimuths and Altitudes on the same evening, in this way. [Obſeruaui etiam eodem veſperi aliquot Azimuth & Altitudines hoc modo.]

	H. M.	Azimuth G. M.	Altitude [Altitudo] G. M.
I.	7 1	20 36	28 56
II.	8 0	7 44	21 16
III.	8 30	1 0	16 40
IIII.	9 3	5 37	12 14

Note. The last Azimuth is counted from the equinoctial setting towards the south, the earlier ones from the same towards the north. [Nota. Vltimum Azimuth numeratur ab occaſu æquinoctiali verſus meridiem, priora ab eodem verſus ſeptentrionem.]

You will be able to use these Azimuths and Altitudes without perceptible error, unless there may be a slip in the time, which, however, will be very small. [His Azimuth & Altitudinibus poteris ſine ſenſibili errore vti, niſi in tempore poterit eße hallucinatio quæ tamen admodum erit exigua.]

DECEMBRIS DIE 14. [14 December]

		P. M.	
$5^{H}30^{M}$	Between the Comet and Scheat of Pegasus [Inter Cometam & Scheat Pegaſi]	21 44	
5 40	Between the Comet and the mouth of Pegasus [Inter Cometam & os Pegaſi]	5 45	(with the Radius) [(per Radium)]
6 38	Between the Comet and Scheat, with the Sextant [Inter Cometam & Scheat per Sextantem]	21 37	good (I set down at hour 6, 21 45) [bona (poſui hora 6, 21 45)]

		P. M.
7 12	The same distance [Eadem diſtantia]	21 34

I also observed some Azimuths, with the clock corrected to noon and returning exactly. [Obſeruaui etiam aliquot Azimuth, horologio ad meridiem correcto & exquiſite redeunte.]

H. M.	Azimuth (one must add 13 in the Azimuth) [Azimuth (oportet addere 13 in Azimuth)] G. M.	Altitude [Altitudo] G. M.
6 44½	25 7	31 28
7 30	14 12	25 30
7 45	10 32	
8 11	5 36	19 54

But in the last Azimuth the Comet was a little dimmer because of intervening clouds. [Verum in vltimo Azimuth erat paulo obſcurior Cometa propter interuenientes nubes.]

DIE 17 DECEMBRIS. [17 December]

		P. M.
8^{H} 0	Between Scheat of Pegasus and the Comet [Inter Scheat Pegaſi & Cometam]	19 50 (19 55)
8 8	Between the first of the neck of Pegasus and the Comet [Inter primam colli Pegaſi & Cometam]	17 5 (17 10)
8 20	Between the Comet and the mouth of Pegasus [Inter Cometam & os Pegaſi]	7 12 (7 14)

DIE 18. [Day 18]

$5^{H}30^{M}$	The Comet and the mouth of Pegasus seemed to be in one vertical circle; the Comet, moreover, being the higher, was distant from the mouth of Pegasus [Videbatur Cometa & os Pegaſi in vno circulo verticali; diſtabat autem Cometa ſuperior exiſtens ab ore Pegaſi]	7^{1} 30	with the Sextant. [per Sextant.]
5 45	Between Scheat and the Comet [Inter Scheat & Cometam]	19 23	

I observed the same distance around the ninth hour, but in breadth, because of the clouds. [Eandem diſtantiam obſeruaui circa horam nonam ſed ἐν πλάτει propter nubes.]

[1] The codex gives no degree, but Tycho wrote beside it: *I think 7.* [[1] Codex nullum gradum dat, ſed adſcripſit Tycho: *Puto 7.*]

This evening the tail of the Comet was, as on several preceding ones, very thin; for the Comet itself, in both head and tail, was seen less and less from its first sighting, and it scarcely appeared by the ☾; but as far as one could make out, the tail itself inclined towards the head of Andromeda. [Cauda Cometæ

erat hoc veſperi vt præcedentibus aliquot admodum tenuis, nam Cometa ipſe & capite & cauda ſucceßiue a primo conſpectu minus videbatur, vixque apparebat ad ☾, verum quantum diſcernere licuit, vergebat verſus caput Andromedæ ipſa cauda.]

DIE 19 DECEMBRIS [19 December]

I observed these in the Comet, which appeared very thin. [hæc obſeruaui in Cometa, qui admodum tenuis apparebat.]

	H. M. S.	Azimuth G. M.	Altitude [Altitudo] G. M.
I.	5 46 50	35 36	38 38
II.	6 34 25	23 10	33 10
III.	7 53 50	5 10	22 18

$6^{H}50^{M}$	Between Scheat and the Comet [Inter Scheat & Cometam]	18 48
	I found the same observation at hour 8¼ [Eandem obſeruationem repperi hora 8¼]	18 36 better [melior]

But both observations were taken in breadth [ἐν πλάτει], because the Comet appeared less, so that its place could scarcely be made out; and this partly because of the slenderness of the Comet's body, which arose from its progressive decrease, partly because of the thickness of the air. [Sed vtraque obſeruatio fuit ἐν πλάτει ſumta, eo quod Cometa minus apparebat, vt diſcerni eius locus vix poßet, idque partim ob corporis Cometæ exilitatem ex decreſcentia eius ſucceßiue ortam, partim ob aëris craßitudinem.]

$8^{H}35^{M}$	Between the first of the neck of Pegasus and the Comet [Inter primam colli Pegaſi & Cometam]	16 20

But very much in breadth, and a doubtful consideration, because of the thinness and the clouds. [Sed valde ἐν πλάτει & dubia conſideratio propter tenuitatem & nubes.]

The tail of the Comet scarcely appeared, the head itself also being much attenuated. [Cauda Cometæ vix apparebat, capite ipſo etiam admodum attenuato.]

DIE 23 DECEMBRIS. [23 December]

$6^{H}10^{M}$	The Comet was distant from Scheat of Pegasus [Diſtabat Cometa a Scheat Pegaſi]	16 10

But in breadth, because of the excessive slenderness of the Comet. [Sed ἐν πλάτει propter exilitatem Cometæ nimiam.]

Diagram. A hand-drawn sketch reproduced in facsimile, set to the right of the narrow-measure paragraphs of 23 December. It shows star marks (asterisks) joined by dashed lines, and at the centre a fuzzy mark with a short line of dashes running from it towards the upper left; a solid line runs from this central mark to the upper right, ending at a small group of star marks under a handwritten label. A star mark stands at the top of the sketch, two more on the left side, one lower left, one lower right and one at the foot; dashed lines run between several of them and the central mark. At the left, apart from the stars, stands a handwritten two-word label with a crossed circular mark below it.

- Left (handwritten, two words): first word not resolved [?]; the second resembles "Pegaſi" [?]; a crossed circular mark beneath.
- Upper right (handwritten, four short lines, beside the end of the solid line): not resolved [?]; the last line resembles "Cygni" [?].
- Beside the star at upper centre-right: "a".
- At the central fuzzy mark: a cursive letter resembling "E".
- Beside the star group at upper right, at the end of the solid line: a cursive letter resembling "d".
- Beside the star at lower left of centre: "c".
- Beside the star at lower right of centre: a cursive letter that the scan leaves between "b" and "f" [?].

The Comet was very thin, so much so that it could scarcely be seen, especially as far as the tail is concerned, which scarcely appeared; it seemed, however, as far as could be made out, to incline towards the head of Andromeda. [Erat Cometa admodum tenuis, adeo vt videri vix poßet præſertim quantum ad caudam attinet, quæ vix apparebat; videbatur tamen, quantum diſcerni potuit, vergere verſus caput Andromedæ.]

A straight line, drawn from the more northern star of the triangle at the foot of Pegasus, and to the mouth of Pegasus, passed through the Comet, as the line AEB. Then from the middle one of the neck, a little below the first star in the right wing of Cygnus, another line passed through the Comet, such as is the line CED. The distance, moreover, from the Comet to the mouth of Pegasus was seen to be P. 10½. [Linea recta, ducta a ſeptentrionaliori ſtella trianguli ad pedem Pegaſi & ad os Pegaſi, tranſibat per Cometam vt linea AEB. Deinde a media colli paulo infra ſtellam primam in dextra ala Cygni, tranſiuit alia linea per Cometam qualis eſt linea CED. Diſtantia vero a Cometa ad os Pegaſi viſa eſt P. 10½.]

DIE 24. [Day 24]

With the Comet appearing very thin, so much so that it could scarcely be observed with the instruments, I saw that the Comet was still in that straight line which is drawn from the star A to B; but a line drawn from the star C through the Comet passed to the extreme one of the right wing of Cygnus. [Cometa admodum tenui apparente, adeo vt per inſtrumenta vix obſeruari potuerit, vidi quod Cometa adhuc verſabatur in ea linea recta, quæ ducitur a

ſtella A in B, ſed linea ducta a ſtella C per Cometam tranſibat in extremam alæ dextræ Cygni.]

The Comet, moreover, was seen with the Radius to be distant from Scheat of Pegasus P. 15 M. 55, and that in breadth, because of the slenderness of the Comet, so great that it could scarcely be made out. [Viſus eſt autem Cometa per Radium diſtare a Scheat Pegaſi P. 15 M. 55, idque ἐν πλάτει propter exilitatem Cometæ tantam, vt diſcerni vix potuerit.]

DIE 26. [Day 26]

At hour 5 M. 40 the Comet did seem still to be in the line AB, nearly, as far as sight goes, but to have passed beyond the line drawn from C to the extreme one of the wing, towards the Zenith, so that that line fell in the space between the tail of Cygnus and the extreme one of the wing. [Hora 5 M. 40 Cometa videbatur quidem adhuc in linea AB fere quo ad viſum, ſed exceßiße lineam ex C ductam in extremam alæ verſus Zenith, adeo vt illa linea caderet in ſpacium inter caudam Cygni & alæ extremam.]

At the same time, moreover, I observed the Comet's distance from Scheat of Pegasus, and found it P. 14½ or 35, in breadth because of the thinness of the Comet. [Obſeruaui autem eodem tempore Cometæ diſtantiam a Scheat Pegaſi, & inueni illam P. 14½ vel 35 ἐν πλάτει propter tenuitatem Cometæ.]

DIE 30. [Day 30]

		P. M.	
$7^{H}10^{M}$ 1	Between the Comet and Scheat [Inter Cometam & Scheat]	13 7	
7 0			
7 10	Between the first of the neck, of the second magnitude, and the Comet [Inter primam colli ſecundæ magnitudinis & Cometam]	11 58	
7 33⅓	Azimuth towards the north from the equinoctial east [Azimuth verſus ſeptentrionem ab ortu æquinoctiali]		
7 22⅔		1 22	Altitude 22 42 (Moderately good, but the time must be corrected from the following noon, as I did) [Altitudo 22 42 (Mediocriter bona, ſed tempus debet corrigi ex meridie ſequenti vt feci)]

The tail of the Comet inclined towards the more southern of the two which are joined in the triangle at the feet of Pegasus; but its course seemed to fall a little below that one, and the tail was nearly so long that it seemed to reach that place below the said star, if anyone could have watched the extremity most exactly. But it did not appear perfectly so long; the Comet nevertheless seemed a little more apparent than in the preceding night-time observations, because the ☾ was below the horizon, and it was not hindered by its light; but it was nevertheless not very apparent, but greatly diminished in light and in size. The

tail appeared visibly enough as far as the midpoint from the head to the said star. [Cauda Cometæ vergebat verſus meridionaliorem ex duabus, quæ ſunt in triangulo coniunctæ, ad pedes Pegaſi, ſed paulo infra illam videbatur eius tractus cadere, & fere tam longa fuit cauda, vt locum eum infra dictam ſtellam attingere videretur, ſi quis exactißime extremitatem tueri poßet. Verum non perfecte tam longa apparebat, videbatur tamen Cometa paulo apparentior quam præcedentibus nocturnis obſeruationibus, eo quod ☾ eßet infra horizontem, & non impediebatur ab eius lumine, verum non tamen erat admodum apparens, ſed plurimum lumine diminuta & quantitate. Viſibiliter ſatis apparebat cauda vſque in medium locum a capite ad dictam ſtellam.]

There are two very small stars within the square of Pegasus, lying more towards the feet than towards the other part; towards these the tail seemed to be projected, or at any rate into the space which is midway between these and the little stars already mentioned in the triangle; for it was not possible to judge exactly, because of the thinness of the tail. [Sunt duæ paruulæ ſtellæ intra quadratum Pegaſi, vergentes magis ad pedes, quam aliam partem; verſus has videbatur cauda proijci, vel certe in ſpacium quod medium eſt inter has & prædictas ſtellulas in triangulo; exquiſite enim dijudicare ob tenuitatem caudæ non licuit.]

Hour [Hora] 8 M. 0	I observed between the Comet and Scheat of Pegasus [obſeruaui inter Cometam & Scheat Pegaſi]	13 0	but very... [ſed valde...]
7 50			
But [Sed] 7 55	I observed the same distance, of degrees [obſeruaui eandem diſtantiam partium]	13 5	
	And this observation was more certain, and agrees better with the one above. [Atque hæc obſeruatio fuit certior magisque quadrat cum ſuperiori.]		
8 13	Distance between the first of the neck of Pegasus and the Comet [Diſtantia inter primam colli Pegaſi & Cometam]		
8 3		12 0	nearly as above [fere vt ſupra]
8 20	but a little later I observed the same distance more attentively and found it exactly as above, and this observation is truer than the preceding one [verum paulo poſt obſeruaui attentius eandem diſtantiam & inueni eam præciſe vt ſupra, atque hæc obſeruatio eſt verior antecedente.]		
8 10		11 58	
9 5	Azimuth of the Comet from the west towards the north [Azimuth Cometæ ab occaſu verſus ſeptentrionem]	17 18	Alti-tude [Alti-tudo] 10^{p} 20′

8
54⅓

This last observation was not exact enough, because the Comet could be seen only with difficulty; it was nevertheless such that you could use it without great error; for it was not possible to see more exactly. [Hæc vltima obſeruatio fuit non ſatis exquiſita, eo quod Cometa difficulter videri potuerit, fuit tamen talis vt ſine magno errore eo vti poßis; exactius enim videre non licuit.]

At hour 9 M. 15 I observed between Scheat and the Comet p. 12 M. 25, twice, and could scarcely see otherwise; but it was near the horizon, and therefore I am not sure enough of this observation. [Hora 9 M. 15 inter Scheat & Cometam p. 12 M. 25 bis obſeruaui & aliter videre vix potui, ſed erat prope horizontem, ideoque non ſum ſatis certus de hac obſeruatione.]

[1] The lower numbers indicate the time of the clock, the upper ones the emended time. See the text under day 30, at the end. [[1] Inferiores numeri tempus horologij indicant, ſuperiores tempus emendatum. Vide textum ſub die 30 in fine.]

Note, however, in these observations that the clock had not been corrected from 27 December; on the following day, therefore, at noon it came round later than it should have, by 12′ 40″ of time, so that on each day it anticipated by 3′ 10″; but by the hour of observation, about the eighth, it had anticipated by 10½ M. (but by the ninth, 10⅔). These are to be added to the time noted above, so that the corrected times are as follows. [Nota tamen in his obſeruationibus quod horologium non erat correctum a die 27 Decembris, die itaque ſequente in meridie tardius reuertebatur, quam oportebat, in 12′ 40″ temp. ita vt quolibet die anticiparit 3′ 10″ ad horam vero obſeruationis circiter octauam anticipauerat 10½ M. (ad nonam vero 10⅔) quæ addenda ſunt tempori ſuperius annotato, vt ſint tempora correcta hoc modo.]

Die 30 Decembris vt ſupra. [30 December, as above]

	H. M. S.	Azimuth G. M.		Altitude [Altitudo] G. M.
I.	7 33 10	1 22	and that from the west towards the south [idque ab occaſu verſus meridiem]	22 42
II.	9 5 0	17 18	from the west towards the north [ab occaſu verſus ſeptentrionem]	10 20

In the other observations made for day 30, too, add 10½ m. of time; and I noted this above the earlier numbers, and on that account deleted the lower ones. [In cæteris etiam obſeruationibus ad diem 30 factis adde 10½ m. temporis, idque ſupra priores numeros annotaui, & deleui ob id inferiores.]

DIE 31. [Day 31]

		P. M.	
$5^{H}30^{M}$	Between Scheat and the Comet [Inter Scheat & Cometam]	12 23	
5 45	Between the Comet and the first of the neck of Pegasus [Inter Cometam & primam colli Pegaſi]	11 51	
6 55[1]	Between the Comet and the mouth of Pegasus [Inter Cometam & os Pegaſi]	13 40	(I made it 13 42) [(feci 13 42)]
	Distance between Scheat and the first, which I call "of the neck" [Diſtantia inter Scheat & primam quam voco colli]	12 40	
6 10[1]	Between the brighter of the three small ones in the neck of Pegasus — namely the one which, of the two nearer ones, is closest to the head — and the Comet [Inter lucidiorem ex tribus paruis in collo Pegaſi quæ videlicet ex duabus vicinioribus proxima eſt capiti & Cometam]	10 55	
	For these stars surrounded the Comet as if at an equal distance. [Circumdabant enim hæ ſtellæ Cometam quaſi in æquali diſtantia.]		
7 15	Between Scheat and the Comet [Inter Scheat & Cometam]	12 25	
7 20	Between the first of the neck and the Comet [Inter primam colli & Cometam]	11 52	nearly as above [fere vt ſupra]

Note. At the following noon the clock came back 6 minutes later; to 6 hours there corresponds 1½. [Nota. In ſequenti meridie horologium redibat 6 minutis tardius, competit 6 horis 1½.]

Good observations. [Bonæ obſeruationes.]

H. M. S.	Azimuth G. M.	Altitude [Altitudo] G. M.
6 20 45	16 40	33 7
6 31 45	14 0	31 48
6 41 5	11 44	30 29 or 30 [vel 30]
7 36½	0 12	22 36
7 58 45	towards the north [verſus ſep.] 4 26	19 20

		P. M.
$8^{H}15^{M}$	Between Scheat and the Comet [Inter Scheat & Cometam]	12 16
	But a little later I observed the same about 3′ greater, so that the true distance at that time is [Sed paulo poſt obſeruaui eandem 3 fere minutis maiorem, vt ſit vera diſtantia eo tempore]	12 18
8 25	Between the first of the neck and the Comet [Inter primam colli & Cometam]	11 50
8 40	Between Scheat and the Comet [Inter Scheat & Cometam]	12 18

And this agrees with the comet's daily motion: for from H. 5½ to H. 8⅔ the Comet moved about 5′, over 3 hours and 10 min., as was bound to happen, since the Comet's daily motion is of 44′ from yesterday's observation. (The daily motion is 40′. Therefore the Comet in 3 hours truly completed 5′.) [Atque hoc conſentit cum cometæ motu diurno, nam ab H. 5½ in H. 8⅔ motus eſt

Cometes 5 circiter minutis per 3 horas & 10 min., quod fieri oportuit ſiquidem Cometæ diurnus motus eſt minutorum 44 ex heſterna obſeruatione. (Motus diurnus eſt 40′. Igitur Cometa per 3 horas vere abſoluit 5 minuta).]

H. 9 M. 4 S. 15 Azimuth of the Comet $17^{G}47'$ Alt. 10 28 [H. 9 M. 4 S. 15 Azimuth Cometæ $17^{G}47'$ Alt. 10 28]

But the Comet was very thin, so that the observation could not be made certain enough, but moderate nevertheless. [Sed Cometa erat admodum tenuis, vt ſatis certa fieri non poßet obſeruatio ſed mediocris tamen.]

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

1578.

JANUARIJ DIE 1. [1 January]

		P. M.	
$5¾^{H}45^{M}$	Between the Comet and Scheat of Pegasus [Inter Cometam & Scheat Pegaſi]	11 43	
	or rather [vel potius]	11 45	(I made it 11 48) [(feci 11 48)]
6 6	Between the first of the neck of Pegasus and the Comet [Inter primam colli Pegaſi & Cometam]	11 26	
	or rather [vel potius]	11 25	
6½	Between the mouth of Pegasus and the Comet [Inter os Pegaſi & Cometam]	14 15	(I made it 14 18) [(feci 14 18)]
6 44 35^{S}	Azimuth of the Comet from the west towards the south [Azimuth Cometæ ab occaſu verſus merid.]	10 37	Altit. 29 44
	Add 12′ in the azimuth. [Adde in Azimuth 12′.]		
8 11 5	Azimuth of the Comet from the west towards the north [Azimuth Cometæ ab occaſu verſus ſept.]	7 22	17 50
8 40	Between Scheat and the Comet [Inter Scheat & Cometam]	11 35	
	But the Comet was very thin, so that it could scarcely be made out. [Sed erat admodum tenuis Cometa, vt vix diſcerni potuerit.]		

The clock went faster by 2 minutes in 24 hours. [Horologium citius ibat 2 minutis in 24 horis.]

DIE 2 JANUARIJ. [2 January]

6 12 10	Azimuth of the Comet [Azimuth Cometæ]	18 8	(18 15) Alt. 34 20
6 35	Between Scheat and the Comet [Inter Scheat & Cometam]	11 10	(I made it 11 12) [(feci 11 12)]
	Between the first of the neck of Pegasus and the Comet [Inter primam colli Pegaſi & Cometam]	10 58	(I made it 11 1) [(feci 11 1)]
6 48	Azimuth of the Comet [Azimuth Cometæ]	9 58	Altit. 29 32

The upper part of the end of the tail seemed to incline towards the more southern of the two small ones in the neck of Pegasus, so that, if anyone looked carefully, it would seem to be carried nearly there. [Superior pars extremitatis

caudæ viſa eſt vergere in meridionaliorem duarum paruarum in collo Pegaſi, ita vt ſi quis accurate aſpiceret illic fere ferri videretur.]

After the instrument had been corrected. [Poſt correctum inſtrumentum.]

7 42⅔	Azimuth of the Comet towards the north [Azimuth Cometæ verſus ſept.]	1 30	Altit. 22 15
a little later [paulo poſt]	I observed the azimuth of the mouth of Pegasus [obſeruaui Azimuth oris Pegaſi]		
7 53⅔	from the west towards the north [ab occaſu verſus ſept.]	5 38	5 58
8 1 50	Azimuth of the Comet towards the north [Azimuth Cometæ verſus ſept.]	5 35	19 7
8 8 0	I saw that the one in the rectangle at the foot of Pegasus, which is not of the square but on its own and more northern, had azimuth from the west towards the north [Vidi quod illa in rectangulo ad pedis Pegaſi, quæ non eſt de quadrato ſed ſola & borealior, habuit Azimuth ab occaſu verſus ſept.]	9 0	28 24
8 17 7	I observed Scheat of Pegasus in azimuth from the west towards the north [Obſeruaui Scheat Pegaſi in Azimuth ab occaſu verſus ſeptent.]	5 10	28 14
8 27 28	The first in the neck of Pegasus in azimuth from the west towards the south [Prima in Collo Pegaſi in Azimuth ab occaſu verſus merid.]	1 12	16 36½
8 36¾	Azimuth of the Comet from the west towards the north [Cometæ Azimuth ab occaſu verſus ſept.]	12 27	15 3
8 55 0	Between the Comet and Scheat of Pegasus [Inter Cometam & Scheat Pegaſi]	11 7	

The daily motion gives, from hour 6 35 to this time, 4′; the observation gave 3′, an insensible difference. [Motus diurnus dat ab hora 6 35 in hoc tempus 4 minuta; obſeruatio dedit 3 minuta, differentia inſenſibilis.]

9 3 20	Azimuth of the Comet [Cometæ Azimuth]	G. 17 M. 52 Alt. G. 10 M. 50
	At the last observation the Comet was very thin, but nevertheless it was not possible to observe more certainly. [In vltima obſeruatione erat Cometa admodum tenuis, ſed tamen certius obſeruare non licuit.]	
9 18 20	The brightest foot of Orion, which is at Eridanus, was on the meridian and had an altitude of 25^{p} 22′. [Lucidißimus pes Orionis, qui eſt ad Eridanum, fuit in Meridiano, habuitque Altitudinem 25^{p} 22′.]	

From these azimuths of the stars and of the Comet you will be able to find their places, and from them the altitude of the pole, and to see whether they agree in the same altitude of the pole; then the Comet is without parallax. But from the last one, namely the foot of Orion, you will be able to correct the time, taking its place from the observation of longitude. But to verify the azimuth I noted the pole star when it was at its more remote distance from the pole; at its most remote I could not see it, but I observed first at H. 10 M. 50⅔ [Ex his ſtellarum & Cometæ Azimuth poteris inquirere earum loca & inde poli Altitudinem & videre vtrum conueniant in eadem poli Altitudine;

tunc Cometa caret parallaxi, ex vltimo vero videlicet pede Orionis poteris corrigere tempus accepto loco ex longitudinis obſeruatione; pro Azimuth vero verificando animaduerti ſtellam polarem cum eßet in remotiori a polo diſtantia; remotißimam videre non potui, obſeruaui autem primum H. 10 M. 50⅔]

that it was distant from the meridian P. 4 M. 59. Then at H. 10 M. 57⅙ I saw it distant from the same in the horizon, by azimuth, P. 4 M. 55, or at most 56. From these you will be able to correct the earlier azimuths, if there is any difference, for the proper time. [eam abeße a Meridiano P. 4 M. 59. Deinde H. 10 M. 57⅙ vidi eam ab eodem in horizonte per Azimuth diſtare P. 4 M. 55 vel ad ſummum 56. Ex his poteris corrigere Azimuth priora, ſi qua erit differentia pro tempore debito.]

DIE 5. [Day 5]

6^H10^M	Between Scheat and the Comet [Inter Scheat & Cometam]	9 47	but doubtful (I put between Scheat and the Comet 9 40) [ſed dubia (ego poſui inter Scheat & Cometam 9 40)]
6 20	Between the first of the neck of Pegasus and the Comet [Inter primam colli Pegaſi & Cometam]	10 23	(perhaps 11 23) [(forte 11 23)]

Note. In all these azimuths 12′ are lacking, for the pole star on day 5, at H. 10¼ p. M., was seen in azimuth P. 5 M. 3, when it should have been P. 5 M. 15 (on day 9 it was seen in the last azimuth 5 2; you must add 12). [Nota. In omnibus Azimuth his deficiunt 12 minuta, nam ſtella polaris die 5, H. 10¼ p. M. viſa eſt in Azimuth P. 5 M. 3, cum deberet eße P. 5 M. 15 (Die 9 viſa eſt in Azimuto vltimo 5 2, addere debes 12).]

		P. M.	
$6^H27¼^M$	The azimuth of the Comet was, towards the south from the west [fuit Cometæ Azimuth verſus meridiem ab occaſu]	11 55	having Altit. 31 42 [habens Altit. 31 42]
7 35¾	The azimuth of the same towards the north from the west [Eiusdem Azimuth verſus ſeptentrionem ab occaſu] A fairly good observation, provided the time is restored and the meridian line is good, which it is absurd to demand. [Satis bona obſeruatio, modo tempus reſtituatur & meridiana linea ſit bona, quod poſcere eſt abſurdum.]	2 43	22 13
8 15	Between Scheat and the Comet [Inter Scheat & Cometam] And this observation is good; the Comet, very thin, projected rays exactly into the lower of the two in the neck of Pegasus, where it ended. [Atque hæc obſeruatio eſt bona, Cometa admodum tenuis exquiſite proiecit radios in inferiorem duarum in collo Pegaſi vbi terminabatur.]	9 35	
8 30	Between Scheat and the Comet [Inter Scheat & Cometam]	9 20	at least [ad minimum]

		P. M.
	But this discrepancy arose because of the thinness of the Comet; trust rather the middle observation. [Sed propter tenuitatem Cometæ accidit hæc diuerſitas, confide potius mediæ obſeruationi.]	

DIE 9 JANUARIJ. [9 January]

I saw the Comet very thin, and it was near two small stars in a triangle at the feet of Pegasus, so that the tail ended exactly in those stars, especially in the one which is more southern and more western, stretching towards the head, which it seemed to touch quite exactly. [Vidi Cometam admodum tenuem & erat prope duas paruas ſtellas in triangulo ad pedes Pegaſi, ita vt cauda exquiſite terminaret in illis ſtellis, præſertim in ea, quæ eſt meridionalior & occidentalior, tendens ad caput, quam ſatis exquiſite attingere viſa eſt.]

$6^{H}30^{M}$	Distance between Scheat and the Comet [Diſtantia inter Scheat & Cometam]	8 30	
7 0	The same [Eadem]	8 30	with the Radius [per Radium]
	A fairly good observation, as far as one could see through the smallness of the Comet. [Satis bona obſeruatio, quantum per paruitatem Cometæ videre licuit.]		(I put precisely 8) [(poſui præciſe 8)]
7 10	Between the other bright one, which is in the triangle at the feet of Pegasus, and the Comet [Inter alteram, quæ eſt in triangulo ad pedes Pegaſi, lucidam & Cometam]	7 55	(I put 7½) [(poſui 7½)]
7 20	The head of the Comet was distant from that small one in the triangle which was nearest to it, in which I said the tail ended [Diſtabat caput Cometæ ab ea paruula in triangulo, quæ ſibi erat proxima, in quam dixi caudam deſinere]	2 45	
	And this was, as it were, the length of the tail itself. [Atque hæc erat longitudo quaſi ipſius caudæ.]		
7 40	From the other, upper small one [Ab altera paruula ſuperiori]	3 50	
7 50	From the one which is the first bright one of the neck [Ab ea, quæ eſt prima colli lucida]	10 16	
	The last is doubtful. [Vltima eſt dubia.]		

DIE 12 JANUARIJ. [12 January]

I saw that the Comet, very thin, was nearer to the lower little star of the two in the breast of Pegasus, distant from it a little more than is the distance of the two small ones, and it made with them an obtuse angle at the lower, namely [Vidi, quod Cometa admodum tenuis propior erat inferiori ſtellulæ ex duabus in pectore Pegaſi, diſtans ab illa paulo plus quam eſt diſtantia ambarum paruarum, & fecit cum illis angulum obtuſum in inferiori videli-]

the small one; but the tail still seemed to incline towards the lower of those two small ones. I saw moreover that this space was nearly equal to the interval of the two in the other horn of ♈, but rather a little greater than that interval,

so that it is 1 40, or 45 at most, for the distance of the stars in ♈ is 1 30. [cet paruula; cauda vero adhuc videbatur vergere verſus inferiorem ex illis duabus paruulis. Vidi inſuper quod hoc ſpacium erat fere æquale interſtitio duarum in altero cornu ♈, ſed potius paulo maius illo interuallo. vt ſit 1 40 vel 45 ad ſummum, nam diſtantia ſtellarum in ♈ eſt 1 30.]

		P. M.	
7^{H} 0^{M}	Was distant from Scheat of Pegasus [Diſtabat a Scheat Pegaſi]	7 20	
7 25	Between the other bright one in the triangle of the foot and the Comet [Inter alteram lucidam in triangulo pedis & Cometam]	6 45	(take 6½) [(pone 6½)]

DIE 13 JANUARIJ. [13 January]

About hour 6 I saw the Comet, though scarcely appearing, and its head seemed to be distant from the lower of the two in the foot of Pegasus at the triangle by about as much as the distance of the two, or a little more; for through the instrument it was not possible to take the distance exactly from those fixed stars. [Circa horam 6 vidi Cometam vix tamen apparentem & caput ipſius videbatur diſtare ab inferiori duarum in pede Pegaſi ad triangulum, quanta eſt fere diſtantia ambarum vel paulo plus, per inſtrumentum enim non licuit diſtantiam exquiſite capere ab illis ſtellis fixis.]

On the following days the Comet could not be seen, because of the thinness and the presence of ☾. [Sequentibus diebus non potuit videri Cometa ob tenuitatem & præſentiam ☾.]

DIE 26 JANUARIJ. [26 January]

At H. 7½ P. M. I saw that the Comet could still thrust itself into view, although very dim; it was nevertheless clear enough that it was in the middle of the space between Scheat of Pegasus and the nearest of the two small ones at the breast of Pegasus. It was, however, deviating from this line a little towards the east and south, by the space of 10′, so that the place of the Comet was exactly in the tropic circle of ♍. The Comet therefore advanced from day 13 to 26, over 13 days, by four degrees with ⅓; to one day there corresponds 20′. [H. 7½ P. M. Vidi, quod Cometa adhuc poterat apparitui ſeſe ingerere, quamuis admodum obſcurus, ſatis tamen apparebat eum eße in medio ſpacio inter Scheat Pegaſi & proximam duarum paruarum ad pectus Pegaſi; erat tamen ab hac linea parum verſus ortum & meridiem deuians ad ſpacium 10 minutorum ita vt locus Cometæ exquiſite fuerit in circulo tropico ♍; promotus eſt itaque Cometes a die 13 in 26, per dies 13, partibus quatuor cum ⅓; competit vni diei 20′.]

That the Comet was not in the elementary region will be demonstrated in three ways. [Quod Cometa non fuerit in elementari regione, demonſtrabitur tribus modis.]

I. Because it described an exactly great circle, which it could not have done if it had been elementary like the other meteors, which move as if by chance; and if it had a sensible parallax, it could not, in so long a time and at such different

distances from the horizon, describe the same circle — of which you can bring forward the demonstration. [I. Quia deſcripſit circulum exquiſite magnum, quod facere non potuit, ſi fuißet elementaris vt cætera meteora, quæ quaſi caſu mouentur, & ſi ſenſibilem haberet parallaxin, non poßet in tanto tempore, tam diuerſis ab horizonte diſtantijs, eundem circulum deſcribere, cuius potes adducere demonſtrationem.]

Then also because under this very circle it advanced with a regular motion and, proportionally, ended by passing from a swifter into a slower one, in the manner of the other planets in their circles; and because it had a daily motion smaller than the Moon. [Deinde etiam quia ſub hoc ipſo circulo ordinario motu progreßus eſt & proportionalis a velociori in tardiorem deſijt more cæterorum planetarum in ſuis circulis, & quia motum diurnum luna minorem, obtinuit.]

Because it began and ended in so notable a place in the heaven, namely having advanced from one of the tropics into the other through a fourth part of the heaven, making at its pole a distance from the pole of the world and of the equator that is congruent. [Quia in tam notabili cœli loco incepit & deſijt, nempe progreßus ab vno tropicorum in alterum per quartam cœli partem, faciens in ſuo polo diſtantiam a polo mundi & æquatoris congruentem.]

II. Through the distance from the fixed stars, relative to which it was taken on its path at different hours, by demonstrating as you know. [II. Per diſtantiam a fixis, ad quas fuit in ſua via diuerſis horis acceptus, demonſtrando vti ſcis.]

III. From the distances obtained at different altitudes of the pole by Tadeáš Hájek and Cornelius Gemma, compared with ours. Afterwards you can append the method of Regiomontanus and his own..... [III. Ex diſtantijs in diuerſis poli Altitudinibus a Thaddeo & Gemma habitis collatis cum noſtris. Potes poſtea ſubiungere Regiomontani modum & ipſius.....]

But if you wish, along the customary way, to investigate the parallax in the manner of Regiomontanus, remember to take those intervals of time which have nearly as many minutes in the hours, because then they made a nearly similar revolution of the wheel in the clock; and above all one must trust the observation which was made on 2 January at hour 8 M. 1 S. 50 and afterwards again at hour 9 M. 3 S. 20. Both times can be restored from the fixed stars, whose azimuths and altitudes are noted there. [Iuxta conſuetam vero viam volens Regiomontani more inquirere parallaxin, memineris accipere ea temporum interualla, quæ fere totidem habent minuta in horis, quia tunc fecerunt fere ſimilem reuolutionem rotæ in horologio, & præſertim fidendum obſeruationi, quæ facta eſt Januarij die 2 Hora 8 M. 1 S. 50 & poſtea rurſus Hora 9 M. 3 S. 20, & poßunt vtraque tempora reſtitui ex ſtellis fixis, quarum Azimuth & Altitudines ibi annotantur.]

	H. M.	Azimuth P. M.	Altitude [Altitudo] P. M.
2 January [Die 2 Januarij]	8 0½	5 28	19 7
	9 2	17 45	10 50
	7 41⅓	1 23	22 15

	H. M.	Azimuth P. M.	Altitude [Altitudo] P. M.
	8 35$^{5}/_{12}$	12 20	15 3
30 November [Die 30 Nouembris]	5 26	54 6	36 10
	6 24	37 53	30 32
	6 50	31 5	27 23
	7 54	16 9	19 4
	8 58½	3 20	10 8
13 December [Die 13 Decembris]	7 1	20 36	28 56
	8 0	7 44	21 16
	9 3	5 37	12 14
19 December [Die 19 Decembris]	5 47	35 36	38 38
	7 54	5 10	22 18
31 December [Die 31 Decembris]	6 31¾	14 0	31 48
	7 36½	0 12	22 36

That this method of Regiomontanus is insufficient in so subtle an examination, and that the other methods, devised both by him and by more recent ones, would have no place here, is partly because for the most part they presuppose the comet's transit through the meridian, which did not appear in this one; and partly because all those methods presuppose an immobile place of the comet — which, however, since it moves perceptibly even within a single hour, and a small change varies the parallaxes very greatly, in such comets they cannot have a place. [Quod modus iſte Regiomontanj in tam ſubtilj examine ſit inſufficiens & reliqui modj tam ab illo quam a recentioribus excogitati hic locum non haberent, partim quod maxima ex parte Cometæ tranſitum per meridianum præſupponunt qui in hoc non apparuit, partim quod omnes illj modj præſupponant Cometæ locum immobilem, qui tamen cum in vna etiam hora ſenſibiliter moueatur & parua mutatio plurimum paralaxes variat, in talibus Cometis locum habere non poßunt.]

Observations of the Comet of the Year 1580, in the Month of October [OBSERUATIONES COMETÆ / ANNI 1580 MENSE OCTOBRI.]

In the year 1580, on 10 October, at hour 7 after noon, I noticed a certain new comet appear near the constellation of the Southern Fish, with a thin light and a rather sparse and less apparent tail. The head itself, however, seemed of a thin and white but less clear light, somewhat livid, and more dully visible than the other stars; and in magnitude it equalled the star of Venus nearest the earth, so that it seemed about 8′. The tail, moreover, quite dim and sparse, was drawn out from the head towards the first star in the breast of the Southern Fish, so that its upper part fell on that star; and the length of the tail was nearly equal to the distance of the two more remote shining stars in Aquila. [Anno 1580 die 10 Octobris hora 7 poſt meridiem animaduerti nouum quendam Cometam tenui lumine & cauda rariore ac minus apparente circa conſtellationem Piſcis auſtralis

apparere. Videbatur autem caput ipſum tenui & albo, ſed minus claro lumine, ſubliuidum & hebetius quam cæteræ ſtellæ conlpicuum, eratque magnitudine Veneris ſydus terræ proximum adæquans, adeo vt quaſi 8 minutorum videretur, producebatur autem cauda a capite admodum ſubobſcura & rara verſus primam ſtellam in pectore Piſcis auſtralis, ita vt ſuperior eius pars in illam ſtellam caderet, eratque longitudo caudæ fere æqualis diſtantiæ duarum remotiorum ſtellarum in Aquila lucentium.]

Diagram. The constellation of the Southern Fish [Conſtellatio piſcis auſtralis]. A pen drawing of a fish, head to the left and tail to the right, with star marks on and about the body, each with a figure beside it. To the left of the fish's head, below it, stands a handwritten word, followed by a small rayed mark and a feathered streak running to the right under the fish's head.

- 1 (at the snout): star mark
- 2 (on the head, below the eye): star mark
- 3 (at the gill line): star mark
- 4 (upper edge, just behind the gill line): star mark
- 5 (upper middle of the body): star mark
- 6 (below the gill line, towards the belly): star mark
- 7 (lower middle of the body): star mark
- 8 (upper body, towards the tail): star mark
- 9 (near the root of the tail): star mark
- handwritten word (left, below the head): "Cometa" [?]

$7^{H}18^{M}$	I observed its distance with the Radius from Markab of Pegasus [Obſeruaui eius diſtantiam per Radium a Marcab Pegaſi]	15 20	It had then passed the 90th degree of the ecliptic by about half an hour [Erat tunc 90 gradum Eclipticæ quaſi per dimidiam horam prætergreßus]
7 25	It was distant, by the same, from the extreme star of the wing [Diſtabat per eundem ab extrema alæ]	21 3	
7 45	The head was distant from the middle one of the head of ♓, which is the 2nd [Diſtabat caput a media capitis ♓, quæ eſt 2^{da}]	3 40	
	And by the same interval that one in the breast, the 6th, towards which the tail sank, seemed to be distant. [Atque eodem interuallo viſa eſt diſtare illa in pectore 6^{ta}, verſus quam cauda ſubſidebat.]		

The end of the tail, moreover, seemed to point — if it were drawn out lengthwise, led from the head itself below the Pleiades — as though it were heading for the star of Mars, with a length of only a cubit. [Viſa autem eſt extremitas caudæ vergere, ſi in longum protraheretur, ducta ab ipſo capite infra Pleiades, quaſi in Martis ſydus tenderet, longitudine tantum cubitali.]

Azimuths and altitudes of the comet. [Cometæ Azimuta & Altitudines.]

H. M. S.	Azimuth towards the east [Azimuth verſus ortum] G. M.	Altitude [Altitudo] G. M.
8 4 0	21 0	
8 10 50	19 0	30 17
8 17 40	17 0	30 32
8 29 10	14 0	30 57
8 37 5	12 0	31 13

The head of the comet was, moreover, in the meridian itself at 9 17 30 exactly, having a meridian altitude of 31 47. [Fuit autem Cometæ caput in ipſo Meridiano 9 17 30 exacte habens altitudinem meridianam 31 47.]

These observations are fairly good as regards the times and azimuths, because the clock on the previous day was coming round well to the preceding noon; but in the afternoon observations I could not trust exactly, because it had meanwhile suffered damage. [Hæ obſeruationes quoad tempora & Azimuta ſunt ſatis bonæ, quod horologium heſterno die in meridiem antecedentem bene reuertebatur, ſed in pomeridianis obſeruationibus non poteram exquiſite fidere, quia contraxit interea damnum.]

Then I observed distances with the Sextant. [Deinde per Sextantem obſeruaui diſtantias.]

		P. M.	
$9^H 40^M$	It was distant from Markab of Pegasus [Diſtabat a Marcab Pegaſi]	15 43	and that without the parallax of the instrument being taken into account [idque non conſiderata parallaxi inſtrumenti]
9 54	Between the head of the comet and the extreme star of the wing of Pegasus [Inter Cometæ caput & extremam alæ Pegaſi]	21 53	

11¼ fere.	About 11¼: between the extreme one in the wing [Inter extremam in ala]	21 53
	But between Markab and the comet I found a little later [Sed inter Marcab & Cometam paulo poſt inueni]	15 30
11 35	Between Markab and the comet by the sextant [Inter Marcab & Cometam per Sextant.]	15 28
12 15	The distance of the same [Earundem diſtantia]	15 25

All these observations on this side were made with the sextant, and the parallax of the instrument has not yet been subtracted. [Hæ omnes huius lateris obſeruationes factæ ſunt per Sextantem, & parallaxis inſtrumenti nondum ſubducta eſt.]

Note. From the time of the preceding new moon, around which this comet began, people universally, more than about half of them [plus fere dimidia parte], nobles as well as commoners, suffered from headache and from catarrhs to the lungs, with cough and difficulty of breathing, which came on with these very

ills through a feverish shivering; and most of them, men as well as women, took to their beds for several days, and the illness was contagious. [Nota. A tempore nouilunij præcedentis, circa quod hic Cometa incepit, laborarunt homines vniuerſaliter plus fere dimidia parte, tam nobiles quam ignobiles, dolore capitis & diſtillationibus ad pulmones cum tußi & anhelitus difficultate, quod malis ipſis per horrorem febrilem inuaſit, & decubuerunt plerique per aliquot dies tam maſculi quam fœminæ, eratque malum contagioſum.]

There was also, in the same days in which the comet began, a very great storm of winds from the north-west [Danish: aff Norweſt][1], and at times hail and showers and rains, and a very stormy state of the air, and frequent and dense fogs now and then. [Fuit etiam ijsdem diebus, quibus incepit Cometa, maxima ventorum tempeſtas aff Norweſt[1] & interdum grandines & imbres ac pluuiæ admodumque tempeſtuoſus aëris ſtatus & crebræ denſæque ſubinde nebulæ.]

DIE 11 OCTOBRIS. [11 October]

$6^{H}37^{M}25^{S}$ The bright star of the Vulture was in azimuth towards the west 6°, having altitude 41 51. [Fuit Vulturis lucida in Azimuto verſus occaſum 6 part. habens Altitud. 41 51] From this you can correct the following times (it was hour 6 4′ 30″). [Hinc potes corrigere ſequentia tempora (fuit hora 6 4′ 30″)]

6 56 10 The pole star was in azimuth towards the east 4 30. [Fuit ſtella polaris in Azimuto verſus ortum 4 30] From this you can correct the following azimuths. [Hinc potes corrigere ſequentia Azimuto.]

Note. I had indeed adjusted the clock around the preceding noon to the azimuth of the ☉; but because its exact revolution was not yet established, it had to be corrected by the following noon and the following azimuths of the stars. Forenoon altitude 27 30. [Nota. Horologium quidem circa præcedentem meridiem ad Azimuth ☉ adaptaram, ſed quia de reuolutione eius exacta nondum conſtitit, ea per meridiem ſequentem & Azimuta ſtellarum ſequentia corrigenda erat. Altitudo antemeridiana 27 30.]

H. M. S.	Azimuth of the comet from the east [Azimuth Cometæ ab ortu] P. M.	Altitude of the comet [Altitudo Cometæ] P. M.
7 26 35	55 22	28 30
7 40 40	58 57	29 30
7 48 10	60 58	30 0

$7^{H}56^{M}$	The comet was distant from the neck of Pegasus, Markab, by the Radius [Diſtabat Cometa a collo Pegaſi, Marcab per Radium]	13 48
8 5	Between the same by the sextant [Inter easdem per Sextantem]	14 10
	The following by the sextant with parallax. [Sequentia per Sextantem cum parallaxi.]	
8 16	The head of the comet was distant from the uppermost of the wing of Pegasus [Diſtabat caput Cometæ a ſuprema alæ Pegaſi]	24 20

8 23	Between the mouth of Pegasus and the comet [Inter os Pegaſi & Cometam]	19 28
8 32½	Between the head of Pegasus and the comet [Inter caput Pegaſi & Cometam]	12 0
8 39	Between the bright star of the neck of Pegasus and the comet [Inter lucidam colli Pegaſi & Cometam]	9 50
8 50 45^{S}	The right shoulder of Aquarius was in azimuth towards the west from the meridian line [Fuit dexter humerus Aquarij in Azimuto verſus occaſum a linea meridiana]	0 50; altitude [Altitudo] 31 48

H. 9 M. 7. I saw precisely that the straight line drawn from the upper and middle one in the right hand of Aquarius to the one that is the lower in the head of Piscis Australis passed exactly through the comet, and the comet was in the space between the two. By the Radius, moreover, it was distant from each of these by exactly the same distance, H. 9¼ P. 6 M. 20. [H. 9 M. 7 Vidi exquiſite, quod linea recta, quæ ducitur a ſuperiori & media in manu dextra Aquarij in eam, quæ eſt inferior in capite Piſcis auſtralis, tranſibat præciſe per Cometam, & erat Cometa in ſpacio intermedio vtriuſque. Diſtabat autem per Radium ab vtraque harum exquiſite eadem diſtantia H. 9¼ P. 6 M. 20.]

[1] Thus in the codex; that is, north-west. [Sic in codice, id eſt Bor. Occ.]

9^{H}42^{M}5ρ	Precisely, the comet was in the meridian, having altitude [exquiſite, fuit Cometa in Meridiano, habens Altitudinem]	33 34 precisely (it was H. 8 M. 43) [33 34 exquiſite (fuit H.8 M.43)]
9 58 15	The first of the neck of Pegasus was in the meridian, having altitude [Fuit prima colli Pegaſi in Meridiano, habens Altitudinem]	47 6; it was H. 8 M. 58 S. 20 [47 6 fuit H. 8 M. 58 S. 20]
10 23	Between the first of the neck of Pegasus and the comet [Inter primam colli Pegaſi & Cometam]	14 7 by the sextant [14 7 per Sextantem]
11 39⅔	The comet was again, after the meridian, in azimuth from the west, [Fuit Cometa rurſus poſt meridiem in Azimuth ab occidente,]	61 55, having altitude [habens Altitud.] 30 0
	But this observation was ἐν πλάτει [Greek: en platei, "in breadth" — roughly] because of the intervening clouds; hence not certain enough, but fair. [Sed hæc obſeruatio fuit ἐν πλάτει propter interuenientes nubes; vnde non ſatis certa, ſed mediocris.]	
12 2	The comet was again in azimuth from the west towards the south [Fuit Cometa rurſus in Azimuto ab occaſu verſus meridiem]	55 5, having alt. [habens Alt.] 28 30
	Middling. [Mediocris.]	

H. 12½. I noticed that the tail of the comet, which was very thin and scarcely visible, extended into the middle space, roughly between the middle one of the arm and the middle one of the hand of ♒, so that the end of the tail seemed to finish next to the space lying between the two nearest to the comet itself, as appears in the figure below. [H. 12½ Animaduerti, quod cauda Cometæ, quæ admodum erat tenuis & vix apparens, tenderet in medium ſpacium fere inter mediam brachij & mediam manus ♒, adeo vt extremitas caudæ deſinere iuxta

ſpacium intermedium duabus proximis ipſi Cometæ videretur, vt apparet in ſubiecta figura.]

Diagram. A star figure without caption, set below the paragraph and before the $2^{H}6^{M}40^{S}$ entry. It is drawn as thirteen asterisk-shaped star marks of varying size. Dotted and dashed lines join several marks in the upper middle of the drawing. A bundle of nearly parallel strokes, wider at its left end, runs down to the right and ends at one of the star marks. Four star marks stand apart in a group at the lower right. Two handwritten script labels stand among the marks.

- Upper middle, to the right of the dotted line: handwritten script label [?] — the letters are not separated on the page.
- Left, around one of the star marks: handwritten script label [?] — the letters are not separated on the page.

$2^{H}6^{M}40^{S}$	The head of the comet was in azimuth from the west towards the south [Fuit caput Cometæ in Azimuto ab occaſu verſus Merid.] Fairly good. [Satis bona.]	28 0, alt. [Alt.] 17 6
2 32	Distance of the comet from the neck of Pegasus by the sextant [Diſtantia Cometæ a collo Pegaſi per Sextantem]	14 3, fair [mediocris]
3 21 10	The left foot of Orion was in azimuth from the east [Fuit ſiniſter pes Orionis in Azimuto ab ortu]	65 0, having forenoon alt. [habens Alt. antemeridianam] 22 38½; good [bona]

From this you will again be able, at the end, to verify the time and moments more certainly and reconcile them with the preceding ones, to find out whether any error in the clock will still be uncorrected. [Ex hoc poteris rurſus in fine verificare & concordare cum antecedentibus tempus & momenta certius, ſi quis in horologio error erit nondum correctus, indagare.]

At the following noon the clock is over by more than two hours, running fast; therefore the time will have to be corrected by the azimuths of the stars and subtracted proportionally from each one, for the clock had not been corrected. [Horologium plus duabus horis citius abundat in ſequenti meridie, quare per Azimuta ſtellarum tempus erit corrigendum & ſingulis proportionaliter erit ſubtrahendum, nam horologium non erat correctum.]

DIE 12. [Day 12]

1	The Flying Vulture was in azimuth [Vultur volans fuit in Azimuto]	8 0, altitude [Altitudo] 41 45
	From this you will be able to verify the times. [Hinc poteris verificare tempora.]	
$6^{H}27^{M}$	The pole star was in azimuth [Fuit ſtella polaris in Azimuto]	4 35
	From this you will be able to verify the azimuths. [Hinc poteris verificare Azimuta.]	

[1] The time is missing. [Tempus abeſt.]

H. M. S.	Altitude of the comet [Altitudo Cometæ] P. M.	Azimuth of the comet [Azimuth Cometæ] P. M.
6 42 0	31 0	57 27
6 56 15	32 0	61 30
7 12 0	33 0	66 10
7 31 55	34 0	72 8

$7^{H}40^{M}$	I observed the distance of the comet [obſeruaui diſtantiam Cometæ] from the right shoulder of ♒ with the Radius [a dextro humero ♒ per Radium]	7 36
7 48	Was distant from the head of Pegasus [Diſtabat a capite Pegaſi]	6 25

At H. 7 M. 56 I saw precisely that a straight line, drawn through the mouth of Pegasus and its head, almost fell on the comet, but left the whole body of the comet toward the north and the east, so far as, as it were, to graze the lower circumference of the comet, so that the centre of the comet stood out by one digit, that is, five or six minutes, in this manner: [H. 7 M. 56 Vidi exquiſite, quod linea recta, ducta per os Pegaſi & caput eiusdem, fere incidebat in Cometam, ſed reliquit totum corpus Cometæ verſus ſeptentrionem & ortum, adeo vt inferiorem Cometæ circumferentiam quaſi ſtringeret, adeo vt centrum Cometæ extaret vno digito, id eſt quinque vel ſex minutis in hunc modum:]

Diagram. A facsimile pen sketch: a single straight line drawn from lower left to upper right. On it, from the lower left, stand a rayed circle, then a small cross-shaped star mark near the middle of the line, then a larger star mark near the upper-right end, beyond which the line runs on a short way. Four handwritten labels stand around the line, in script whose letters are not securely separated on the scan:

- Above the line, at its middle: [?]
- Left of the lower end of the line: [?]
- Right of the upper end of the line: [?]
- Below the line, beneath the small middle star mark: [?]

8^{H} 9^{M}	The comet was distant, by the Sextant, [Diſtabat per Sextantem Cometa] from the right shoulder of ♒ [a dextro humero ♒]	7 40	good [bona]
8 15	Was distant from the head of Pegasus [Diſtabat a capite Pegaſi]	6 25	good [bona]
8 27	The distance of the comet from the maw of Pegasus was [Fuit Diſtantia Cometæ a rictu Pegaſi]	13 50	good, with the Sext. [bona, per Sext.]
8 30 20^{s}	The comet was on the meridian, [Fuit Cometa in Meridiano,]		{ and it crossed the merid. [tranſiuit autem merid.]

	having altitude [habens Altitudinem]	35 20	with 338 degrees) [cum gradibus 338)]
8 43	The distance between the comet [Fuit diſtantia inter Cometam]		
	and the first of the neck was [& primam colli]	14 30	good, with the Sext. [bona, per Sext.]
8 52	Was distant from the middle and brighter of the neck [Diſtabat a media & lucidiore colli]	8 5	with the Sextant [per Sextantem]
9 3 10	The first of the neck crossed [Tranſiuit prima colli]		
	the meridian, having alt. [per Meridianum, habens Alt.]	47 7	(it was truly $8^{H}54'\ 20''$) [(fuit vere $8^{H}54'\ 20''$)]

H. M. S.	Altit. of the comet / The comet was again in [Altitud. Cometæ / Fuit rurſus cometa in]	having / azimuth [habens / Azimuth]	
9 31 30	34° 0'	71° 7'	
9 50 0	33 0	65 45	
10 7 5	32 0	60 42	
10 20 30	31 0	56 55	
11 36 40	23 36	36 50	
11 46 30	22 30	34 30	good [bona]
11 53 15	21 42	33 0	
12 3 0	20 36	30 40	
12 9 5	19 51	29 8	
12 14 20	19 13	28 0	

$12^{H}22^{M}$	Between the comet and the right shoulder of Aquarius [Inter Cometam & dextrum humerum Aquarij]	7 23	} with the [per]
12 29	Between the comet and the head of Pegasus [Inter Cometam & caput Pegaſi]	5 35	} Sextant [Sextantem]

At H. 12 40 I saw exactly, by the ruler, that the comet was still on the straight line drawn through the mouth and head of Pegasus, yet in such a way that it reached a little closer to the line through the centre than I noted above, so that 3 parts of the comet appeared below the line, but 4 above; for some part of the centre still stood out above the line toward the south; from this seek the parallax. [H. 12 40 Vidi exacte per Regulam, quod Cometa adhuc erat in linea recta, ducta per os & caput Pegaſi, ita tamen vt paulo propius ad lineam per centrum attingeret, quam ſupra annotaui, adeo vt 3 partes Cometæ infra lineam,

4 vero ſupra videretur; nam adhuc extabat aliqua pars centri ſupra lineam verſus meridiem; hinc quære parallaxin.]

$12^{H}53^{M}$	Between the middle and the bright of the neck [Inter mediam & lucidam colli]	8 0	with the Sextant. [per Sextant.]
	at the least it was [ad minimum fuit]	7 59	
1 8	the distance between the first of the neck and the comet was [fuit Diſtantia inter primam colli & Cometam]	14 42	with the Sextant. [per Sextant.]

Moreover, the first of the neck was almost directly above the comet in the same vertical circle, and the line Markab–comet falls on this line, which is drawn from the middle of the neck to the comet, at right angles; so the distance, which changes from the previous observation, comes about by reason of parallax pa...; so it, too, can be traced from this. [Erat autem prima colli fere directe ſupra Cometam in eodem circulo verticali & linea Marcab cometæ cadit huic lineæ quæ ducitur a media colli in Cometam ad angulos rectos, vnde diſtantia quæ mutatur a priori obſeruatione fit ratione paralaxeos pa... vnde ea & hinc indagari poterit.]

At H. 1 the mouth and head of Pegasus appeared, as far as sight goes, exactly in the same straight line with the comet; so from this too, taking account of the earlier ones, room is given for the parallax. [H. 1 Videbatur exacte quoad viſum os & caput Pegaſi cum Cometa in eadem recta linea, vnde & hinc habita priorum ratione locus datur parallaxi.]

$1^{H}25^{M}$	Between the first of the neck and the comet [Inter primam colli & Cometam]	14 42	pre-cisely [exquiſite]
			as before [vt prius]
1 32 50	The comet was in azimuth [Fuit Cometa in Azimuto]	11 7	and altit. [& Al-titud.]
			9 20
1 41 10	Azimuth of the comet from the east toward the merid. [Azimuth Cometæ ab ortu verſus merid.]	9 24	— 8 7
1 57 0	Between the comet and the middle of the neck, which was almost [Inter Cometam & mediam colli, quæ fuit fere]		
	directly above and at right angles with the line [directe ſupra & ad angulos rectos cum linea]		
	of the comet's path [viæ Cometæ]	7 53	

	So my Architect observed, but narrowed the distance too much, because he sighted not through the centres but the circumference of the stars; but moderate nonetheless. [Sic obſeruauit meus Architectus, ſed nimis coarctauit diſtantiam, quia non per centra ſed circumferentiam ſtellarum vidit, ſed mediocris tamen.]	
2 7	I observed the distance between the first of the neck and [Obſeruaui diſtantiam inter primam colli &]	
	the brighter middle of the neck of Pegasus [mediam colli Pegaſi lucidiorem]	7 37
	but near the horizon. [ſed circa horizontem.]	
2 37	The eye of ♉ was on the meridian, having altit. [Fuit oculus ♉ in Meridiano,	49 43
20	habens Altitud.]	
3 20	Alhibar was on the merid.; altitude of the s. foot of Orion [Fuit in Merid.	25 23
20	Alhibar, Altitudo s. pedis Orionis]	
3 24	The star of Mars was on the meridian, having altit. [Fuit ſtella Martis in	56 57
10	Meridiano, habens Altit.]	

At the following noon the clock was going faster by almost 15 minutes, by a quarter of an hour. Hence the amounts are to be subtracted proportionally from the times written above. [In Meridie ſequente horologium 15 fere ſcrupulis primis per horæ quadrantem celerius ibat. Vnde hinc proportionaliter ſunt ſubducenda præſcriptis temporibus.]

But do not trust the clock too much, except whenever it has been properly verified by the azimuths of the stars. [Noli tamen nimis fidere horologio, niſi quoties per Azimuta ſtellarum probe fuerit verificatum.]

DIE 13. [Day 13]

At noon I corrected the clock, and took off weights in proportion to the amount by which it seemed to have been advanced faster in the preceding revolution, a quarter of one hour, and this by a probable proportion of the weights, so that it may run round more precisely. Moreover, I observed at the setting of the ☉, when the uppermost circumference of the ☉ was seen to graze the horizon with the whole body withdrawn below, that there was on the clock hour 5 M. 0 exactly; but behind the ☉ the clouds were denser above, nor was it setting at all clearly enough; the centre of the ☉, however, should have set on the true horizon on this day at hour 4 M. 50. [In Meridie rectificaui horologium, & exemi pondera pro quantitate ea, qua citius videbatur promotum præcedenti reuolutione, quarta parte vnius horæ, idque per probabilem ponderum proportionem, vt poßit exquiſitius recurrere. Obſeruaui autem in occaſu ☉, quando ſuprema circumferentia ☉ viſa eſt ſtringere horizontem toto corpore ſubducto, eße in horologio Hora 5 M. 0 exquiſite, ſed poſt ☉ denſiores ſuperius erant nubes, nec ſatis admodum clarus occidebat, debuit autem centrum ☉ in horizonte vero hoc die occidere Hora 4 M. 50.]

H. M. S.		The bright star of the Vulture was in azimuth toward the west [Fuit Vulturis lucida in Azimuto / verſus occaſum] P. M.	having altit. [habens / Altitud.] P. M.	
6 0 5		5 0	41 53½	
6 5 10		6 30	41 47	
6 31 15	The comet [Cometa]	60 12	33 30	} moderate [mediocris]
6 36 10	almost [fere]	62 20	34 0	}
7 5 40		70 13	35 30	
7 15 35		73 10	36 0	quite good [ſatis bona]

$7^{H}26^{M}$	The comet was distant from the head of Pegasus [Diſtabat Cometa a capite Pegaſi]	1 25	with the Radius [per Radium]

For it was very much nearer to this little star, but a little below the line which is drawn through it and the mouth of Pegasus, on which it was yesterday evening. For now it was a little lower, by about a space [ad ſpacium fere]; it was, however, on the line which is drawn from the head to the uppermost of the three in the right hand of ♒, as here. [Erat enim admodum propius huic ſtellulæ, ſed paulo infra lineam, quæ ducitur per eam & os Pegaſi, in qua erat heri veſperi. Nam nunc paululum inferior erat ad ſpacium fere, erat autem in linea, quæ ducitur a capite in ſupremam trium in manu dextra ♒, vt hic.]

It was also seen quite precisely on the straight line which is drawn through the first of the neck and the bright middle of the neck to the comet. [Viſus eſt etiam ſatis exquiſite in linea recta, quæ ducitur per primam colli & mediam colli lucidam in Cometam.]

Diagram. A facsimile pen sketch standing to the right of the two paragraphs above. One straight line runs from the upper left down to the right; a second, steeper line starts above it, crosses it at a star mark, and runs on down to the lower right. On the first line, near its upper-left end, stands a star mark; at the crossing stands a second star mark. Just below the crossing, on the steeper line, is a small cluster of dots and short strokes. Lower down, the steeper line passes through a drawn outline resembling a hand, inside which stand three star marks, one of them on the line. Three handwritten labels:

- Right of the upper-left star mark: "os" followed by a script word [?]
- Right of the star mark at the crossing: two script words [?] [?]
- Left of the hand-shaped outline, below and to the left: a script word [?], its first letter a capital M-form, with a long descending tail

		P. M.		
$7^{H}54^{M}$	The comet, moreover, was distant by the Radius [Diſtabat autem per Radium Cometa]			
	from the middle of the neck of Pegasus [a media colli Pegaſi]	8 52		
8 0	From the mouth of Pegasus, by the Radius [Ab ore Pegaſi per Radium]	8 32		quite precisely [ſatis exquiſite]
8 11 35^{s}	The comet was precisely on the meridian, [Fuit Cometa exquiſite in Meridiano,]			
	having altitude [habens Altitudinem]	37 7½		good [bona]
8 26	Was distant by the Sext. from the very small one in the head of Pegasus, [Diſtabat per Sext. a paruula in capite Pegaſi,]			
	which was near to it [quæ ſibi erat vicina]	1 17½		
8 45	Was distant from the middle of the neck of Pegasus by the Sext., exactly [Diſtabat a media colli Pegaſi per Sext. exacte]	9 25		
8 50	by the Radius the same distance [per Radium eadem diſtantia]	9 10		
8 55	Between the mouth of Pegasus and the comet [Inter os Pegaſi & Cometam]	8 30		
	A little later, the same by the Radius [Paulo poſt, eadem per Radium]	8 19		good [bona]
9 20	by the Sext. was distant from the middle of the neck [per Sext. diſtabat a media colli]	9 22		
	And this observation is a little more exact than the earlier ones made with the Sextant. [Atque hæc obſeruatio eſt exactior paulo prioribus per Sextantem factis.]			
9 30	The comet, being higher, was distant from the shoulder [Diſtabat Cometa ſuperior exiſtens ab humero]			
	of ♒, the right [♒ dextro]	5 39		with the Sextant. [per Sextant.]
	And this star falls almost at right angles with the line of the comet's path, near the place where the comet now is. [Atque hæc ſtella cadit ad angulos rectos fere cum linea viæ Cometæ prope locum, vbi Cometa nunc eſt.]			
9 47 5	The comet was again in azimuth [Fuit Cometa rurſus in Azimuto]	61 42	Alt. 34 0	good [bona]
	You will be able to compare this with the earlier one. [Hanc poteris conferre cum priore.]			
10 28	The comet in azimuth from the west [Cometa in Azimuto ab occaſu]	50 0	altit. [Alti-tud.] 30 50	
	You can trust this. [Huic potes fidere.]			
	At the same instant the right shoulder of ♒ has an altitude in almost the same vertical with the comet [Eodem inſtanti habet dexter humerus ♒ Altitudinem in eodem fere cum Cometa verticali]	25 10		
	so the distance will be [vnde diſtantia erit]	5 30		
10 35	A little later, I observed the same distance [Paulo poſt, obſeruaui eandem diſtantiam]	5 37½		}
10 50	The same [Eadem]	5 38		}

		P. M.		
12 0	The comet was seen precisely on the straight line which [Viſus eſt Cometa exquiſite in linea recta, quæ]			} with the [per]
	is drawn from the head of Pegasus to the right shoulder [ducitur a capite Pegaſi in dextrum humerum]			} Sextant [Sextantem]
	of ♒, distant from the right shoulder [♒, diſtans ab humero dextro]	5 42½		}
12 4 45	The comet was seen in azimuth [Viſus eſt Cometes in Azimuto]	25 0	altit. [Altitud.] 19 45	
	Quite good. [Satis bona.]			
12 18	Between the right shoulder and the comet [Inter dextrum humerum & Cometam]	5 44		with the Sextant. [per Sextant.]
12 31 10	The comet was in azimuth [Fuit Cometa in Azimuto]	19 0	altit. [Altitud.] 16 17	
	Quite good. [Satis bona.]			
12 44 40	Azimuth of the comet [Azimuth Cometæ]	16 0	— 14 34	
	Moderately and quite good. [Mediocriter & ſatis bona.]			
	These azimuths are counted from the west toward the merid. [Hæc Azimuta numerantur ab occaſu verſus merid.]			

$1^{H}20^{M}$	Was distant from the mouth of Pegasus by the Sextant [Diſtabat ab ore Pegaſi per Sextantem]		7 54	
	It was, however, near the horizon, but it was not possible to observe them, and it is fair. [Erat autem prope horizontem, ſed eas obſeruare non licuit, eſtque mediocris.]			
1 38	was between the middle and the bright of the neck of Pegasus [fuit inter mediam & lucidam colli Pegaſi]			
	and the comet [& Cometam]		10 32	
	But because of the nearness of the horizon and the intervening clouds and vapours it was less certain, as was also the observation of the stars. [Sed erat propter vicinitatem horizontis & interuenientes nubes ac vapores minus certa, vt & ſiderum obſeruatio.]			
2 43 45^{s}	The eye of Taurus was in azimuth from the merid. toward the west [Fuit Oculus Tauri in Azimuto a Merid. verſus occ.]		4 0	altit. [Altitud.] 49 43
	From this you can verify the time in these, but the altitudes are not to be taken into account so very much, because of the slack plumb-line, but moderately. [Hinc potes in his verificare tempus, ſed Altitudinum non vſque adeo habenda ratio propter perpendiculum laxum, ſed mediocriter.]			

Note. At the following noon the clock was going faster than it should by M. 21 S. 35, for which I took off 81. [Nota. Horologium in meridie ſequenti ibat celerius iuſto M. 21 S. 35, pro quibus exemi 81.]

On day 14 and 15 there was no clear weather, but the sky was entirely covered with clouds; so too on day 16 none was granted because of the clouds. [Die 14 & 15 nulla fuit ſerenitas, ſed cœlum plane totum obductum nubibus, ſic etiam die 16 nulla dabatur propter nubes.]

DIE 17. [Day 17]

$6^H17^M40^s$	by the lesser clock. The bright star of the Vulture in azimuth [per minus horologium. Vulturis lucida in Azymuth]	15 10	Alt. 41 6
6 23 20	greater clock } the same in azimuth [Horol. mai. } Eadem in Azimuth]	16 54	— 40 53½
6 22 10	lesser cl. } [min. h. }]		
6 42 20	by the greater cl. The comet was on the meridian (in breadth [Greek: ἐν πλάτει (en platei, "in breadth")], because of intervening clouds), having alt. precisely [per mai. h. Fuit Cometa in Meridiano (ἐν πλάτει propter nubes interuenientes), habens Alt. exquiſite]	43 20	
8 20 0	by the greater cl. The limb of the ☾ which inclines toward the east was on the meridian in breadth, but clouds were running across. [per mai. h. Fuit ☾ limbus, qui vergit in ortum, in Meridiano ἐν πλάτει, ſed intercurrebant nubes.]		
	But when the same part was in azimuth toward the west [Verum cum eadem pars eßet in Azimuto verſus occaſum]	0 40	{ and alt. of the centre 23 30, the greater clock was $8^H22'20''$, the lesser $8^H14'50''$. [& Alt. centri 23 30, fuit Horolog. maius $8^H22'20''$ min. $8^H14'50''$.]
9 0	The comet was distant from the mouth of Pegasus [Diſtabat Cometa ab ore Pegaſi]	11 27	
9 11	The comet was distant from the Eagle [Diſtabat Cometa ab Aquila]	16 58	
9 21	The comet was distant from the bright one in the hand of Antinous, [Diſtabat Cometa a lucida in manu Antinoi,]		
	which is in a straight line with the three in the Vulture [quæ eſt in linea recta cum tribus in Vulture]	16 56	
9 32	Was distant from the left shoulder of ≈ [Diſtabat a ſiniſtro humero ≈]	18 53	
9 47	Was distant from the uppermost brighter one of the Dolphin [Diſtabat a ſuprema lucidiore Delphini]	6 12	
9 54	Was distant precisely by as many degrees from the lowest of the Dolphin. [Diſtabat exquiſite totidem partibus ab infima Delphini.]		

All these hours and minutes are taken from the greater clock. [Hæ omnes horæ & ſcrupula ſunt ex maiori horologio deſumpta.]

Quite precisely, as far as the smallness of the stars and the light of the ☾ allowed; for these two stars, with the head of the comet, were to the sight as it were in a triangle of equal sides. Moreover, I call the uppermost the one which, in the middle of the body, is the more northern of the three, and the lowest the one which is nearest the tail. [Satis exquiſite, quantum paruitas ſtellarum & ☾ lumen ferebat; erant enim hæ duæ ſtellæ cum capite Cometæ ad viſum quaſi in triangulo æqualium laterum. Voco autem ſupremam, quæ eſt in medio corpore borealior trium, infimam vero, quæ proxima caudæ.]

10H greater cl. } The extreme star of the wing of Pegasus was on the
5M 5S meridian, altitude 47° 0'. [mai. h. } Fuit extrema alæ Pegaſi in Meridiano, Altitudo 47° 0'.]
9 54 lesser cl. } [min. h. }]
20

The tail of the comet about the 10th hour very faint and hardly visible because of the ☾; it seemed quite to point to a place above the mouth of Pegasus, as it were to the first of the wing of Pegasus. [Cauda Cometæ circa horam 10am admodum tenuis & vix apparens propter ☾; videbatur ſatis in locum ſupra os Pegaſi, quaſi in primam alæ Pegaſi indicare.]

11H 3M greater cl. } Azimuth of the comet 18° 0', altitude 23° 2'. [mai. h. } Cometæ Azimuth
0S 18° 0', Altitudo 23° 2'.]
10 50 lesser cl. } [min. h. }]
15

H. 11½ on the greater clock. The comet was seen on the straight line that is drawn through the bright star of the Vulture and the body of the comet to the middle and brighter of the neck of Pegasus, yet in such a way that this line passed beyond it in the neck, near the place of the said star, by about a diameter of the ☾ toward the north; and the tail went as it were in the same course. [H. 11½ in maiori horologio. Viſus eſt Cometes in linea recta, quæ ducitur per Vulturis lucidam & corpus Cometæ in mediam & lucidiorem colli Pegaſi, ita tamen, vt hæc linea eam in collo iuxta dictæ ſtellæ locum quaſi ad ☾ diametrum verſus boream excederet, & cauda quaſi in eundem ductum ibat.]

Diagram. A facsimile pen sketch below the paragraph above. A single straight line runs from the upper left down to the lower right. Near its upper-left end, above the line, stands a star mark with a handwritten letter above it; a little further along, on the line, stands a second star mark with a handwritten letter beside it. About two-thirds of the way along, on the line, is a larger star mark from which a bundle of short parallel strokes runs back up the line toward the upper left; a handwritten word stands above it. Near the lower-right end

of the line stands a further star mark with a handwritten word above it. To the right of the sketch stands a printed key: "A. Prima colli." / "B. Media colli" [A. The first of the neck. / B. The middle of the neck]. Labels on the sketch:

- Above the uppermost star mark: handwritten "a"
- Beside the second star mark: handwritten "b" [?]
- Above the larger star mark with the strokes: a script word [?]
- Above the lower-right star mark: a script word, apparently "Vultur" [?]

		P. M.
	Was distant, moreover, from the Vulture at hour 11¾ [Diſtabat autem a Vulture Hora 11¾]	16 42
12 28½	on the greater cl. } The comet was in the vertical circle and [in mai. h. } Fuit Cometa in circulo verticali &]	
12 13½	on the lesser cl. } with azimuth nil, having altitude [in min. h. } Azimuto nullo, habens Altitudinem]	11 41

Note. About hour 4 in the morning the pole star was seen in azimuth toward the west from the north P. 5 M. 30, whereas it ought to have been at least P. 5 M. 18. From this, verify all the preceding azimuths. [Nota. Circa horam 4 matutinam viſa eſt ſtella polaris in Azimuto verſus occaſum a ſeptentrione P. 5 M. 30, cum deberet ſaltem eße P. 5 M. 18. Hinc verifica antecedentia omnia Azimuta.]

Meridian altitudes of the comet. [Altitudines Cometæ Meridianæ.]

Day [Die]	G. M.	Difference, which is the daily change of declination [Differentia quæ eſt mutatio declinationis quotidiana] G. M.
10	31 47	
		1 47
11	33 34	
		1 46
12	35 20	
		1 47
13	37 7	
		6 13
17	43 20	

It should be noted that the times assigned in these observations are not to be trusted enough, because both clocks, on account of their newness, had not been sufficiently corrected. So too one must not hold to the azimuths too scrupulously, because of the ambiguity of the smaller quadrant. The altitudes are in quite good order, but the distances are to be limited. [Notandum, quod temporibus aßignatis in his obſeruationibus non ſit ſatis fidendum, eo quod vtrumque horologium ob nouitatem non fuerit ſufficienter correctum. Sic neque Azimuthis nimium ſcrupuloſe inhærendum ob quadrantis minoris ambiguitatem. Altitudines ſatis bene ſe habent, ſed diſtantiæ ſunt limitandæ.]

Note. In all the observations made with the Sextant the parallax has nowhere been subtracted. [Nota. In omnibus obſeruationibus per Sextantem factis nusquam ſubducta eſt parallaxis.]

OCTOBRIS DIE 20, HELSINGBURGI. [20 October, at Helsingborg]

$7^{H}45^{M}$	by the town clock, the comet was distant [iuxta horologium vrbis, diſtabat Cometa] from the bright star of the Vulture with the Radius [a Vulturis lucida per Radium]	7 35
	But the time of this observation, because it was taken from a clock, not so very certain, could at most be about the eighth hour; nor was it possible to take more observations that evening because of the intervening clouds. [Sed tempus huius obſeruationis, quia erat ſumtum ex horologio, non vsque adeo certum, poterat ad ſummum eße hora circiter octaua; nec plures obſeruationes eo veſperi capere licuit propter interuenientes nubes.]	

DIE 21 OCTOBRIS, HELSINGBURGI. [21 October, at Helsingborg]

I set my lesser portable clock to the town clock. Then I observed the following. [Horologium meum minus portatile aptaui ad horologium vrbis. Deinde ſequentia obſeruaui.]

		P. M.	
$7^{H}50^{M}$	Between the bright star of the Vulture and the comet [Inter Vulturis lucidam & Cometam]		
	with the Radius [per Radium]	6 20	
8 15	The comet was distant from a certain little star which is on the straight line drawn from the right[1] foot of Cygnus through the head of the same Cygnus, making with the comet and the Vulture, at the very star of the Vulture, a right angle, to the sight [Diſtabat Cometa a ſtellula quadam, quæ eſt in linea recta, ducta a dextro[1] pede Cygni per caput eiusdem Cygni, faciente cum Cometa & Vulture in ipſa Vulturis ſtella angulum rectum, ad viſum]	13 30	{ (This star is the tail of the Eagle, but Mercator places it at the end of the right wing). [(Hæc ſtella eſt cauda Aquilæ, ſed Mercator ponit eam in alæ dextræ extremitate).]
8 25	The comet was distant from the head or beak of Cygnus [Diſtabat Cometa a capite ſiue roſtro Cygni]	15 5	{ (At hour 8 should be distant from the mouth of Pegasus, account being taken of the other distance, P. 26 0). [(Debet hora 8 diſtare a Pegaſi ore habita ratione alterius diſtantiæ P. 26 0).]

The tail of the comet, being quite rarefied, so that it hardly appeared — far less than before, and that chiefly because of the ☾ being above the horizon — was on the straight line that is drawn through that unknown one mentioned before and the head of the comet as far as the rhombus of the Dolphin, or perhaps the two upper ones of the rhombus; its end could not be made out because of the excessive rarity and thinness of the whole tail. [Cauda Cometæ admodum rariuſcula exiſtens, adeo vt vix appareret, longe minus quam prius, idque præſertim ob ☾ ſupra horizontem exiſtentem, fuit in linea recta, quæ

ducitur per illam prius memoratam incognitam ac caput Cometæ vsque in Rhombum Delphini vel forte duas ſuperiores Rhombi; extremitas eius propter nimiam totius caudæ raritatem & tenuitatem diſcerni non potuit.]

H. 8 M. 45. I saw that the straight line drawn through the bright star of the Vulture and the comet toward the zenith left the middle and brighter one in the left[2] wing of Cygnus toward the east by more than a lunar diameter, ¾ of one degree; and it is in the wing which, relative to the other wing, was the more eastern. [H. 8 M. 45 Vidi, quod linea recta, ducta per Vulturis lucidam & Cometam verſus Zenith, relinquebat mediam & lucidiorem in ſiniſtra[2] ala Cygni verſus ortum plus diametro Lunari ¾ vnius gradus, eſtque ea in ala, quæ reſpectu alterius alæ fuit orientalior.]

9^{H} 0^{M}	The comet was distant from the bright star of the Vulture [Diſtabat Cometa a lucida Vulturis] or at most 22, which you can trust. [vel ad ſummum 22, cui potes fidere.]	6 21	
9 10	The comet was distant from the mouth of Pegasus with the Radius [Diſtabat Cometa ab ore Pegaſi per Radium]	26 7	at most [ad ſum-mum]
9 20	The same with the Radius [Eadem per Radium]	26 10	
9½	about, there were on the meridian the two hinder [circiter, fuerunt in meridiano duæ poſteriores] of the □ of Pegasus, and from this you can verify the clock. [de □ Pegaſi, atque hinc potes verificare horol.]		
9 45	The comet was distant from the bright star of the Vulture [Diſtabat Cometa a lucida Vulturis] or 22 at most, as above. And from this you can be more certain about the parallax, by comparing with the observation made from the same star at H. 7 M. 50, almost two hours having elapsed; for the comet in its path runs this evening at right angles with the Vulture, so that the proper motion varies the distance imperceptibly, but the difference alone falls into the parallax. [vel 22 ad ſummum vt ſupra. Atque hinc potes eße certior de parallaxi, conferendo cum obſeruatione ab eadem ſtella facta H. 7 M. 50, interlapſis pene duabus horis, nam Cometa in ſua via currit hoc veſperi ad angulos rectos cum Vulture, vnde motus proprius inſenſibiliter variat diſtantiam, ſed ſola differentia cadit in parallaxin.]	6 21	

At hour 11, when I saw by eye that the bright star of the Vulture was raised above the horizon by about 5° (from which you can verify the preceding times) and that the comet, a little above, was already approaching its setting, I could not detect any other distance of the comet from the bright star of the Vulture than the one I assigned above, namely P. 6 M. 22; for with the pinnules remaining unmoved, as they had been set before, I saw the comet and the said star at the same distance, as far as it was possible to discern for the smallness of both because of the vapours around the horizon. [Hora 11^{a} quando vidi ad oculum, quod Vulturis lucida eleuaretur ſupra horizontem partibus circiter 5 (vnde potes verificare antecedentia tempora) & Cometa paulo ſupra occaſui iam appropinquaret, non potui aliam diſtantiam Cometæ a lucida Vulturis

deprehendere, quam ea erat, quam ſupra aßignaui, videlicet P. 6 M. 22; nam manentibus pinnacidijs, vt prius erant poſita, immotis, videbam Cometam & dictam ſtellam in eadem diſtantia, quantum præ paruitate vtriusque propter vapores circa horizontem diſcernere licuit.]

[1] He had first written »ſiniſtro« (left). [Primitus »ſiniſtro« ſcripſerat.]

[2] He first wrote »Dextra vt puto« (right, as I think). [Primitus ſcripſit »Dextra vt puto«.]

DIE 26. [Day 26]

On the following day of ☿, at H. 5 M. 15 by the clock, the comet, standing higher toward the zenith, was distant from that star which is on the above-mentioned straight line through the more western foot of Cygnus and the head, in line with the Vulture, and is in the tail of Cygnus, of magnitude 3, to the sight P. 3 M. 30; and this almost on the straight line that is drawn through the same fixed star and the comet into the head of Cygnus. This line, however, left the head of Cygnus toward the north and west by about the semidiameter of the Moon. The head of Cygnus and the said star with the comet were in the same place, as far as sight goes, almost in the same vertical circle; the tail of the comet, on the other hand, was seen to be directed toward the stars of the Arrow, especially into the middle star situated in the Arrow. [Die ☿ ſequente H. 5 M. 15 iuxta horologium diſtabat Cometa ſuperior exiſtens verſus Zenith, ab illa ſtella, quæ eſt in ſupradicta linea recta per pedem occidentaliorem Cygni & caput in directum Vulturis eſtque in Cauda Cygni 3 magnitudinis, ad viſum P. 3 M. 30, idque fere in linea recta, quæ ducitur per eandem fixam & Cometam in caput Cygni; relinquebat tamen hæc linea caput Cygni verſus ſeptentrionem & occaſum circiter ad ſemidiametrum Lunæ; in eodem loco fuerunt caput Cygni & prædicta ſtella cum Cometa, quoad viſum in eodem fere circulo verticali; cauda vero Cometæ viſa eſt dirigi verſus ſtellas Teli, præſertim in mediam ſtellam in Telo ſitam.]

		P. M.
$5^H 25^M$	The same comet was distant from the head of Cygnus, being lower, [Diſtabat idem Cometa a capite Cygni, inferior]	
	being almost in the same vertical circle [exiſtens in eodem pene circulo verticali]	10 38[1]
5 35	The comet was distant from the said unknown fixed star [Diſtabat Cometa a prædicta incognita fixa]	3 31
	as before, at most 32. [vt prius ad ſummum 32.]	
5 40	Was distant from the head of Cygnus [Diſtabat a capite Cygni]	11 28
	or rather at most [vel potius ad ſummum]	11 30
A little after 5 50 [Paulo poſt 5 50]	I found the same distance [Deprehendi eandem diſtantiam]	11 32
Hour 6 [Hora 6]	The comet was distant from the bright star of the Vulture [Diſtabat Cometa a lucida Vulturis]	12 32

		P. M.
	Was then on the meridian, opposite the pole star, about the head of Pegasus. [Fuit tunc in Meridiano aduerſus ſtellam polarem circiter caput Pegaſi.]	
6 15	Again I observed the distance of the comet from the above-mentioned one of magnitude 3, namely the tail of the Vulture, being brighter [Rurſus obſeruaui diſtantiam Cometæ a ſupradicta 3 magnitudinis, cauda videlicet Vulturis lucidior exiſtens]	3 30
6 20	From the head of Cygnus [A capite Cygni]	11 36
	And this observation was better than the earlier one. [Atque hæc obſeruatio melior fuit priori.]	
6 30	Was distant from the first, brighter and more northern, of the Arrow, toward which the tail too, precisely as far as sight goes, seemed to stretch. [Diſtabat a prima lucidiore & borealiore Teli in quam etiam cauda præciſe quoad viſum verſus porrigi videbatur.]	11 28
	The same fixed star, moreover, was distant from the bright star of the Vulture [Diſtabat autem eadem fixa a Vulturis lucida]	10 52

For this star in the Arrow formed, with the bright star of the Vulture and the comet, as it were a triangle of equal sides; that unknown little star in the Vulture formed at its place a right angle with the bright star of the Vulture and the head of Cygnus, and was, at 45 M. after the sixth, as far as sight goes, at an equal altitude from the horizon with the bright star of Cygnus. [Conſtituebat enim hæc ſtella in Telo cum Vulturis lucida & Cometa quaſi triangulum æqualium laterum; iſta ſtellula ignota in Vulture conſtituebat in ſuo loco angulum rectum cum lucida Vulturis & capite Cygni, eratque 45 M. poſt ſextam, quoad viſum in æquali altitudine ab horizonte cum lucida Cygni.]

6 55	The comet was distant from the same fixed star in the tail of the Eagle [Diſtabat Cometa ab eadem fixa in cauda Aquilæ]	3 32	at most [ad ſummum]
7 5	From the head of Cygnus [A capite Cygni]	11 38	
	And this observation will be able to compete with the earlier ones. [Atque hæc obſeruatio poterit certare cum prioribus.]		
7 10	Between the bright star of the Vulture and the comet [Inter Vulturis lucidam & Cometam]	[12 48][1]	
7¼	I found the same [Eandem inueni]	12 42	
7 30	I observed the same distance [Obſeruaui eandem diſtantiam]	12 40	
	And you can trust this one rather. [Atque huic potes fidere potius.]		
7 45	The head of Cygnus and the above-mentioned star in the tail of the Vulture were in a straight line, which by the ruler was seen exactly to intercept the body of the comet; was distant, moreover, from the head of Cygnus [Fuit caput Cygni & ſtella ſupradicta in cauda Vulturis in linea recta, quæ exquiſite per regulam viſa eſt intercipere corpus Cometæ; diſtabat autem a capite Cygni]	11 40	about [circiter]

Hour 8 [Hora 8]	The comet, however, seemed to be distant from the said star in the tail [Cometa vero viſus diſtare a prædicta ſtella in cauda]	3 32	as above [vt ſupra]

[1] These are struck through with a line in the codex. [Hæc in codice linea inducta ſunt.]

After hour 7 there were recurring clouds, so that it was not always possible to see with certainty. Immediately after hour 8 a dense darkness set in, and a wet state of the sky. [Fuerunt poſt horam 7 recurrentes nubes, vnde non ſemper certo videre licuit. Poſt horam 8 ſtatim facta eſt denſa obſcuritas & vdus cœli ſtatus.]

By the star in the tail of the Vulture, from which the comet was always equally distant, you can verify, and be more certain about the parallax; for the proper motion there is imperceptible. [Per ſtellam in cauda Vulturis, a qua Cometa ſemper æqualiter diſtabat, potes verificare & certior eße de parallaxi; nam motus proprius ibi eſt inſenſibilis.]

DIE 27. [Day 27]

Between 9 and 10 in the evening, the clouds having partly dispersed, I saw that the comet had perceptibly and very far passed beyond that line which is drawn from the former one, which is in the tail of the Eagle[1], into the head of Cygnus, on which line it was seen yesterday evening; so much so that at that time, on considering twice with fair care, it was seen to be on the straight line which is drawn from the tail of Cygnus through its head into the comet. But it was not possible to take the distance from any fixed stars because of the intervening clouds. [Inter 9 & 10 veſpertinam, dißipatis aliqua ex parte nubibus, vidi, quod Cometa ſenſibiliter & plurimum erat prætergreßus lineam illam, quæ ducitur a priore, quæ eſt in cauda Aquilæ[1], in caput Cygni, in qua linea heri veſperi conſpiciebatur, adeo vt eo tempore viſus ſit bis ſatis diligenter conſiderando in linea recta, quæ ducitur a cauda Cygni per ipſius caput in Cometam; ſed diſtantiam ab vllis fixis capere non licuit propter interuenientes nubes.]

All the preceding observations I made myself, from the 20th up to the 27th, at Helsingborg with the Radius; but the following ones Paulus and Petrus[2] observed on Hven on the same days, up to the 28th, on which day I myself returned home. [Præcedentes obſeruationes omnes feci ipſemet a die 20 vsque in 27 Helſingburgi per Radium, ſed ſequentes Paulus & Petrus[2] obſeruarunt Huenæ ijsdem diebus vsque in diem 28, quo die ipſemet domum redij.]

DIE 21 OCTOBRIS. [21 October]

$8^{H}31^{M}$ ☉ in the greater clock: the meridian altitude of the first in the wing of Pegasus was observed [in maiori horol. Obſeruata eſt Altitudo Meridiana primæ in ala Pegaſi] [Margin: A] 47° 8′ about [fere]

6 2 55	on the greater cl. } The comet was in azimuth from the west [in mai. h. } Fuit Cometa in Azimuth ab occaſu]	24 0	Alti-tude [Alti-tudo]	31 20
5 43	on the lesser cl. } [in min. h. }]			
6 17 15	on the greater cl. } The Eagle was in azimuth [in mai. h. } Fuit Aquila in Azimuth]	21 20	—	23 9
6 1 15	on the lesser cl. } [in min. h. }]			
6 27 30	on the greater cl. } Dist. of the comet from the bright star in the Dolphin [in mai. h. } Diſt. Cometa a lucida in Delphine]	8 53		
6 11 30	on the lesser cl. } [in min. h. }]			
6 34 0	on the greater cl. } The comet was distant from the Eagle [in mai. h. } Diſtabat Cometa ab Aquila]	6 22		
6 18 10	on the lesser cl. } [in min. h. }]			
6 42½	on the greater cl. } The comet was distant from the mouth of Pegasus [in mai. h. } Diſtabat Cometa ab ore Pegaſi]	26 16		
6 26 40	on the lesser cl. } [in min. h. }]			
6 57 20	on the greater cl. } The comet was in azimuth [in mai. h. } Fuit Cometa in Azimuth]	11 0	—	23 48
6 41 20	on the lesser cl. } [in min. h. }]			
	At almost the same moment the Eagle was under the same azimuth. [Eodem fere momento fuit ſub eodem Azimutho Aquila.]			
7 7 0	on the greater cl. } The Eagle was in azimuth [in mai. h. } Fuit Aquila in Azimuth]	10 0	—	16 38
6 52 10	on the lesser cl. } [in min. h. }]			
7 13 30	on the greater cl. } The distance between the comet and [in mai. h. } Diſtantia inter Cometam &]			
6 57 45	on the lesser cl. } the outermost in the mouth of Pegasus [in min. h. } extremam in ore Pegaſi]	26 21		
7 19 30	on the greater cl. } The comet was distant from the Eagle [in mai. h. } Diſtabat Cometa ab Aquila] [Margin: B]	6 25		
7 4 50	on the lesser cl. } [in min. h. }]			

At the same time the comet was as it were on the straight line drawn through the Eagle and the first in the left wing of Cygnus, the comet standing a little farther from the line toward the north, by about a third of a lunar diameter. [Eodem tempore fuit Cometa quaſi in linea recta, ducta per Aquilam & primam in ſiniſtra ala Cygni, remotiore paulo exiſtente Cometa quaſi triente diametri Lunaris a recta verſus boream.]

8 46½ The comet was in azimuth 90° 0′, [Fuit Cometa in Azymutho 90° 0′,]

	having altitude [habens Altitudinem]	16 34	about [quaſi]
	Not certain enough, however, because of the clouds. [Non ſatis tamen certa propter nebulas.]		

[1] He had first written *Cygni* (of Cygnus). [Primitus *Cygni* ſcripſerat.]
[2] Paul Wittich of Wrocław and Peder Jacobsen Flemløse. [Paulus Wittichius Vratiſlauienſis & Petrus Jacobi Flemløse.]

	16° 34′ Alt. of the com. [Alt. Com.]		
	34 8		
	50 42	77384	
	17 34	30182	
		47202	
	Sine of the declination sought [Sinus Declinationis quæſitæ]	23601	13° 39′ apparent declination of the comet [Declinatio Cometæ apparens]
$9^H 22^M 33^s$	The Moon was in the M. C.[1] [} Fuit Luna in M. C.[1]]		
9 11	}		
15			

DIE 22 OCTOBRIS. [22 October] [Margin: C]
The greater clock fell short of noon by 3 hours and 17½ minutes, for it had not been corrected during the four preceding days. The lesser clock, however, exceeded the same noon by seven minutes. [Maius horologium defecit a meridie 3 horis & 17½ minutis, per quatuor enim dies præcedentes non correctum erat. Minus vero horologium ſeptem minutis eundem meridiem ſuperauit.]
DIE 26 OCTOBRIS. [26 October]
At noon the greater clock showed the ninth hour 18′ 50″; therefore it was running slow by $2^h\ 41^m\ 10''$. The lesser clock was running slow by one minute. [Indicabat in meridie maius horologium Horam nonam 18′ 50″, ideo tardius ibat 2 horis 41 minutis 10″. Minus horologium tardius ibat vno minuto.]

5 39 25	on the greater cl. } The Eagle was in azimuth in the west [in mai. h. } fuit Aquila in Azymutho in occaſu]	19° 20′	Altitude [Altitudo]	40° 37′
5 48 0	on the lesser } [in minori }]			
6 3 50	on the greater cl. } The comet was in azim. in the west [in mai. h. } fuit Cometa in Azym. in occaſu]	42 30	—	44 26½
6 14 30	on the lesser cl. } [in min. h. }]			
6 14 50	on the greater cl. } The comet was in azim. from the west [in mai. h. } fuit Cometa in Azym. ab occaſu]	44 0	—	43 20⅓

6 26 o	on the lesser cl. } [in min. h. }]		
6 27 30	on the greater cl. } Dist. between the comet and the Eagle [in mai. h. } Diſt. inter Cometam & Aquilam] [Margin: D]	12 36	
6 39 o	the lesser cl. } [minus h. }]		
6 33 o	on the greater cl. } The comet was distant from the star [in mai. h. } Diſtabat Cometa a ſtella]		
6 45 o	the lesser cl. } at the end of the tail of the Eagle [minus h. } in extrema cauda Aquilæ]	3 35	
	This star was distant from the Eagle [Diſtabat hæc ſtella ab Aquila]	12 15	
6 44 o	} The distance of the comet from the outermost [} Diſtantia Cometæ ab extrema]		
6 57 o	lesser cl. } in the beak of Cygnus [min. h. } in roſtro Cygni]	11 50	
6 51¼	on the greater cl. } The comet was distant from the brighter [in mai. h. } Diſtabat Cometa a lucidiore]		
7 4	on the lesser cl. } in the tail of the Dolphin [in min. h. } in cauda Delphini]	21 2	

At hour 7¼ the comet fell on the straight line of two stars, of which one is in the beak of Cygnus, the other outside the figure in the tail of the Eagle, and was used just before. [H. 7¼ incidebat Cometa in lineam rectam duarum ſtellarum, quarum vna eſt in roſtro Cygni, altera extra formam in cauda Aquilæ & proxime aßumta fuit.]

$7^{H}14^{M}$ 40″	The comet was in azimuth from the west [Fuit Cometa in Azymuto ab occaſu]	27 0	Altitude [Altitudo]	36 14⅓
7 30	The comet was distant from the tail of the Dolphin [Diſtabat Cometa a cauda Delphini] [Margin: E]	21 5		
7 35	The comet was distant from the Eagle [Diſtabat Cometa ab Aquila]	12 50		
7 45	The comet was distant from the unformed star [Diſtabat Cometa a ſtella informi]		} not precise enough [} non ſatis præciſe]	
	outside the Eagle [extra Aquilam]	3 38	}	

At this said unformed star two nearly equal lines meet at right angles, of which one is drawn from the Eagle, the other from the head or beak of Cygnus, through the comet. [In dictam hanc ſtellam informem concurrunt æquales fere duæ lineæ ad angulos rectos, quarum vna ab Aquila, altera a capite ſeu roſtro Cygni per Cometam deducitur.]

[1] After this, at the foot of the page, is written: »These pages, marked with the sign of the letters A B C D E, I acknowledge to be written in the hand of Paul Wittich of pious memory, which is very well known to me; and I attest this by this autograph of mine, which I left at Prague with the Magnificent and Most Noble Lord Tycho Brahe etc. In the year 1600, 23 October. Jacob Monaw,

in his own hand.« [Poſt hæc in ima pagina adſcriptum eſt: »Has paginas ſigno literarum A B C D E notatas agnoſco ſcriptas eße manu Pauli Wittichij p. m. quæ mihi optime nota eſt; idque teſtor hoc meo chirographo, quod reliqui Pragæ apud Mag^{cum} & Nobilißimum Dom. Tychonem Brahe etc. Ao 1600. XXIII Octobris. Jacob Monaw manu propria.«]

Diagram. A drawing in a reproduced hand, set in the left part of the text block beside the first two paragraphs. A star mark (asterisk) at the top, with a vertical line running down from it to a second star mark at the lower right; from that second star a horizontal line runs left to a third star mark at the lower left. On the vertical line, above its lower end, stands a small circle ringed by dots, with several curved strokes running from it to the left. Above the horizontal line are two numbers, and a single dot stands to the left of the vertical line between the circle and the horizontal line.

- Top star (either side of it): "Roſtrū Cygni" [?] — beak of Cygnus; the final letters of both words are uncertain in the hand
- Right of the small circle: "Occaſu…" [?] — west; the ending is a flourish not resolved
- Right of the lower-right star: "Informis" [?] — unformed; the letters after "Inform" are uncertain
- Below the lower-left star, on two lines: "aqui-" / "la" — Aquila, the Eagle
- Above the horizontal line, left: "12" with a small circle above it
- Above the horizontal line, right: "15" with a short stroke above it

In the following time the whole sky was suddenly overcast with clouds, which hindered us in the remaining observations. [Sequenti tempore totum cœlum ſubito obductum fuit nubibus, quæ reliquas obſeruationes nobis impediuerunt.]

Hour 8 52½. From a momentary observation (because of the clouds coming between) the distance of the comet from the above-mentioned unformed star outside the Eagle was noted as 3° 37′. [H. 8 52½. Ex momentanea obſeruatione (propter nubes intercidentes) notata eſt diſtantia Cometæ a prædicta ſtella informi extra Aquilam 3° 37′.]

We later learned that this star was the last or outermost in the tail of the Eagle. [Hanc ſtellam poſtea cognouimus fuiße vltimam ſeu extremam in cauda Aquilæ.]

DIE 28. [Day 28]

$5^{H}54^{M}$ 5^{s}	by the greater clock the Eagle [ſecundum maius horol. Aquila]			
	was in azimuth [fuit in Azimuto]	40° 0′	having altitude [habens Altitud.]	32 25

But you must not trust the hours, because it was running too slow; the lesser clock showed 2′ 0″; the hour is not certain, but at least for the sake of the interval

of time. [Sed in horis non debes fidere, quia nimis tarde ibat; minus horologium monſtrabat 2′ 0″; de hora non conſtat, ſed ſaltem propter interuallum temporis.]

5H 3M	by the greater clock there were between the tail of the Vulture [ſecundum maius horologium fuerunt inter caudam Vulturis] and the comet [& Cometam]			with the Radius [per Radium]	4 25

But the hour and the time must everywhere be restored, for it is off by several hours; and that by the azimuth of the Vulture. [Sed hora & tempus vbique reſtituendum eſt, nam in aliquot horis aberrat, idque per Azimuth Vulturis.]

Minute [Min-uto] 10′ 50″	by the greater cl. } the azimuth of the comet was [per mai. h. } fuit Cometæ Azimuth]					
19 30	by the lesser cl. } from the west [per min. h. } ab occaſu]		17° 0′	Alt.	31° 47′	good [bona]
20	by the greater cl. } There was between the mouth of Cygnus and [per mai. h. } Fuit inter os Cygni &]					
29	by the lesser cl. } the comet [per min. h. } Cometam]	with the Radius [per Radium]	12 46			
	About the same time the comet was distant [Circa idem tempus diſtabat Cometa]					
A little [Paulo]	from the tail of the Vulture [a cauda Vulturis]	with the Sextant [per Sextantem]	4 30			
after [poſt] 27 0	by the greater cl. } I found [per mai. h. } inueni]	with the Radius [per Radium]	12 48			
37 0	by the lesser cl. } [per min. h. }]					
		with the Sextant [per Sextantem]	12 58			
Hour [Hora] — 35	greater } Was distant from the bright star of Lyra [mai. } Diſtabat a lucida Lyræ]		21 35	with the Sextant [per Sextantem]		
45½	lesser } [min. }]					
Minute [Min-uto] 38	by the greater cl. Was distant from the one which is the bright star [per mai. h. Diſtabat ab ea, quæ lucida eſt]					
	of the Vulture, [Vulturis,]	with the Radius [per Radium]	15 55			
		with the Sextant [per Sextantem]	16 11			

Hour [Hora] — 1 5	by the greater cl. } the Eagle was [per mai. h. } fuit Aquila]				
12 35	by the lesser cl. } in azimuth [per min. h. } in Azimuto]	23 0	Altitude [Altitudo]	24 1⅓	
18 17	by the greater cl. } the Vulture [per mai. h. } Vultur]	19 0		21 45	
30 40	by the lesser cl. } [per min. h. }]				
26 40	by the greater cl. } the Vulture was [per mai. h. } fuit Vultur]	17 0		20 34	good [bona]
39 40	by the lesser cl. } [per min. h. }]				
37 20	by the greater cl. } was [per mai. h. } fuit]		from the west [ab occaſu]		
51 10	by the lesser cl. } the comet in [per min. h. } Cometa in]	2 30	toward the north [verſ. ſept.]	19 23	good [bona]
44 40	by the greater cl. } the comet [per mai. h. } Cometa]	4 0	toward the north [verſ. ſept.]	18 22	good [bona]
58 50	by the lesser cl. } [per min. h. }]				
2 30	by the greater cl. } the Vulture [per mai. h. } Vultur]	9 0	from the west [ab occ.]	15 33 or [vel] 33½	
17 10	by the lesser cl. } [per min. h. }]		toward the south [verſ. mer.]		

Hour [Hora] — 14^{M} 0	by the greater cl. the comet [per mai. h. Cometa]	10 0	14 14	
20 55	by the greater cl. } the comet [per mai. h. } Cometa]	11 32	13 14	
36 40	by the lesser cl. } [per min. h. }]			
30	by the greater cl. } with the Sext. the dist. was [per mai. h. } fuit per Sext. diſt.]			
47	by the lesser cl. } between the mouth of Cygnus and the comet [per min. h. } inter os Cygni & Cometam]		13 10	
	with the Radius I took the same [per Radium accepi eandem]		13 4	in breadth [Greek: ἐν πλάτει (en platei)]
36	by the greater cl. } Between the bright star of the Vulture [per mai. h. } Inter lucidam Vulturis]			
53	by the lesser cl. } and the comet [per min. h. } & Cometam]		16 30	with the Sextant [per Sextantem]

The hours and minutes in the preceding observations you can look up from the observations of the Vulture, for the clocks had not been verified, just as on the preceding days they had not been either. [Horas & minuta in antecedentibus obſeruationibus potes inquirere ex obſeruationibus Vulturis, nam horologia non erant verificata vt neque antecedentibus diebus.]

This evening the tail stretched above the Dart toward the outermost in the left wing of Cygnus. [Cauda hoc veſperi tendebat ſupra Telum verſus extremam in ſiniſtra ala Cygni.]

DIE 29. [Day 29]
I adjusted the clocks better. [Rectificaui melius horologia.]
Azimuths from the south. [Azimuta a meridie.]

			Az-imuth	Altitude [Alti-tudo]
$5^{H}32^{M}$ 0^{s}	by the greater } [per mai. }]	the Flying Vulture [Vultur Volans]	15° 0′	41° 10′
5 32 0	by the lesser } [per min. }]			
	But I think that azimuth was passed a little, yet barely perceptibly. [Sed puto paululum præterijße illud Azimuth, vix ſenſibiliter tamen.]			
5 43 25	by the greater cl. } [per mai. h. }]	of the same Vulture [Eiusdem Vulturis]	18 30	40 43
5 43 21	by the lesser cl. } [per min. h. }]			
	This observation was quite certain; you can trust it. [Hæc obſeruatio fuit ſatis certa, cui potes fidere.]			
5 51 56	by the greater cl. } [per mai. h. }]	of the same Vulture [Eiusdem Vulturis]	21 0	40 21
5 52 5	by the lesser cl. } [per min. h. }]			

From these three observations you can verify the time and correct the clock. [Ex his tribus obſeruationibus potes verificare tempus & horologium corrigere.]

		Azimuth of the comet [Azimuth Cometæ]	Altitude of the comet [Altitudo Cometæ]			Azimuth of the comet [Azimuth Cometæ]	Altitude of the comet [Altitudo Cometæ]
6^{H} $3^{M}35^{s}$	by the greater cl. } [per mai. h. }]	43° 0	44° 3′	6 18 15	by the greater cl. } [per mai. h. }]	39 0	42 39
6 4 5	by the lesser cl. } [per min. h. }]		good enough [bonæ ſatis]	6 18 30	by the lesser cl. } [per min. h. }]		
6 10 40	by the greater cl. } [per mai. h. }]	41 0	43 26½	6 25 45	by the greater cl. } [per mai. h. }]	37 0	41 53
6 11 15	by the lesser cl. } [per min. h. }]			6 26 25	by the lesser cl. } [per min. h. }]		

		P. M.	
$6^{H}38^{M}$	by the greater cl. The comet was distant from the tail of the Vulture [per mai. h. Diſtabat Cometa a cauda Vulturis]		
	with the Radius [per Radium]	5 35 or [vel] 36	
	with the Sextant [per Sextantem]	5 40	
6 47	Was distant from the head of Cygnus with the Radius [Diſtabat a capite Cygni per Radium]	13 24	
	with the Sextant [per Sextantem]	13 45	
6 56	Between the head of Ophiuchus and the comet [Inter caput Ophiuchi & Cometam]		
	with the Radius [per Radium]	18 30	
	with the Sextant [per Sextantem]	19 0	
7 7	We repeated the same with the Radius [Eandem repetiuimus per Radium]	18 32	good [bona]
	with the Sextant [per Sextantem]	18 58	twice [bis]
7 19	from the bright star of the Vulture the comet with the Radius [a lucida Vulturis Cometa per Radium]	17 18	
	with the Sextant [per Sextantem]	17 35	
7 38	From the bright star of Lyra with the Radius [A lucida Lyræ per Radium]	20 55	
	with the Sextant [per Sextantem]	21 19	good, twice [bona, bis]

The tail was on the straight line that is drawn from the head of Ophiuchus through the head of the comet to the two outermost of the right wing of Cygnus. [Cauda fuit in linea recta, quæ ducitur a capite Ophiuchi per caput Cometæ in duas extremas dextræ alæ Cygni.]

Hour 7 M. 40. We saw accurately that the comet was very near a certain small little star, which is on a straight line drawn as below. Was distant, moreover, from this star toward the east by about ⅔ of the Moon's diameter, and was at the same altitude from the horizon, as it were in equidistance from the horizon itself; at most the distance could be of 20′. That star, moreover, is unformed; and if a line were drawn from the tail of the Vulture to the one that follows next, toward the stars in the spoils of ♌, in the left arm of Hercules, that star which was near the comet was met first; yet it was a little above the said line, toward the zenith. This star, moreover, makes a right angle with the beak of Cygnus and the tail of the Vulture, the angle standing at the unknown star; it also makes a right angle with the beak of Cygnus and the bright star of Lyra, the angle itself being contained at the beak of Cygnus. This star, moreover, is unformed and is not placed on the globe. But a little later I observed more accurately the distance of the comet from the said little star, and saw that it nearly equalled the diameter of the Sun, but a little less, as if it were of 25′. It seemed, moreover, as if the size of the comet's head could lie between the comet itself and the said star four times to the sight, or at most five times, if you look at the centres of each. [H. 7 M. 40 Vidimus accurate, quod Cometa fuit admodum prope ſtellulæ cuidam paruæ, quæ eſt in linea recta ducta vt infra. Diſtabat

autem ab hac ſtella verſus ortum quaſi ad ⅔ diametri Lunaris eratque in eadem altitudine ab horizonte quaſi in æquidiſtantia ipſius horizontis; ad ſummum poterat eße diſtantia 20 minutorum. Eſt autem ea ſtella informis, ac ſi duceretur linea a cauda Vulturis in eam, quæ proxime ſequitur, verſus ſtellas in ſpolijs ♌, in ſiniſtro brachio Herculis, ea ſtella, quæ prope Cometam erat, primum occurrebat; erat tamen paulo ſupra dictam lineam verſus Zenith. Facit autem hæc ſtella angulum rectum cum roſtro Cygni & cauda Vulturis, angulo exiſtente in ſtella ignota; facit etiam angulum rectum cum roſtro Cygni & lucida Lyræ, ipſo angulo in roſtro Cygni comprehenſo. Eſt autem hæc ſtella informis nec in globo conſtituitur. Sed paulo poſt accuratius obſeruaui diſtantiam Cometæ a dicta ſtellula, vidique eam fere æquare diametrum Solis, ſed paulo minorem ac ſi eßet minutorum 25. Videbatur autem, quaſi magnitudo capitis Cometæ poßet interiacere ipſi Cometæ & dictæ ſtellæ quater ad viſum vel ad ſummum quinquies, ſi centra vtriusque reſpicias.]

Hour 8 M. 25. I saw that the upper and more northern of the three in the body of the Eagle, and the comet, and the said little star nearest the comet were on one straight line and in equidistance from the horizon. [H. 8 M. 25 Vidi quod ſuperior & borealior trium in corpore Aquilæ & Cometa & dicta ſtellula proxima Cometæ fuere in vna linea recta & æquidiſtantia horizontis.]

Hour 10 M. 40 by the greater clock. These three stars still seemed equidistant from the horizon on a straight line, but the comet was nearer to that star by the diameter of its own body; and by this too you can be made more certain that the comet has no sensible parallax. For from Hour 7 M. 40 to H. 10 M. 40, for 3 hours, remained in the same equidistance from the horizon and straight line. [Hora 10 M. 40 per maius horol. Adhuc videbatur hæ tres ſtellæ æquidiſtantes horizonti in linea recta, ſed propior erat Cometa iſti ſtellæ ad diametrum ſui corporis, atque per hoc etiam potes certior fieri, quod Cometa nullam habeat ſenſibilem parallaxin. Nam ab Hora 7 M. 40 in H. 10 M. 40, per 3 horas, manſit in eadem æquidiſtantia horizontis & linea recta.]

Diagram. A drawing in a reproduced hand, set in the left part of the text block beside the narrowed lines of the preceding paragraph. A single line runs from the left, rising slightly, to a cluster of star marks (asterisks) at its right end; a small star mark stands on the line in its left part. Several parallel strokes slant down from the upper left toward the cluster. Below the line stand three further star marks: one at the left, with the left end of the line just above it; one below and to the right of that; and one in the middle below the line. Three written labels.

- Right of the cluster, above the line: ”informis” [?] — unformed; the letters after ”info” run together in the hand
- Left of the left-hand lower star: ”Aq…” [?] — the ending is a flourish not resolved
- Right of the middle lower star: ”cauda Aq…” [?] — ”cauda” (tail), the second word's ending not resolved

The following azimuths of the comet are toward the north. [Azimuta ſequentia Cometæ ſunt verſus ſeptentrionem.]

		Az-imuth	Altitude [Altitudo]			Az-imuth	Altitude [Altitudo]
$9^{H}19^{M}$ 0^{s}	by the greater cl. } [per mai. h. }]	2 0	20 4	$9^{H}39^{M}$ 35^{s}	by the greater cl. } [per mai. h. }]	6 0	17 19
9 30 20	by the lesser cl. } [per min. h. }]			9 52 0	by the lesser cl. } [per min. h. }]		precise [exquiſita]
9 29 10	by the greater cl. } [per mai. h. }]	4 0	18 43	9 50 25	by the greater cl. } [per mai. h. }]	8 0	16 0
9 40 50	by the lesser cl. } [per min. h. }]			10 3 5	by the lesser cl. } [per min. h. }]		good enough [ſatis bona]

Then I observed the bright star of the Vulture. [Deinde obſeruaui Vulturis lucidam.]

		Azimuth from the west toward the south [Azimuth ab occ. verſus mer.]	Alti-tude [Alti-tudo]			Azimuth from the west toward the south [Azimuth ab occ. verſus mer.]	Alti-tude [Alti-tudo]
10 0 30	by the greater cl. } [per mai. h. }]	8 19	15 0	10 43 25	by the greater cl. } [per mai. h. }]	90 0	9 33
10 13 45	by the lesser cl. } [per min. h. }]			10 57 35	by the lesser cl. } [per min. h. }]		
10 28 5	by the greater cl. } [per mai. h. }]	3 0	11 35	10 55 45	by the greater cl. } [per mai. h. }]	the comet [Cometa]	
10 41 35	by the lesser cl. } [per min. h. }]		good [bona]	11 10 45	by the lesser cl. } [per min. h. }]	20 15	7 50½

Precise enough, as far as it was possible to see because of the smallness near the horizon. [Satis exquiſita quantum per paruitatem iuxta horizontem videre licuit.]

		P. M.	
10^{H} 5^{M}	by the greater cl. The comet was distant from the tail of the Eagle [per mai. h. Diſtabat Cometa a cauda Aquilæ]	5 45	with the Sextant. [per Sextant.]
10 46	I found the same distance with the Radius [Inueni eandem diſtantiam per Radium]	5 46	

The daily motion, taking account of the previous day, was found on the globe to be about 1¾ G. [Motus diurnus habita ratione prioris diei in globo deprehenſus eſt quaſi 1¾ G.]

At the following noon the greater clock was running faster than it should have, by 45′40″; but it was corrected around hour 3 yesterday afternoon. [In Meridie ſequente horologium maius celerius ibat, quam debuit, 45′40″, ſed fuit correctum circa horam 3 heſternam pomeridianam.]

DIE 30 OCTOBRIS. [30 October]

We set the greater clock at H. 3 M. 8 S. 55, when ☉ was in azimuth 45 0. The uppermost circumference of ☉ was seen, moreover, to set on the same clock at H. 4 M. 15 S. 10. You can compare these with the following times; should set at M. 13. [Poſuimus maius horologium ſuper H. 3 M. 8 S. 55, quando ☉ fuit in Azimuto 45 0. Viſa eſt autem ſuprema circumferentia ☉^{lis} occidere in eodem horologio H. 4 M. 15 S. 10. Hæc potes conferre cum ſequentibus temporibus; debet occidere M. 13.]

H. 5 M. 10 I set the lesser clock with the greater. [H. 5 M. 10 poſui minus horologium cum maiore.]

Then I adjusted by the Eagle in this way. [Deinde rectificaui per Aquilam hoc modo.]

		Azimuth from the west [Azimuth ab occaſu]	Altitude [Alti-tudo]			Azimuth from the west [Azimuth ab occaſu]	Altitude [Alti-tudo]
$5^H 13^M 30^s$	by the greater } [per mai. }]	77 0	41 19	5 20 0	by the greater } [per mai. }]	75 0	41 8
5 13 27	by the lesser } [per min. }]			5 19 55	by the lesser } [per min. }]		

		Azimuth from the west [Azimuth ab occaſu]	Altitude [Altitudo]
5 26 10	by the greater } [per mai. }]	73 0	40 55
5 26 0	by the lesser } [per min. }]		

From this you will be able to verify the times around the first observations of the comet, for on this day I again adjusted both clocks differently. [Hinc poteris verificare tempora circa primas Cometæ obſeruationes, nam hoc die rurſus vtrumque horologium aliter rectificaui.]

Then I observed the comet in this manner. [Deinde Cometam obſeruaui hoc pacto.]

		Az-imuth	Altitude [Altitudo]			Az-imuth	Altitude [Altitudo]
$5^H 43^M 30^s$	by the greater cl. } [per mai. h. }]	43 0	44 18	5 58 20	by the greater cl. } [per mai. h. }]	39 0	42 56
5 42 50	by the lesser cl. } [per min. h. }]			5 56 45	by the lesser cl. } [per min. h. }]		

		Azimuth	Altitude [Altitudo]			Azimuth	Altitude [Altitudo]
5 50 50	by the greater cl. } [per mai. h. }]	41 0	43 40	6 5 35	by the greater cl. } [per mai. h. }]	37 0	42 8
5 49 40	by the lesser cl. } [per min. h. }]			6 3 55	by the lesser cl. } [per min. h. }]		

Then I observed the distances of the comet by the greater clock. [Deinde diſtantias obſeruaui Cometæ per maius horologium.]

		P. M.
$6^{H}15^{M}$	Between the bright star of the Eagle and the comet with the Radius [Inter Aquilæ lucidam & Cometam per Radium]	18 41
	with the Sextant [per Sextantem]	18 56
6 23	Between the head of Ophiuchus and the comet with the Radius [Inter caput Ophiuchi & Cometam per Radium]	17 17
	with the Sextant [per Sextantem]	17 29
6 29	Between the bright star of Lyra and the comet with the Radius [Inter lucidam Lyræ & Cometam per Radium]	20 29
	with the Sextant [per Sextantem]	20 49
6 36	Between the mouth of Cygnus and the comet with the Radius [Inter os Cygni & Cometam per Radium]	14 40
	with the Sextant [per Sextantem]	14 49

H. 6 M. 45 I saw that the comet had passed the said star of yesterday, with which was coupled, to the sight, at an interval as great as is the distance of the two small ones in the right foot of Cygnus; that little star, moreover, was more southerly and nearer to the horizon than the star, and that nearly on the line which is drawn from the head of Ophiuchus through the comet, except that this line left the place of the said little star, in its own place, a little lower, by the size of the comet's body. The lower part of the comet's tail, however, as it were shone upon the said star, thus: [H. 6 M. 45 Vidi quod Cometa erat prætergreßus dictam ſtellam heſternam, cum qua copulabatur tanto interuallo ad viſum, quanta eſt diſtantia duarum paruarum in dextro pede Cygni; erat autem meridionalior illa ſtellula & propior horizonti quam ſtella, idque fere in ea linea, quæ ducitur a capite Ophiuchi per Cometam, niſi quod hæc linea locum ſtellulæ dictæ relinquebat in ſuo loco parum inferius ad quantitatem corporis Cometæ. Caudæ vero Cometæ inferior pars quaſi dictam ſtellam radiabat ſic:]

Hour 7 M. 0 I observed the comet's tail carefully and saw that, if a straight line were drawn from the head of Ophiuchus through the body of the comet, the course of the tail would fall a little higher, but very little; yet, more precisely, it seemed to stretch out on the straight line that is drawn from the head of the comet to the outermost of the right wing of Cygnus; was, moreover, rather thin, but brighter than usual. For the very head of the comet also appeared brighter and more conspicuous than usual, almost like the fixed stars, and the size of the head was equal to the size of the [Hora 7 M. 0 Obſeruaui diligenter caudam

Cometæ & vidi, quod ſi a capite Ophiuchi per corpus Cometæ duceretur linea recta, caudæ ductus paulo ſuperior caderet, ſed admodum parum; exquiſitius tamen videbatur ea protendi in lineam rectam, quæ ducitur a capite Cometæ in extremam dextræ alæ Cygni; erat autem rariuſcula, ſed lucidior ſolito. Nam & ipſum caput Cometæ lucidius apparuit & conſpectius ſolito inſtar fere affixarum ſtellarum, eratque quantitas capitis æqualis quantitati ſtellæ]

Diagram. A drawing in a reproduced hand, set to the right of the narrowed lines of the paragraph "Hora 7 M. 0 …". A single straight line runs from the upper left down to the lower right, where it ends in a star mark (asterisk). Along the upper-left part of the line run several heavy parallel strokes, ending at a larger star mark with short radiating strokes; further marks stand among the strokes to its left. Three written labels.

- Below and left of the larger star mark, in two lines: "Stella informis" [?] — "star unformed [?]"; the second word's letters run together in the hand
- Right of the larger star mark: "Com…" [?] — the ending is a flourish not resolved
- Above and left of the star mark at the lower right end of the line: "Capu… Oph…" [?] — the endings of both words not resolved

bright star of the Vulture, but as it were a very little smaller, but a little larger than the stars in the tail of the Bear. The colour of the comet's head, however, was not so very bright as the colour of the Eagle, but a little more dusky, almost similar to that star which is in the head of Ophiuchus or the head Algol; yet was of a somewhat dimmer light than is the head of Ophiuchus, similar, as most nearly, to the very head of Hercules, but larger than stars of the second magnitude and a little smaller than of the first. Afterwards came thick clouds and darkness of the air, so that on that evening it was not possible to observe any longer. [lucidæ Vulturis, ſed paululum quaſi minor, ſed paulo maior ſtellis in cauda Vrſæ. Color vero capitis Cometæ non erat vsque adeo lucidus vt color Aquilæ, ſed paulo magis fuſcus, ſimilis fere illi ſtellæ, quæ eſt in capite Ophiuchi vel capite Algol; erat tamen paulo obſcuriore lumine, quam eſt caput Ophiuchi, ſimilis vt proxime ipſi capiti Herculis, ſed maior ſtellis ſecundæ magnitudinis & minor paulo primæ. Poſtea venerunt denſæ nubes & obſcuritas aëris, adeo vt eo veſperi non licuerit amplius obſeruare.]

At noon the following day the greater clock showed H. 1 M. 45 S. 10, the lesser clock 13′ 10″. [In Meridie ſequente monſtrabat maius horologium H. 1 M. 45 S. 10, minus horologium 13′ 10″.]

DIE 31. [Day 31]

The centre of the Sun was seen to graze the western horizon while the greater clock indicated Hour 3 M. 37. The upper circumference of the Sun, however, was seen to be hidden when on the same clock Hour 3 39′ 10″ was indicated, whereas according to the calculation it should have been H. 4 10′ 45″. The lesser clock showed the minute 15′ 30″, which fell short of the third clock by about 50 seconds. [Viſum eſt centrum Solis ſtringere horizontem occidentem, dum maius horologium indicaret Horam 3 M. 37. Superior vero circumferentia

Solis viſa eſt occultari, cum in eodem horologio Hora 3 39′ 10″ indicaretur, cum debuißet eße ſecundum calculum H. 4 10′ 45″. Minus horologium monſtrabat minutum 15′ 30″, quod deficiebat a tertio horologio 50 ſecundis fere.]

			Az-imuth	Altitude [Altitudo]	
$4^{H}45^{M}50^{s}$	by the greater cl. } [per mai. h. }]	was of the Eagle [fuit Aquilæ]	75° 0′	41° 8′	
12 0	by the lesser cl. } [per min. h. }]				
4 53 20	by the greater cl. } [per mai. h. }]	of the Eagle [Aquilæ]	73 0	40 52	
18 15	by the lesser cl. } [per min. h. }]				
5 6 15	by the greater cl. } [per mai. h. }]	of the Eagle [Aquilæ]	70 30	40 24	
29 30	by the lesser cl. } [per min. h. }]				

Afterwards the quadrant was directed at the comet. [Poſtea directus fuit Quadrans ad Cometam.]

5 26 40	by the greater cl. } [per mai. h. }]	the comet was [fuit Cometa]			
47 30	by the lesser cl. } [per min. h. }]	in azimuth [in Azimuth]	37½	42 38½	
5 37 23	by the greater cl. } [per mai. h. }]		35 0	41 32	good [bona]
56 40	by the lesser cl. } [per min. h. }]				
5 46 35	by the greater cl. } [per mai. h. }]		33 0	40 39	good [bona]
4 35	by the lesser cl. } [per min. h. }]				

Finally the distances of the comet from the fixed stars were noted. [Tandem notatæ fuerunt diſtantiæ Cometæ a fixis.]

5 56	by the greater cl. } [per mai. h. }]	Distance of the comet from the Eagle [Diſtantia Cometæ ab Aquila]	20 18
12	by the lesser cl. } [per min. h. }]		
6 4	by the greater cl. } [per mai. h. }]	The comet from the head of Ophiuchus [Cometa a capite Ophiuchi]	16 8
19½	by the lesser cl. } [per min. h. }]		
6 15	by the greater cl. } [per mai. h. }]	The comet from the bright star of Lyra [Cometa a lucida Lyræ]	20 45
30	by the lesser cl. } [per min. h. }]	I made [feci]	20 20
6 25	by the greater cl. } [per mai. h. }]	The comet from the mouth of Cygnus [Cometa ab ore Cygni]	15 45
38	by the lesser cl. } [per min. h. }]		

H. 6½ The tail appeared very obscurely because of clouds coming between. Seemed, moreover, directed to about the third, inner, part of the distance of the two stars in the left wing of Cygnus. [H. 6½ Cauda admodum obſcure apparebat propter intercidentes nebulas. Videbatur autem directa ad tertiam fere partem interiorem diſtantiæ duarum ſtellarum in ſiniſtra ala Cygni.]

7 12 10	by the greater cl. } [per mai. h. }]	the Eagle was in [fuit Aquila in]	38 30	31 39	
19 35	by the lesser cl. } [per min. h. }]				
7 19 0	by the greater cl. } [per mai. h. }]	the Eagle [Aquila]	37 0	30 59 about [fere]	
26 0	by the lesser cl. } [per min. h. }]				
7 30 50	by the greater cl. } [per mai. h. }]	the comet [Cometa]	11 0	29 3	
36 55	by the lesser cl. } [per min. h. }]				

7 41 48	by the greater cl. } [per mai. h. }]	the comet [Cometa]	8 0	27 49
46 10	by the lesser cl. } [per min. h. }]			
7 51 0	by the greater cl. } [per mai. h. }]	Distance of the comet [Diſtantia Cometæ]		
54½	by the lesser cl. } [per min. h. }]	from the head of Ophiuchus [a capite Ophiuchi]		16 4
7 57½	by the greater cl. } [per mai. h. }]	The comet from the Eagle [Cometa ab Aquila]		20 25
8 0	by the lesser cl. } [per min. h. }]			
8 5½	by the greater cl. } [per mai. h. }]	The comet from the bright star of Lyra [Cometa a lucida Lyræ]		20 40
8 7¼	by the lesser cl. } [per min. h. }]	I made [feci]		20 18
8 13½	by the greater cl. } [per mai. h. }]	The comet was distant from the beak of Cygnus [Diſtabat Cometa a roſtro Cygni]		15 43
8 14½	by the lesser cl. } [per min. h. }]			

From here on the comet was observed further. [Hinc porro obſeruatus eſt Cometa.]

8 29 50	by the greater cl. } [per mai. h. }]		
8 29 30	by the lesser cl. } [per min. h. }]	90 0	22 0½
8 25 0	by the third cl. } [tertio horol. }]		
8 46 50	by the greater cl. } [per mai. h. }]	3 0 towards [verſus]	19 54
8 44 10	by the lesser cl. } [per min. h. }]	the north [ſept.]	

8 58 50	by the greater cl. } [per mai. h. }]		5 0	18 34
8 54 0	by the lesser cl. } [per min. h. }]			
9 12 20	by the greater cl. } [per mai. h. }]	the Eagle [Aquila]	14 0	18 41½
9 5 40	by the lesser cl. } [per min. h. }]			

Set in smaller type at the right of this table, beside its rows (lines as printed, top to bottom):

Altit.	22° 1′
	34 8
	56 9
	12 7
	49829
	12594
	37235
	18618
	18° 4′ 30″
Decl. of the comet [Decl. Cometæ]	H. 8½

Once the clocks had been set at noon of the next ensuing day, the greater clock was found to be stationary; the same was also observed in it a little before the setting of ☉. The lesser clock, however, had run faster by five minutes, which agreed well with the third clock. At sunset these same could not be examined because of clouds coming between. [Facta horologiorum directione ad proximi diei inſtantis meridiem, deprehenſum fuit maius horologium ſtationarium; idem etiam paulo ante occaſum ☉ in eodem obſeruatum fuit. Minus vero horologium citius motum fuit minutis quinque, quæ cum tertio horologio bene reſpondebant. Ad occaſum Solis eadem examinari propter nubes intercidentes non poterant.]

At Helsingborg on the 31st I myself observed the following distances with the Radius, the clock having been verified at sunset. [Helſingburgi die 31 ipſemet cum Radio obſeruaui ſequentes diſtantias, horologio ad occaſum Solis verificato.]

		P. M.
$5^{H}30^{M}$	Between the bright star of the Vulture and the comet [Inter lucidam Vulturis & Cometam]	19 50
5 35	Between the head of Ophiuchus and the comet [Inter caput Ophiuchi & Cometam]	16 0
5 45	Between the tail of the Eagle and the comet [Inter caudam Aquilæ & Cometam]	8 3
6 0	Between the Eagle and the comet [Inter Aquilam & Cometam]	19 50
	But at H. 5 55 I found the same [Sed H. 5 55 deprehendi eandem]	20 4
6 5	Between the head of Ophiuchus and the comet [Inter caput Ophiuchi & Cometam]	15 55
6 10	The same distance [Eadem diſtantia]	15 57

		P. M.
6 20	Between the mouth of Cygnus and the comet [Inter os Cygni & Cometam]	15 25

The course of the tail was seen to point exactly towards the one that is the first in the left wing of Cygnus, which, that is, is one of those three that are in the body. The size of the comet's head was almost equal to the size of the bright star of the Vulture, yet it shone not with so very clear a light, but with a somewhat whiter and slightly livid one; nor did it twinkle like the other fixed stars; and since it was in the Milky Way, I judge that yesterday and today it was brighter than usual, and on account of the absence of ☾. In size and colour it was not unlike the star of ♄ itself; but yet not so very bright, but with a somewhat duller light, livid and whitish. [Ductus caudæ viſus eſt vergere exquiſite verſus eam, quæ eſt prima in ſiniſtra ala Cygni, quæ videlicet vna eſt earum trium, quæ ſunt in corpore. Magnitudo capitis Cometæ erat fere æqualis magnitudini lucidæ Vulturis, verum non vſque adeo claro lumine, ſed paulo albiore & ſubliuido lucebat, neque ſcintillabat vt reliquæ ſtellæ fixæ, & quia erat in via lactea, exiſtimo heri & hodie fuiße lucidiorem ſolito, & propter abſentiam ☾. Non dißimilis fuit magnitudine & colore ipſi ſtellæ ♄ni; ſed tamen non vſque adeo lucidus, ſed paulo hebetiori lumine liuide albeſcens.]

		P. M.
8^H40^M	Between the bright star of Lyra and the comet [Inter lucidam Lyræ & Cometam]	20 12
8 45	Between the bright star of the Vulture and the comet [Inter lucidam Vulturis & Cometam]	20 8
8 55	I found the same [Eandem deprehendi]	20 5
	And this observation is more certain than the earlier. [Atque hæc obſeruatio eſt certior priori.]	
9 20	Was distant from the head of Cygnus [Diſtabat a capite Cygni]	15 28

All these observations I made at the castle of Helsingborg with the Radius. [Has omnes obſeruationes feci in arce Helſingburgenſi per Radium.]

DIE 10 NOUEMBRIS. [10 November]

Around setting the comet appeared again, of about the same size as before, with its tail appearing quite visible, which it stretched exactly, as far as sight goes, towards the rear and more southerly of the two lower ones in the body of Lyra, or into the space midway between both; the tail, moreover, was as it were curved, and broader in its rear part than where it was joined to the head. The head of the comet, moreover, was exactly, as far as sight goes, on the straight line that is drawn from the middle one of the three outermost in the left wing of Cygnus, as Mercator places them, through the bright star of Lyra, being distant from this very one by the Radius P. 22 M. 7. This consideration was made a little before the horns of ♈ were on the meridian, by about half an hour, and the whole consideration will have to be reckoned, because of the nearness of the horizon and the comet, as it were ἐν πλάτει

[Greek: en platei, "in breadth"]. [Cometa circa occaſum apparuit rurſus fere ea magnitudine vt prius, cauda admodum viſibili apparente, quam tendebat exquiſite quoad viſum in poſteriorem & meridionaliorem duarum inferiorum in corpore Lyræ vel in ſpacium medium vtriuſque, erat autem cauda quaſi incuruata & in poſtrema parte magis lata, quam vbi capiti iuncta erat. Fuit autem caput Cometæ exquiſite, quoad viſum in linea recta, quæ ducitur a media trium extremarum in ſiniſtra ala Cygni, prout Mercator ponit, per Lyræ lucidam, diſtans ab hac ipſa per Radium P.22 M.7. Fuit hæc conſideratio facta paulo ante, quam cornua ♈ erant in Meridiano, per ſemißem quaſi horæ, atque conſideratio tota propter vicinitatem horizontis & Cometæ quaſi ἐν πλάτει putanda erit.]

DIE 12. [Day 12]

6¼H	Between the comet and the head of Ophiuchus by the Radius [Inter Cometam & caput Ophiuchi per Radium]	6 0 good [bona]
	by the Sextant [per Sextantem]	6 15
6½	Between the comet and the head of Hercules [Inter Cometam & caput Herculis]	8 12 by the Radius [per Radium]
6 35	Between the comet and the head of Hercules [Inter Cometam & caput Herculis]	8 30

H. 6 M. 35 With careful consideration, a ruler being applied, I noticed that the bright star of Lyra and the comet's head and the head of Ophiuchus were exactly in a straight line, by viewing all of them along the ruler at the same end of the ruler. [H. 6 M. 35 Animaduerti exquiſita conſideratione adhibita regula, quod lucida Lyræ & Cometæ caput atque Ophiuchi caput fuerunt exquiſite in linea recta per regulam videndo omnes in eadem extremitate regulæ.]

6¾H	The comet was distant from the head of Ophiuchus [Diſtabat Cometa a capite Ophiuchi]	
	being higher [ſuperior exiſtens]	5 59 by the Radius [per Radium]
6 51	The same [Eadem]	6 1
7 0	Between the bright star of Lyra and the comet [Inter lucidam Lyræ & Cometam]	23 16 good, by the Rad. [bona, per Rad.]
7 5	The comet was distant from the left shoulder of Hercules [Diſtabat Cometa a ſiniſtro humero Herculis]	9 48 by the Radius [per Radium]

The tail pointed, as it were, towards the middle space between the two lower ones of Lyra itself, which are in the body, having a length of about three degrees; for it could not be determined exactly because of the thinness of the tail and the sparseness: the tail itself nevertheless appeared, although by the light of the Moon, more conspicuous than usual, than ever before, so that although it was thin and sparser. [Cauda vergebat quaſi verſus medium ſpacium

inter duas inferiores ipſius Lyræ, quæ ſunt in corpore, habens longitudinem partium circiter trium; nam exquiſite determinari propter tenuitatem caudæ & raritatem non licuit: apparuit tamen ipſa cauda quamuis ad lumen Lunæ ſolito conſpectior, quam vſque prius vt quamuis tenuis & rarior fuerit.]

$7^{H}19^{M}$	Between the comet and the left shoulder [Inter Cometam & humerum ſiniſtrum]	9 51
7 25	The comet was distant from the head of Ophiuchus [Diſtabat Cometa a capite Ophiuchi]	5 59 by the Rad. as before [per Rad. vt prius]
7 28	The last of the wing passed through the meridian. From this you can verify the preceding times of the lesser clock, for I did not use the greater clock this evening. [Tranſiuit poſtrema alæ per Meridianum. Hinc potes verificare tempora antecedentia horologij minoris, nam maiori horologio non ſum vſus hoc veſperi.]	
7 40	Distance of the comet from the head of Ophiuchus by the Radius [Diſtantia Cometæ a capite Ophiuchi per Radium]	6 0 about, as above [fere vt ſupra]
7 45	Between the tail of the Eagle and the comet [Inter caudam Aquilæ & Cometam]	19 30 fair, by the Rad. [mediocr. per Rad.]

Note. The observations with the sextant this evening were made through both of the new lower pinnules, from which no parallax is to be subtracted. [Nota. Obſeruationes Sextantis hoc veſperi fuerunt per pinnacidia vtraque noua inferiora vnde nulla parallaxis eſt ſubtrahenda.]

$11^{H}47^{M}$	The eye of ♉ passed through the meridian, having an altit. of [Oculus ♉ tranſiuit per Meridianum, habens Altit.]	49°45′
12 0	♂ passed the meridian, having an altitude of [♂ tranſiuit Meridianum, habens Altitudinem]	57 24

N.B. ♂ in ☍ of the Sun. [N.B. ♂ in ☍ Solis.]

DIE 13 NOUEMBRIS. [13 November]

$6^{H}15^{M}$	The prior one in the wing of Pegasus passed the meridian, noted by the wall. [Prior in ala Pegaſi tranſiuit Meridianum per murum notatum.]	
6 28	The comet was distant from the head of Ophiuchus [Diſtabat Cometa a capite Ophiuchi]	5 31
6 38	The comet was distant from the head of Hercules [Diſtabat Cometa a capite Herculis]	7 26

6 46	The comet was distant from the left shoulder of Hercules [Diſtabat Cometa ab humero ſiniſtro Herculis]	9 25	by the Radius [per Radium][12]
7 38	The comet was distant from the bright star of Lyra [Diſtabat Cometa a lucida Lyræ]	23 44	
7 43	The comet was distant from the bright star of the Eagle [Diſtabat Cometa a lucida Aquilæ]	33 24	

The last two observations were made with the comet being very dim, in the vicinity of the horizon. [Duæ poſtremæ obſeruationes ſunt factæ, Cometa exiſtente admodum obſcuro in horizontis vicinitate.]

DIE 15 NOUEMBRIS. [15 November]

$4^{H}55^{M}$	The mouth of Pegasus passed the meridian, [Os Pegaſi tranſiuit Meridianum,] having an altitude of [habens Altitudinem]	42 9
5 36	The comet was distant from the head of Ophiuchus [Diſtabat Cometa a capite Ophiuchi]	4 48
5 45	The comet was distant from the head of Hercules [Diſtabat Cometa a capite Herculis]	5 54

The comet's tail, quite apparent by the light of ☾, was seen to point towards one of the first ones in the body of Lyra, namely the one that was more southerly and more easterly. [Cauda Cometæ ad lumen ☾ ſatis apparens viſa eſt vergere in alteram primarum in corpore Lyræ, quæ videlicet eßet meridionalior & orientalior.]

6^{H} 0^{M}	The comet was distant from the head of Hercules [Diſtabat Cometa a capite Herculis]	5 55
6 9	The comet was distant from the head of Ophiuchus [Diſtabat Cometa a capite Ophiuchi]	4 48⅓

The comet's tail pointed to a place in the sky distant southward from the bright star of Lyra by the space of the diameter of the Moon's body. [Cauda Cometæ vergebat ad locum cœli diſtantem verſus auſtrum a lucida Lyræ ſpatio diametri corporis Lunaris.]

DIE 17 NOUEMBRIS. [17 November]

Hour 7½ [Hora7½]	The head of Andromeda passed the meridian, noted by the wall. [Caput Andromedæ tranſiuit Meridianum per murum notatum.]	
7 35	The comet was distant from the head of Hercules [Diſtabat Cometa a capite Herculis]	4 20

[12] a brace joins the five values from 5 31 to 33 24 to this note

	Not much trust is to be placed in this observation, because of the dimness of the head of Hercules in the vicinity of the horizon. [Huic obſeruationi non multum fidendum eſt propter obſcuritatem capitis Herculis in vicinitate horizontis.]	
7 46	The comet was distant from the head of Ophiuchus [Diſtabat Cometa a capite Ophiuchi]	4 28

DIE 25 NOUEMBRIS. [25 November]

H. 6 0 Scheat of Pegasus passed the meridian, noted by the wall. [H. 6 0 Scheat Pegaſi tranſiuit Meridianum per murum notatum.]

On the day of ♀, at about the 6th hour after noon, when I was in a boat between Scania and Hven, the stars already shining in some part after sunset, I still saw the comet appearing quite brightly and shining with a size like a star of the second magnitude, yet its tail [Die ♀ circa horam 6 pomeridianam, cum eßem in cimba inter Scaniam & Huenam, lucentibus iam aliqua ex parte poſt occaſum Solis ſtellis, vidi adhuc Cometam ſatis lucide apparentem & lucentem magnitudine inſtar ſtellæ ſecundæ magnitudinis, cauda tamen]

Diagram. A figure in a hand-drawn style at the right of the lower half of the text block, beside the entries "DIE 17 NOUEMBRIS." and "DIE 25 NOUEMBRIS." At its top stands an outline figure drawn with hatched, feather-like strokes, with two wide spreading parts to left and right; inside it are a filled black dot and two six-pointed star marks, and a further star mark at its upper edge. Two lines run down from this figure: the left one, drawn as a narrow double outline, ends in a closed tip with a star mark near its foot; the right one, a single line, runs further down and passes three star marks, the lowest two close together. Three handwritten labels stand beside the lower star marks:

- star mark on the right-hand line, upper (label to its left): "caput Ophiuchi" — the head of Ophiuchus
- star mark on the right-hand line, lower (label to its right, two lines): "caput Herculis" — the head of Hercules
- lowest star mark (label to its right): "Cometa" — the comet

was scarcely apparent; yet certain longer rays, as it were, seemed to stretch out towards the zenith of the head, as far as sight goes. The comet itself, moreover, was near the head of Hercules, lower than it, towards the west and north. And it was distant from that one in the head of Hercules by three diameters of the sun at most, as far as sight goes, that is, by almost one and a half degrees; for this distance was notably smaller than the distance of the two nearer ones in the body of the Vulture. Moreover, the line through the comet and the nearest one mentioned, namely the one in the head of Hercules, seemed, when produced, to stretch into the one that is the middle one in the body of Cygnus, as far as sight goes; afterwards clouds coming from the west at once hid the comet's head with the rest of the stars. [vix apparebat; videbantur tamen quaſi radij quidam longiores protendi verſus Zenith capitis quoad viſum. Fuit autem Cometa ipſe prope caput Herculis illo inferius verſus occaſum & ſeptentrionem. Diſtabatque ab illa in capite Herculis tribus diametris ſolis ad

ſummum quoad viſum id eſt ſeſquialtero fere gradu; erat enim hæc diſtantia notabiliter minor duarum propiorum in corpore Vulturis diſtantia. Videbatur autem linea per Cometam & proximam dictam, videlicet in capite Herculis protendi, vbi producta eßet, in eam, quæ media eſt in corpore Cygni quoad viſum; poſtea nubes ab occaſu venientes ſtatim abſconderunt Cometæ caput cum reliquis ſtellis.]

On these intervening days it was not clear with us, but the sky was always wet, dark and windy through all these days. [Hiſce intermedijs diebus non fuit apud nos ſerenum ſed ſemper vdum obſcurum & ventoſum cœlum per omnes haſce dies.]

DIE 13 DECEMBRIS. [13 December]

I saw the comet again in the morning before the rising of ☉, and it was still quite apparent at the beginning of dawn, like a little star of the third magnitude, sending out a very thin tail towards the upper parts. [Rurſus vidi Cometam mane ante ortum ☉, fuitque ſatis adhuc apparens in auroræ principio inſtar ſtellulæ tertiæ magnitudinis, mittens tenuißimam caudam verſus ſuperiora.]

Its distance, however, from certain fixed stars Petrus observed with the Radius in this way. [Diſtantiam vero eius a quibuſdam fixis obſeruauit Petrus per Radium hoc modo.]

$6^{H}25^{M}$	Distance of the comet from the brighter star of the left shoulder of Ophiuchus [Diſtantia Cometæ a lucidıore ſiniſtri humeri Ophiuchi]	7 29	
6 42	The comet was distant from the other, brighter one in the right shoulder of the same Ophiuchus [Diſtabat Cometa ab altera lucidiore in dextro eiuſdem Ophiuchi humero]	14 45	by the Radius [per Radium][13]
6 49	Was distant from the head of Ophiuchus [Diſtabat a capite Ophiuchi]	16 0	
6 30	Azimuth of the comet from the east towards the south [Cometæ Azimuth ab ortu verſus merid.]	26 46	Alt. 20 59
40^{S}			
6 42	Azimuth of the head of Ophiuchus [Capitis Ophiuchi Azimuth]	12 21	— 23 56½
33			

From this you can verify the preceding times; for the clock almost kept its revolution from yesterday's sunrise to today's. At least, as far as sight goes, ἐν πλάτει, 4 minutes were lacking (for the rising was H. 8 M. 36), which are imperceptible in this interval; but for greater certainty of the time I also observed Spica in this way. [Hinc potes verificare præcedentia tempora; nam horologium fere ſeruauit ſuam reuolutıonem ab ortu Solis heſterno in hodiernum; deerant ſaltem quoad viſum ἐν πλάτει 4 minuta (nam ortus H.8 M.36) quæ inſenſibilia ſunt hoc interuallo; pro maiori autem certitudine temporis obſeruaui etiam Spicam hoc modo.]

[13] a brace joins the three values 7 29, 14 45 and 16 0 to this note

	Azimuth	Altitude almost meridian [Altitudo quaſi Meridiana]
$6^{H}58^{M}30^{S}$	0°30′	25°11′
7 9 40	3 32	

Die 19. [Day 19] Nowhere could I perceptibly find the comet; but yet it was not so very clear around the horizon. [Nuſquam potui ſenſibiliter Cometam inuenire, ſed non fuit tamen circa horizontem vſque adeo ſerenum.]

Die 21 mane. [Day 21, morning] I watched quite diligently between the arm of Ophiuchus and the head and the whole tract where the comet should have been, but nowhere could I discern a trace of it. Perhaps it was not the rays of the Moon, which was shining, that prevented the sight of it, or because it was in the early morning twilight; but either it no longer appears, or it is very small, or it lies hidden under the Sun's rays. [Satis diligenter attendi inter brachium Ophiuchi & caput totumque tractum, vbi Cometa eße debebat, verum nuſquam veſtigium eius potui diſcernere; forte non Lunares radij, quæ ſplendebat, eius aſpectum prohibebant, vel quia erat in diluculo matutino; ſed aut non apparet amplius, aut admodum eſt exigua vel latet ſub radijs Solaribus.]

Die 20, 21 & 22 [Days 20, 21 and 22] I again looked diligently in the morning and nowhere saw the comet appearing; therefore either it has disappeared, or through a swifter direct motion it lies hidden under the Sun's rays. [rurſus mane diligenter aſpexi & nuſquam Cometam apparentem vidi, quapropter aut diſparuit aut per motum velociorem directum ſub radijs latet Solaribus.]

Rœslinus [Roeslin] affirms that it was seen until 1581 January 1 and had reached the ecliptic. [Rœslinus affirmat viſum vſque ad 1 Januarij 1581 & peruenißе ad Eclipticam.]

There follows the examination of the comet of the year 1580 on our largest brass globe, by Wilhelmus Johannes, a Batavian of Alkmaar [?], while he was with me in the year 1596, the comet having been diligently examined in the preceding winter; the more correct places along the comet's path and the limited distances are noted, and the longitude and latitude are also sometimes added, as that globe gives them. [Sequitur examinatio Cometæ anni 1580 in globo noſtro maximo orichalcico per Wilhelmum Johannem Batauum Alchmarienlem, dum hic mecum eßet anno 1596, in hyeme antecedente diligenter examinati, annotatis correctioribus locis ad tramitem Cometæ & diſtantijs limitatis, appoſitis etiam nonnunquam longitudine & latitudine, prout fert globus ille.]

DIE 10 OCTOBRIS. [10 October]

		Dist. observed, without parallax [Diſt. obſeru. absque paralaxi]	Corrected [Correcta]
$7^{H}18^{M}$	From Markab of Pegasus [A Marcab Pegaſi]	Rad. 15°20′	
7 25	From the extreme star of the wing of Pegasus [Ab extrema alæ Pegaſi]	Rad. 21 3	
7 45	From the middle one, or 2nd, in ♓ south. [A media vel 2^{da} in ♓ auſtrin.]	Rad. 3 40	3°36½′

		Dist. observed, without parallax [Diſt. obſeru. absque paralaxi]	Corrected [Correcta]
	The same distance from the 6th of ♓. [Eadem diſtantia a 6ta ♓.]		
9 40	From Markab of Pegasus [A Marcab Pegaſi]	Sext. 15 25 good [bona]	
9 54	From the extreme star of the wing of Pegasus [Ab extrema alæ Pegaſi]	Sext. 21 28 good [bona]	

DIE 11 OCTOBRIS. [11 October]

7 56	From Markab of Pegasus [A Marcab Pegaſi]	Rad. 13 48	
8 5	The same distance [Eadem diſtantia]	Rad. 13 54	13 57
8 16	From the extreme star of the wing of Pegasus [Ab extrema alæ Pegaſi]	Sext. 23 57	23 58
8 23	From the mouth of Pegasus [Ab ore Pegaſi]	Sext. 19 26	
8 32½	From the head of Pegasus [A capite Pegaſi]	Sext. 11 46	11 42
8 39	Between the bright star of the neck of Pegasus and the comet [Inter lucidam colli Pegaſi & Cometam]	Sext. 9 39	9 43
9 7	A straight line which is drawn from the middle one in the right [Linea recta quæ ducitur a mcdia in dex-]		
	hand of Aquarius to the one which is in the head of [tra manu Aquarij in eam quæ eſt in Cap.]		
	♓, the 2nd. The comet was in [♓ 2a. Erat Cometa in]	2 ♓	6 10
9 15	the intermediate space. Dist. from each [ſpatio intermedio. Diſt. ab vtraque]	Rad. 6 20	6 17½

DIE 12 OCTOBRIS. [12 October]

7 40	From the right shoulder of ♒ [A dextro humero ♒]	Rad. 7 36	7 38
7 48	From the head of Pegasus [A capite Pegaſi]	Rad. 6 25	6 23½
8 9	From the right shoulder of ♒ [A dextro humero ♒]	Sext. 7 31	7 32
8 15	From the head of Pegasus [A capite Pegaſi]	Sext. 6 18	6 16
12 53	From the bright star of the neck [A lucida colli]	Sext. 7 51	
1 8	From Markab of Pegasus [A Marcab Pegaſi]	Sext. 14 25	

DIE 13 OCTOBRIS. [13 October]

7 26	From the head of Pegasus [A capite Pegaſi]	Rad. 1 25	1 27
7 54	From the middle one of the neck [A media colli]	Rad. 8 52	9 14
8 0	From the mouth of Pegasus [Ab ore Pegaſi]	Rad. 8 32	

8 26	From the small one in the head of Pegasus [A paruula in capite Pegaſi]	Sext. 1 16	1 36½
8 45	From the middle one of the neck of Pegasus [A media colli Pegaſi]	Sext. 9 14	9 22½
8 50	The same distance [Eadem diſtantia]	Rad. 9 10	
8 55	From the mouth of Pegasus [Ab ore Pegaſi]	Sext. 8 20	
	A little later, the same dist. [Paulo poſt eadem diſt.]	Rad. 8 19	
9 20	From the middle one of the neck of Pegasus [A media colli Pegaſi]	Sext. 9 12	
9 30	From the right shoulder of ♒ [Ab humero dextro ♒]	Sext. 5 33	5 30
10 35	The same distance [Eadem diſtantia]	Sext. 5 31	5 31
10 50	The same [Eadem]	Sext. 5 32	5 31

DIE 17 OCTOBRIS. [17 October]

9 0	From the mouth of Pegasus [Ab ore Pegaſi]	Sext. 11 14	
9 11	From the Eagle [Ab Aquila]	Sext. 16 39	16 45½
9 21	From the bright star in the hand of Antinous [A lucida in manu Antinoi]	Sext. 16 37	16 31
9 32	From the left shoulder of ♒ [A ſiniſtro humero ♒]	Sext. 18 31	18 27
9 47	From the uppermost, brighter one of Delphinus [A ſuprema lucidiore Delphini]	Sext. 6 5	5 53

DIE 21 OCTOBRIS HUENÆ. [21 October, at Hven]

		Dist. observed [Diſt. obſeru.]	Dist. corrected [Diſt. corr.]
$6^{H}27½^{M}$	From the bright star in Delphinus [A lucida in Delphine]	Sext. 8 43	
6 34	From the Eagle [Ab Aquila]	Sext. 6 15	
6 42½	From the mouth of Pegasus [Ab ore Pegaſi]	Sext. 25 47	
7 13½	From the mouth of Pegasus [Ab ore Pegaſi]	Sext. 25 52	
7 19½	From the Eagle [Ab Aquila]	Sext. 6 18	

HELSINGBURGI DIE 21. [At Helsingborg, on the 21st]

7 50	Between the bright star of the Vulture and the comet [Inter lucidam Vulturis & Cometam]	Rad. 6 20 good [bona]	
8 15	From the tail of the Vulture [A cauda Vulturis]	Rad. 13 30 good [bona]	
8 25	From the head of Cygnus [A capite Cygni]	Rad. 15 5	15 3
9 0	From the bright star of the Vulture [A lucida Vulturis]	Rad. 6 21	6 19½
9 10	From the mouth of Pegasus [Ab ore Pegaſi]	Rad. 26 7	25 44
9 20	The same distance [Eadem diſtantia]	Rad. 26 10	

9 45	The comet was distant from the bright star of the Vulture [Diſtabat Cometa a lucida Vulturis]	Rad. 6 22	

DIE 26 OCTOBRIS. [26 October]

5 40	From the head of Cygnus [A capite Cygni]	Rad. 11 30	
	A little later, namely at M. 50, the same distance [Paulo poſt, ſcilicet M. 50 eadem diſtantia]	Rad. 11 32	
6 0	From the bright star of the Vulture [A lucida Vulturis]	Rad. 12 32	12 33
6 20	From the head of Cygnus [A capite Cygni]	Rad. 11 36	11 43
6 30	From the more northern and brighter one of the Dart [A borealiore & lucidiore Teli]	Rad. 11 28 good [bona]	
6 55	From the tail of the Eagle [A cauda Aquilæ]	Rad. 3 32 good [bona]	
7 5	From the head of Cygnus [A capite Cygni]	Rad. 11 38	11 46½
7 15	From the bright star of the Vulture [A lucida Vulturis]	Rad. 12 42	12 39
7 30	The same distance [Eadem diſtantia]	Rad. 12 40	
7 45	From the head of Cygnus [A capite Cygni]	Rad. 11 40	11 48
8 0	From the tail of the Vulture [A cauda Vulturis]	Rad. 3 32	3 31

HUENÆ DIE 26. [At Hven, on the 26th]

6 27½	Between the comet and the Eagle [Inter Cometam & Aquilam]	Sext. 12 22	
6 33	From the outermost one in the tail of the Eagle [Ab extrema in cauda Aquilæ]	Sext. 3 31	
6 44	From the outermost one in the beak of Cygnus [Ab extrema in roſtro Cygni]	Sext. 11 37	
6 51¼	From the bright star in the tail of Delphinus [A lucida in cauda Delphini]	Sext. 20 38	
7 30	The same distance [Eadem diſtantia]	Sext. 20 41	
7 35	Was distant from the Eagle [Diſtabat ab Aquila]	Sext. 12 22	
7 45	From the tail of the Eagle [A cauda Aquilæ]	Sext. 3 34	
8 52½	The same distance [Eadem diſtantia]	Sext. 3 33	

DIE 28 OCTOBRIS. [28 October]

5 3	From the tail of the Vulture [A cauda Vulturis]	Rad. 4 25	4 22[14]
5 20	The same distance [Eadem diſtantia]	Sext. 4 25	

[14]a brace to the right of the values Rad. 4 25 and Sext. 4 25 joins them to this figure, which stands at the point of the brace, between the two lines

5 20	From the mouth of Cygnus [Ab ore Cygni]	Rad. 12 46	12 57½
5 27	The same distance [Eadem diſtantia][15]	Rad. 12 48	
		Sext. 12 44	
5 35	From the bright star of Lyra [A lucida Lyræ]	Sext. 21 11	21 30
5 38	From the bright star of the Vulture [A lucida Vulturis][16]	Rad. 15 55 good [bona]	
		Sext. 15 53	
7 30	From the mouth of Cygnus [Ab ore Cygni]	Sext. 12 55	
7 36	Between the bright star of the Vulture and the comet [Inter lucidamVulturis & Cometam]	Sext. 16 11	

DIE 29 OCTOBRIS. [29 October][17]

		Dist. observed [Diſt. obſeru.]	Dist. corrected [Diſt. corr.]
$6^{H}38^{M}$	From the tail of the Vulture [A cauda Vulturis]	Rad. 5 35 good [bona]	
		Sext. 5 34	
6 47	From the head of Cygnus [A capite Cygni]	Rad. 13 24	13 54[18]
		Sext. 13 29	
6 56	From the head of Ophiuchus [A capite Ophiuchi]	Rad. 18 30	
		Sext. 18 38 good [bona]	
7 7	The same distance [Eadem diſtantia]	Rad. 18 32	
		Sext. 18 37	18 38
7 19	From the bright star of the Vulture [A lucida Vulturis]	Rad. 17 18	17 30
		Sext. 17 16	
7 38	From the bright star of Lyra [A lucida Lyræ]	Rad. 20 55	21 3[19]
		Sext. 20 55	

DIE 30 OCTOBRIS. [30 October][20]

[15] stands centred on a brace to the left of the two values Rad. 12 48 and Sext. 12 44, between their lines

[16] stands centred on a brace to the left of the two values Rad. 15 55 bona and Sext. 15 53, between their lines

[17] in each pair of rows below, a brace on the left joins the two values, Rad. above and Sext. below, and the time and object stand centred between the two lines; they are given on the first row of the pair, and the second value has a row of its own.

[18] a brace to the right of the values Rad. 13 24 and Sext. 13 29 joins them to this figure, which stands at the point of the brace, between the two lines

[19] a brace to the right of the values Rad. 20 55 and Sext. 20 55 joins them to this figure, which stands at the point of the brace, between the two lines

[20] the same arrangement: a brace on the left joins each Rad. and Sext. pair, and the time and object stand centred between the two lines.

6 15	Between the Eagle and the comet [Inter Aquilam & Cometam]	Rad. 18 41 Sext. 18 35	18 57
6 23	From the head of Ophiuchus [A capite Ophiuchi]	Rad. 17 17 good [bona] Sext. 17 10	
6 29	From the bright star of Lyra [A lucida Lyræ]	Rad. 20 29 Sext. 20 26	20 46

DIE 31 OCTOBRIS. [31 October]

5 56	From the Eagle [Ab Aquila]	Sext. 19 55
6 4	From the head of Ophiuchus [A capite Ophiuchi]	Sext. 15 50
6 15	From the bright star of Lyra [A lucida Lyræ]	Sext. 20 22
6 25	From the mouth of Cygnus [Ab ore Cygni]	Sext. 15 27
7 51	From the head of Ophiuchus [A capite Ophiuchi]	Sext. 15 46
7 57½	From the Eagle [Ab Aquila]	Sext. 20 2
8 5½	From the bright star of Lyra [A lucida Lyræ]	Sext. 20 17
8 13½	From the beak of Cygnus [A roſtro Cygni]	Sext. 15 25

HELSINGBURGI DIE 31. [At Helsingborg, on the 31st]

5 30	Between the bright star of the Vulture and the comet [Inter lucidam Vulturis & Cometam]	Rad. 19 50	20 10
5 35	From the head of Ophiuchus [A capıte Ophiuchi]	Rad. 16 0 good [bona]	
5 45	From the tail of the Eagle [A cauda Aquilæ]	Rad. 8 3 good [bona]	
6 0	From the Eagle [Ab Aquila]	Rad. 19 50	
5 55	The same [Eadem]	Rad. 20 4	
6 5	From the head of Ophiuchus [A capite Ophiuchi]	Rad. 15 55	
6 10	The same [Eadem]	Rad. 15 57 good [bona]	
6 20	From the mouth of Cygnus [Ab ore Cygni]	Rad. 15 25	15 48
8 40	From the bright star of Lyra [A lucida Lyræ]	Rad. 20 12	20 34
8 45	From the bright star of the Vulture [A lucida Vulturis]	Rad. 20 8	20 14
8 55	The same distance [Eadem diſtantia]	Rad. 20 5	
9 20	From the head of Cygnus [A capite Cygni]	Rad. 15 28	

DIE 10 NOUEMBRIS. [10 November]

On the straight line which is drawn from the middle one of the three [In recta linea quæ ducitur a media trium]
outermost ones in the left wing of Cygnus through the bright star [extremarum in ſiniſtra ala Cygni per Lyræ]

	of Lyra, dist. from the bright star of Lyra [Lucidam diſt. a lucida Lyræ]		Rad. 22 7

DIE 12 NOUEMBRIS. [12 November]

		Dist. observed [Diſt. obſeru.]	Dist. corrected [Diſt. corr.]
6^{H} $0¼^{M}$	Was distant from the head of Ophiuchus [Diſtabat a capite Ophiuchi][21]	Rad. 6° 0′	
		Sext. 6 8	
6 30	From the head of Hercules [A capite Herculis]	8 12	
6 35	Now the head of the comet was on the straight line [Fuit autem caput Cometæ in linea recta] which is drawn from the head of Ophiuchus to the bright star of [quæ ducitur a capite Ophiuchi in Lucidam] Lyra, except that the bright star of Lyra seemed to be on [Lyræ, niſi quod Lucida Lyræ videbatur in]		
	that very line between the comet and the head of Hercules [ipſa linea inter Cometam & cap. Herculis]	Sext. 8 20 good [bona]	
6 45	From the head of Ophiuchus [A capite Ophiuchi]	Rad. 5 59	6° 9′
6 51	The same distance [Eadem diſtantia]	Rad. 6 1	
7 0	From the bright star of Lyra [A lucida Lyræ]	Rad. 23 16	23 27
7 5	From the left shoulder of Hercules [A ſiniſtro humero Herculis]	Rad. 9 48 good [bona]	
7 19	The same distance [Eadem diſtantia]	Rad. 9 51	
7 25	From the head of Ophiuchus [A capite Ophiuchi]	Rad. 5 59	
7 40	The same distance [Eadem diſtantia]	Rad. 6 0	
7 45	From the tail of the Eagle [A cauda Aquilæ]	Rad. 19 30	

DIE 13 NOUEMBRIS. [13 November]

6 28	From the head of Ophiuchus [A capite Ophiuchi]	5 31	5 34
6 38	From the head of Hercules [A capite Herculis]	7 26 good [bona]	
6 46	From the left shoulder of Hercules [A ſiniſtro humero Herculis]	9 25 good [bona]	
7 38	From the bright star of Lyra [A lucida Lyræ]	23 44	
7 43	From the bright star of the Eagle [A lucida Aquilæ]	33 24	
	The last two observations were made [Duæ poſtremæ obſeruationes ſunt factæ] with the comet very dim, in the vicinity of the [Cometa exiſtente admodum obſcuro in ho-] horizon. [rizontis vicinitate.]		

DIE 15 NOUEMBRIS. [15 November]

[21] stands on a brace to the left of the two values Rad. 6° 0′ and Sext. 6 8, between their lines

5 36	From the head of Ophiuchus [A capite Ophiuchi]	4 48
5 45	From the head of Hercules [A capite Herculis]	5 54
6 0	The same distance [Eadem diſtantia]	5 55
6 9	From the head of Ophiuchus [A capite Ophiuchi]	4 48⅛

DIE 17 NOUEMBRIS. [17 November]

7 35	From the head of Hercules [A capite Herculis]	Rad. 4 20
7 46	From the head of Ophiuchus [A capite Ophiuchi]	Rad. 4 28

DIE 13 DECEMBRIS. [13 December]

6 25	From the brighter one of the left shoulder of Ophiuchus [A lucidiore ſiniſtri humeri Ophiuchi]	Rad. 7 29	8 20
6 42	From the other, brighter one in the right shoulder [Ab altera lucidiore in dextro humero]		
	of the same [eiusdem]	Rad. 14 45	15 27
6 49	From the head of Ophiuchus [A capite Ophiuchi]	Rad. 16 0 good [bona]	

Correction of the distances taken with different instruments, so that they correspond to the comet's path: from the great brass globe.

There follows the delineation of the comet of the year 1580, in length as well as in breadth, derived from the distances and declinations, and the correspondence of the times to each observation, so that 17′ for 20 years are to be subtracted for the longitude, because they were taken on the brass globe, where the places of the stars are set out for the year 1600.

___[22]

	H. M.	Longitude [Longitudo]	Latitude B. [Latitudo B.]	Right ascension [Aſcenſ. R.]	Declination [Declinatio]
Die 10 Octobris [10 October]	7 45	♓ 13°41½′	4°22′	343°19½′	2°23½′ A
	9 40	♓ 13 26½	4 38	342 57½	2 15 A
	9 54				
11	8 5	♓ 9 43	7 56	338 17	0 34 A
	8 16				
	8 32½	♓ 9 37½	8 0	338 10	0 32½A

[22] in this table a brace to the right of each group of two, three or four times joins them to the single set of values that follows, which stands at the point of the brace; the values are given here on the first row of each group, and each further time has a row of its own.

	H. M.	Longitude [Longitudo]	Latitude B. [Latitudo B.]	Right ascension [Afcenf. R.]	Declination [Declinatio]
	8 39				
	9 15	♓ 9 33½	8 4	338 5	0 30 A
12	7 40	♓ 5 33	11 31	333 8	1 16 B
	7 48				
	8 9	♓ 5 27½	11 37½	333 0	1 18½B
	8 15				
13	7 26	♓ 1 26	14 57	328 9	3 1 B
	7 54				
	8 26	♓ 1 15	15 8	327 56	3 6 B
	8 45				
	9 30				
	12 0	♓ 0 43½	15 31	327 20	3 17½B
17	9 11	♒ 15 0	26 54	309 42	9 25 B
	9 21				
	9 32	♒ 14 55	26 27	309 37½	9 26 B
	9 47				
21	7 50	♒ 0 39	34 26	295 37	13 38 B
	8 15				
	8 25				
	9 0	♒ 0 33	34 30	295 32½	13 40 B
	9 10				
26	6 0	♍ 16 42½	39 15	283 28	16 30 B
	6 20				
	6 30				
	6 55	♍ 16 37½	39 17	283 21½	16 31½B
	7 5				
	7 15				
	7 45	♍ 16 28	39 19½	283 13	16 33 B
	8 0				
28	5 3	♍ 12 10	40 20	279 44	17 14 B
	5 20				
	5 35	♍ 11 53	40 21	279 35	17 15 B
	5 38				
29	6 38	♍ 9 53	40 45	277 51½	17 29 B
	6 47				
	6 56	♍ 9 52	40 45	277 47	17 30 B
	7 7				
	7 19				
	7 38				

___[23]

[23]as on the preceding page, a brace to the right of each group of times joins them to the single set of values that follows, standing at the point of the brace; the values are given on the first row of each group.

	H. M.	Longitude [Longi-tudo]	Latitude B. [Latitudo B.]	Right ascension [Aſcenſ. R.]	Declination B. [Declinatio B.]
Die 30 Octobris [30 October]	6 15	♍ 7°54′	41° 4′	276°17′	17°43′
	6 23				
	6 29				
31	5 30	♍ 6 8	41 20	274 50½	17 55
	5 35				
	5 45				
	6 10	♍ 6 2	41 20½	274 45½	17 55½
	6 20				
	8 40				
	8 45				
Die 12 Nouembr. [12 November]	6 45	♐ 19 52½	41 37	262 2	18 23
	7 0				
	7 5 and following [& ſequentes]				
13	6 28	♐ 18 45	41 16	261 7½	18 8
	6 38				
	6 46				
15	5 36	♐ 16 49½	40 44	259 32	17 42
	5 45				
17	7 35	♐ 14 52½	40 9	257 55½	17 15
	7 46				
Die 13 Decembr. [13 December]	6 25	♐ 4 7½	24 17	247 30½	2 50
	6 42				
	6 49				

PRO CORRECTIONE TEMPORUM IN COMETA ANNI 1580. [For the correction of the times in the comet of the year 1580.]

	Clock, H. M. [Horolog. H. M.]		Degrees of the equator on the meridian [Gradus Æquatoris in Meridiano]
Die 11 Octobris [11 October]	8 50¾	The right shoulder of Aquarius was in the azimuth [Fuit dext. hum. Aquarij in Azimutho]	
		west of the meridian line, 0°50′, altitude 31°48′ [verſ. occ. a linea mer. 0°50′, Alt. 31°48′]	
	3 21⅙		50° 20′
12	6 27		250 0
	2 3⅓	Aldebaran on the meridian [Aldeboram in Merid.]	

	Clock, H. M. [Horolog. H. M.]		Degrees of the equator on the meridian [Gradus Æquatoris in Meridiano]
	3 20⅓	The left foot of Orion on the meridian [Sinister pes Orionis in Merid.]	
13	6 5$\frac{1}{12}$		296 32
	6 5⅙		297 30
	2 43¾	After midnight [Post mediam noctem]	65 45
17	6 17⅔		304 18
	10 5$\frac{1}{12}$	The extreme star of the wing of Pegasus on the meridian [Extrema alæ Pegasi in Merid.]	
20	11 0		25 30
21	6 17¼		352 36
	7 7		5 24
26	5 39$\frac{5}{12}$		307 27
28	5 54$\frac{1}{12}$		333 34
29	5 32		304 3
	5 51		308 43
	10 28$\frac{1}{12}$		13 39

	Horolog. H. M.		Gradus Æquatoris in Meridiano
Die 30 Octobris [30 October]	5 13½		302 24
	5 26⅙		305 40
31	4 53⅓		305 40
	7 19		336 25
	9 12⅓		0 53
Die 15 Nouembr. [15 November]	4 55	The mouth of Pegasus crossed the merid. [Transiuit os Pegasi Merid.]	
17	7 30	The head of Andromeda crossed the merid. [Caput Andromedæ transiuit Merid.]	
25	6 0	Scheat of Pegasus crossed the merid. [Scheat Pegasi transiuit Merid.]	
Die 13 Decembr. [13 December]	6 42	morning [mane]	192 25

These times were taken from the larger clock. [Hæc tempora ad horologium maius accepta sunt.]

CERTAIN METHODS FOR OBTAINING THE PARALLAX [PRO PARALAXI HABENDA CERTÆ RATIONES.]

Our first method. [Prima ratio nostra.]

On the 17th, from the meridian altitude 43 20, the declination is given that it had at the time when it was in the meridian; and when it was at 90

from the meridian it had an altitude of 11 41. From this you will be able to investigate whether, by the motion of the primum mobile, it described a circle parallel to the equator, account being taken of its proper motion, and from this to investigate the parallax. Let DA be the altitude of the comet at the time of its transit through the meridian; therefore the distance from the pole AC will not be unknown, from the given altitude of the pole; for when these are found together and subtracted from the semicircle, AC is given. First seek the declination from the meridian altitude, by subtracting the altitude of the pole, as on the 17th:

Diagram. A circle, set at the right of the text, with a horizontal diameter running from D at the left end to the right side of the circle. Points A, B and C stand on the upper arc, left to right. A nearly vertical line runs from B down to E on the diameter. A straight line runs from A down to F on the diameter, crossing the line from B; G is marked at that crossing. A line runs from C down to G. A further line runs from an unlabelled point on the upper-left arc, below A, down to E. The lower half of the circle is empty.

- A (upper arc, left)
- B (top of the circle)
- C (upper arc, right)
- G (at the crossing of the line from B and the line from A, right of the line from B)
- D (left end of the diameter)
- E (on the diameter, below the foot of the line from B)
- F (on the diameter, right of E)

	43 20
	34 7
declination [declinatio]	9 13

Next, when it was in the 90th degree, seek the same declination in this way. Triangle BGC has two sides, BG the complement of the altitude and BC the complement of the altitude of the pole, with the right angle at B known; therefore by the first [per I^{am}] the side GC, the complement of the declination, is given, as for example:

11 41		
34 7		
45 48	71691	
22 26	38161	
	33530	declination when it was [declinatio cum eßet]
	16765	in the 90th degree [in 90 gradu]
	Corresponding [Resp.] 9 39	

9 13	
26	difference [differentia]

by which the declination increased in the space of 5¾ hours. [qua aucta eſt declinatio ſpacio horarum 5¾.]

But on the 21st the declination around the 90th degree was found in the same way to be p. 13 M. 39; so it changed by 4° in the four following days, and thus 1° falls to each single day, and so to 5¾ hours about 15′. The declination therefore ought to have been, at the time of transit through 90 gr., by the reckoning of its angle, p. 9 M. 28, whereas

it was found to be p. 9 M. 39, which is greater by about 11′. But if you seek from the four preceding days a way of reconciling this discrepancy, you will find from the meridian altitudes that from the 13th to the 17th the declination changed by p. 6 M. 13; thus p. 1 M. 33 falls to one day. And so $5¾^{H}$ takes M. 23, which, on comparison with 15, exceeds by a motion of 8′. If I take the mean of these, so that it is the variation intervening between the two declinations, then without sensible error the declination on the 17th will change from the comet's proper motion by 19′ in the interval [minutis 19 ſpacio].

Diagram. A circle, set at the left of the text, with a horizontal diameter running from E at the left end to the right side of the circle. Points A, B and C stand on the upper arc, left to right. A nearly vertical line runs from B down to the diameter. A straight line runs from A down to a point on the diameter right of the foot of the line from B, crossing the line from B; D is marked just right of that crossing. A line runs from C down to the crossing at D. The lower half of the circle is empty.

- A (upper arc, left)
- B (top of the circle)
- C (upper arc, right)
- D (at the crossing of the line from A and the line from B)
- E (left end of the diameter)

Another and neater method. [Alia & concinnior ratio.] From the observed meridian alt. EA the declination is given; and since it is established how much the declination changes in the four preceding and the four following days, both from observation near the merid. and near the horizon, it will become known how much it varies in one day on the 17th, and consequently by how much in the space H. 5 M. 45 ſed merid. [?] by both observations [quanto ſpacio H. 5 M. 45 ſed merid. vtraque obſeruatione]. This portion, added to the declination found in the meridian, shows what the declination is at the time when it is in the 90th degree, and therefore the side DC is then known. And since in triangle BCD the side BC, the complement of the elevation of the pole, is known and the angle at B is right, the side BD, the complement of the altitude of the comet, will be given. If this agrees with the observation, there is no parallax; but if it disagrees, it shows what the parallax is. For the parallax must

be far smaller in the meridian than around the 90th degree near the horizon. For suppose that the comet had been in the very concavity of the lunar sphere: then (as can be demonstrated from the distance of 52¼ semidiameters) it will have a parallax of 48′ around the meridian, but in the 90th degree a parallax of 64′, the difference of which is 16′ [ſcrupulorum 16]; and by that much the comet ought to have been at a lower altitude around the 90th degree than was observed, if its place had been as near the earth as the concavity of the lunar sphere is. Yet quite the opposite of this happened.

Note. You may suppose that around the 90th degree it had an altitude of p. 11 M. 38, which we observed as three minutes greater, so that they agree better; or put in the merid. 43 18, here 11 40.

One must put the meridian alt. 2′ [ſcrupulis] greater, so that it is 43 22, and the other one minute [ſcrupulo] smaller, so that it is 11.40; otherwise it will not agree.

N.B. Here too, in demonstrating the parallax, you may use the third problem of Regiomontanus, provided that the times and the rest are first correctly verified.

Another way. [Alius modus.]

Note. You can also investigate the parallax in another way. For let the longitude and latitude of the comet be sought from given distances around the 90th degree; then also, after some lapse of time, take its longitude and latitude from the same fixed stars. If these correspond proportionally to the daily motion, according to the interval of time, the comet lacks parallax of longitude; if not, the parallax will be given from this, and you can compare it with the nearest distance of the moon from the earth.

As on the 10th, around Hour 7.18, distances from Markab and the wing of Pegasus: it was then near the 90th degree, having passed it by scarcely half an hour. For with the Asc. [Aſc.] at 21 ♊ the comet was in 13 ♓; and if there was then some parallax in longitude, you can take account of it with respect to the lunar distance. The parallax of longitude could then have been at most 5′. Then at H. 11¼, after 4 hours, it ought to have been 37′ if it had been in the lunar orb, so that the difference is 32′, which are quite observable.

See Reg.[1] *de Cometis*, probl. 5 and the sixth.

[1] That is, Regiomontanus. [[1] i. e. Regiomontani.]

OBSERUATIONES COMETÆ QUI APPARUIT MENSE MAIO ANNI 1582. [Observations of the comet that appeared in the month of May of the year 1582]

Note. These observations were made quite exactly for this comet, so much so that no perceptible error of even a single minute underlies them, especially in those taken by distances with the help of the sextant; the times assigned are also in quite good order, so that you can safely base yourself on them. [*Nota. Hæ obſeruationes ſunt exquiſite ſatis in hoc Cometa factæ, adeo vt nullius ſcrupuli ſubſit ſenſibilis error, præſertim in ijs, quæ per diſtantias beneficio Sextantis acceptæ ſunt; tempora etiam aßignata ſatis bene ſe habent, vt tuto te ijs fundare queas.*]

DIE 12 MAIJ. [12 May]

At H. 10½ in the evening a certain hairy star appeared to us not very far from the horizon, of a magnitude midway between the second and the third. It seemed, however, to be of the third because of the nearness of the ☉; likewise of a livid colour, and with its tail inclining toward the smaller shoulder of Erichthonius. We observed, moreover, [Obſeruauimus autem]

$10^{H}47^{M}$	its distance from the brighter shoulder of Erichthonius with the Radius (for all the observations that evening were made with this instrument) [Diſtantiam eius a lucidiore humero Erichtonij per Radium (nam per hoc inſtrumentum omnes obſeruationes eo veſpere factæ ſunt).]	10°50′
10 51	Distance from the lower head of ♊ [Diſtantia ab inferiori capite ♊]	36 32
10 55	The same distance [Eadem diſtantia]	36 30
11 0	The comet was distant from the brighter shoulder of Erichthonius [Cometa diſtabat a lucidiore humero Erichtonij]	10 47
11 3	The same distance [Eadem diſtantia]	10 37
11 8	The same distance [Eadem diſtantia] The last two are less certain, because the comet was too near the horizon and its light was intercepted by exhalations. [Poſteriores duæ minus ſunt certæ, quod Cometa nimis vicinus eßet horizonti, atque lumen eius ab exhalationibus interciperetur.]	10 36
11 18	M. Johannes observed the same distance [Obſeruauit M. Johannes eandem diſtantiam]	10 45
11 24	From the middle of the tail to the shoulder of Erichthonius [A media caudæ ad humerum Erichtonij]	4 58

The middle of the end of the tail, moreover, was distant from the other, smaller one in the shoulder of Erichthonius, where it ended, by about 3° — as great as the distance of the two outermost in the wheel of Ursa Minor appears to be. The tail of the comet was seen to end perpendicularly below the smaller shoulder of Erichthonius, distant from it a little less than the distance of the head of Cassiopeia and Schedar is, about two degrees. The brighter shoulder, moreover, was distant from the part of the tail nearest to it, by the Radius, 5°. From this the curvature of the tail can be recognized.

DIE 13 MAIJ. [13 May]

H. 10 32. We saw the comet at about the 23° azimuth from the northern meridian toward the west, having an altitude of about 7°. But this observation was made only roughly [ἐν πλάτει (en platei, "in breadth" — roughly)], since, because of the comet's sudden concealment in clouds, a certain observation could not be had. [Sed facta eſt hæc obſeruatio ἐν πλάτει cum propter ſubitam Cometæ in nubibus occultationem certa obſeruatio haberi non potuerit.]

DIE 17 MAIJ. [17 May]

$10^{H}40^{M}$	The head of the comet from the lower head of ♊ [Caput Cometæ ab inferiori capite ♊]	30°40′	with the trig. sext. [per Sext. trig.]

10 51 27	The head of the comet was in the azimuth from the north toward the west [Caput Cometæ fuit in Azimutho a ſept. verſus occaſum]	21 30	Alt. 12°27′
11 0 10	The bright star of the Crown crossed the merid., noted by the wall. [Lucida Coronæ tranſiuit Merid. muro notatum.]		
11 6 20	The comet was distant from the lower head of ♊ [Cometa diſtabat ab inferiori capite ♊]	30 42	
11 8 0	The bright star of the neck of Serpens crossed the meridian, noted by the armillae. [Lucida colli Serpentis tranſiuit Meridianum per Armillas notatum.]		
11 11 10	The comet from the lower head of ♊ [Cometa ab inferiori capite ♊]	30 37	
11 14 10	The same distance [Eadem diſtantia]	30 37½	

11H17M50	The same [Eadem]	30°42′	
11 22 30	The same [Eadem]	30 37½	
	(The parallax of the comet can nowhere be conveniently found from all these observations, except from the observation made on 17 May at H. 10 51½ and the following morning at H. 0 47⅚ in the meridian, although this is not evident enough, since not even in the orb of the ☾ would the difference be 2′.) [*(Parallaxis Cometæ ex his omnibus obſeruationibus nuſquam commode inueniri poteſt, præterquam ex animaduerſione facta die 17 Maij H. 10 51½ & mane ſequenti H. 0 47⅚ in Meridiano, licet id non ſit ſatis euidens, cum ne quidem in orbe ☾ ſit differentia 2 minutorum.)*]		
11 24	The northernmost of the three in the forehead of ♏ crossed the meridian, noted by the armillae. [Maxime borealis trium in fronte ♏ tranſiuit Meridianum, per Armillas notatum.]		
11 27 30	The comet was distant from the brighter shoulder of Erichthonius [Cometa diſtabat ab humero Erichtonij lucidiore]	3 52½	
11 32 30	The comet was distant from the less bright shoulder of Erichthonius [Cometa diſtabat ab humero Erichtonij minus lucido]	4 39	
11 46 50	The heart of ♏ crossed the meridian, noted by the armillae. [Cor ♏ tranſiuit Meridianum, per Armillas notatum.]		
11 46 52	The comet was in the azimuth from the north toward the west [Cometa fuit in Azimuth a ſept. verſus accaſum][24]	11 23	Alt. 10°11′

This evening the comet was quite small, like a star of the 4th magnitude, nearly; scarcely showing much. [*Cometa hoc veſperi erat admodum paruus vt ſtella 4tæ magnitudinis fere vix multum apparens.*]

DIE 18 MAIJ, MANE. [18 May, morning]

0H12M10	The comet was distant from the right shoulder of Erichthonius [Cometa diſtabat a dextro humero Erichtonij]	4°42′

[24] so printed; the same phrase on the facing page reads occaſum

0 20 10	The comet was distant from the brighter shoulder of Erichthonius [Cometa diſtabat a lucidiore humero Erichtonij]	3 50

About this time the tail of the comet inclined toward the more southern of the two in the front wheels of Ursa Major; *it was, moreover, very thin and short, scarcely three degrees in length.* [Circa hoc tempus cauda Cometæ vergebat verſus auſtraliorem duarum in anterioribus Vrſæ maioris rotis; *erat autem admodum tenuis et breuis vix trium graduum quoad longitudinem.*]

0 29 0	The brighter shoulder of Erichthonius crossed the northern meridian. Its altitude [Lucidior humerus Erichtonij tranſiuit Meridianum ſeptentr. Altitudo eius]	11 26
0 47 50	The comet crossed the northern merid., having an alt. of [Cometa tranſiuit Merid. ſept. habens Alt.]	9 36
1 11 50	The right shoulder of Erichthonius crossed the northern meridian. The altitude could not be taken because of the morning twilight. [Dexter humerus Erichtonij tranſiuit Meridianum ſept. Altitudo capi non potuit propter matutinum diluculum.]	

At the next following noon the larger clock, which we used in these observations, was running 29″ 1 fast, but it had not been corrected for four days. The Sun's transit, moreover, was observed at the wall. [Proxime ſequenti meridie horologium maius, quo in his obſeruationibus vſi ſumus, 29″ 1 celerius mouebatur, ſed non erat correctum per quatriduum. Solis autem tranſitus ad murum obſeruabatur.]

From these it is gathered by the globe that this comet, in an interval of 5 days, completed 12° in its circle, so that each day it accomplishes not much more than two degrees. [*Ex his per globum colligitur Cometam hunc interuallo dierum 5 in ſuo circulo abſoluiße partes 12, adeo vt ſingulis diebus non multum vltra binos gradus conficiat.*]

EODEM DIE 18 MAIJ. [The same day, 18 May]

In the evening the comet appeared to us very small; we nevertheless observed it roughly [ἐν πλάτει]. [Viſus eſt nobis Cometa veſperi admodum exiguus, quem tamen ἐν πλάτει obſeruauimus.]

$10^{H}33\frac{1}{3}{}^{M}$	Distance of the comet from the lower head of ♊ with the trig. sext. [Diſtantia Cometæ ab inferiori capite ♊ per Sext. trig.]	29°47′
10 36	The same distance [Eadem diſtantia]	29 56
	Distance of the comet from the right shoulder of Erichthonius with the Radius [Diſtantia Cometæ ab humero dextro Erichtonij per Radium]	3 22
and a little later, 10 54 [& paulo poſt, 10 54]	the same distance with the Radius [eadem diſtantia per Radium]	3 24½

From this time on this comet no longer appeared to us, both because, much diminished, it vanished about this time, and because the night light at this elevation of the pole was increasing steadily more and more, on account of the Sun, which at midnight itself was not far removed below the horizon and for that reason made the night less dark, since it is consistent that we are situated near the outermost circumference of the Earth's shadow. [*Ex hoc tempore iſte Cometa nobis non amplius apparuit, tum quia admodum imminutus circa hoc tempus diſparuit, tum quia lumen nocturnum in hac poli ſublimitate ſucceßiue magis magiſque augebatur, ob Solem in ipſa media nocte non multum infra horizontem remotum & ob id noctem minus tenebroſam efficientem, cum circa extremam circumferentiam vmbræ Terrenæ nos verſari conueniat.*]

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

OBSERUATIONES COMETÆ ANNO 1585[1]. [Observations of the comet in the year 1585[1]]

On 18 October, when I had returned home from Haffnia [Copenhagen] between 9 and 10 in the evening, wishing as is my custom to observe the stars, since after long spells of overcast, rain and storms it was quite clear and calm, I noticed unexpectedly that in the more southern cord, which runs to the southern Fish, a certain rather dim and as it were nebulous star could be seen. In size it nevertheless equalled the stars of the first rank, but it did not shine with so splendid a light; rather, compared with the other stars, its light was thin, dark and nebulous, so that it did not differ much from the nebulous circle of ♋. Yet it was a little brighter at its centre than around its edges, which gradually tapered off into a rather thin and somewhat dark light. Its place was then next to the third from the knot of the cord, southern, a little above it toward the northern hand of Andromeda, and at no greater distance than that of the two small ones in the breast of Pegasus, and yet hardly so great. Nor was it then far removed from the star of Saturn, which was nearly acronychal, but it was more easterly by about the interval of the first star of ♈ and the bright one in the other horn; and it was at about the same altitude and declination as Saturn, except that it seemed a little more northerly than he. I watched it until about hour 11, before it reached the meridian; the rest will be shown more exactly by the observations made with the instruments. One of my students, Helias by name, reported that he had noticed it a few nights before, but had not been certain what it was; and this from the 13th of this month, at about the same place. [Die 18 Octobris cum Haffnia domum eßem reuerſus inter 9 & 10 veſpertinam, volens meo more ſidera obſeruare, cum eßet poſt diuturnas obſcuritates, pluuias & tempeſtates admodum ſerenum & tranquillum: animaduerti ex improuiſo in lino auſtraliori, quod tendit ad Piſcem meridionalem, conſpici ſtellam quandam ſubobſcuram & quaſi nebuloſam, quæ tamen magnitudine ſtellas primi honoris æquaret, ſed non ita ſplendido lumine lucebat, verum potius raro, tenebroſo & nebuloſo reſpectu aliarum ſtellarum: ita vt non multum differret a nebuloſo gyro ♋; erat tamen in ſui meditullio paulo clarior, quamcirca extremitates, quæ ſucceßiue in rariuſculum & ſubtenebroſum lumen deſinebant. Locus eius tunc erat iuxta tertiam a nodo lini, Auſtralis paulo ſuper eam verſus manum

boream Andromedæ, idque non in maiori diſtantia, quam eſt duarum paruarum in pectore Pegaſi & vix tamen tanta. Nec multum tunc remouebatur a ſtella Saturni, ferme Achronicij, ſed erat orientalior ad interuallum quaſi primæ ♈ ſtellæ, & lucidæ in altero cornu, eratque quaſi in eadem altitudine & declinatione cum Saturno, niſi quod ipſo videbatur paulo borealior. Attendebam eam vſque in horam quaſi 11, antequam Meridianum pertingeret, cætera obſeruationes per inſtrumenta factæ enucleatius indicabunt. Retulit quidam e ſtudioſis meis, Helias nomine, ſe animaduertiße illam ante paucas præteritas noctes, ſed certo non ſibi conſtitiße, quidnam eßet, idque a die 13 huius circa eundem quaſi locum.]

It is therefore likely that it began around the immediately preceding new moon. [*Veriſimile itaque fuerit, eam incepiße circa Nouilunium proxime antecedens.*]

If you looked at the outermost ends of its rays, it equalled the star of Jupiter almost exactly, except that it was visible with a light not so bright but rather dim, *as I said*, and therefore presented itself to the eyes as smaller than it really was. It appeared, however, perfectly round on all sides, so that no tail or beard could be discerned by sight extending toward any one side more than toward another. [Si vltimas radiorum extremitates ſpectares, accuratius ferme Iouis ſtellam adæquabat, niſi quod non tam claro ſed potius ſubobſcuro, *vt dixi*, lumine eßet conſpicuus, ideoque minor oculis ingerebatur, quam reuera extitit, apparuit vero exquiſite vndiquaque rotunda, vt nullam caudam vel barbam in vllam partem magis quam in alteram protendere viſu diſcerni potuerit.]

The observations of this comet are as follows. [Obſeruationes huius Cometæ habent ſe in hunc modum, vt ſequitur.]

DIE 18 OCTOBRIS. [18 October]

With the larger subterranean armillae. [Per Armillas ſubterraneas maiores.]

H. M.	Aldebaran from the merid. toward the east [Aldeboram a merid. verſus ortum]	Comet from the merid. also toward the east [Cometa a merid. etiam verſus ortum]	Diff. of R. Asc. [Diff. Aſc. R.]
10 15²	56° 11′	12° 24½′	43° 46½′
10 19	55 9¾	11 24	43 45¾
10 24	54 4½	10 17½	43 47
10 28	53 0½	9 15	43 45½
10 34	51 30	7 45	43 45
10 37	50 48	7 4	43 44
10 40	49 57	6 14	43 43
10 43	49 7	5 24⅔	43 42⅓
10 47	48 4¾	4 22½	43 42¼
10 51½	47 12½	3 30	43 42½

With the time therefore corrected from the distance of the eye of ♉ from the meridian in the circle of the equator, it was hour 9 55. Declination of the comet first observed: 4 23½ north. [Tempore itaque correcto ex diſtantia oculi ♉ a

Meridiano in circulo Æquatoris fuit Hora 9 55. Declinatio Cometæ primum obſeruata 4 23½ Bor.]

[1] From codices N and C. Cf. vol. X, p. XXIII. [[1] E codicibus N et C. Cf. T. X p. XXIII.]

[2] In codex N, added by Tycho: *Hour 10 15, diff. asc. 43 46, declin. 4 25.* [[2] In codice N adſcriptum a Tychone: *Hora 10 15 Diff. Aſc. 43 46, declin. 4 25.*]

	With the subt. armill., with the other pinnule [Per Armill. ſubt. Altero pinnacidio]	4 24⅓	
10H 0M	Distance from the third star in the knot of the cord of ♓, the southern one, then in an almost straight line drawn from the pole star with the comet itself [Diſtantia a tertia ſtella in nodo lini ♓ auſtralis tunc in recta quaſi linea ducta a ſtella polari cum ipſo Cometa]	1 13	
		1 13	with the Radius [per Ra-dium]
		1 14	

The eye of ♉, moreover, crossed the meridian on this day at P. M. H. 13 59⅚, since the R. asc. of ☉ at noon was 212° 33′ and the asc. of Aldebaran 63° 5′. [Tranſiuit autem oculus ♉ hoc die per Meridianum P. M. H. 13 59⅚, ſiquidem Aſc. R. ☉ fuit in meridie 212° 33′ & Aſc. Aldeboram 63° 5′.]

Then, when the comet was almost on the meridian, its declin. was N. 4° 27′. [Deinde cum fere in Meridiano eßet Cometa, fuit declin. eius B. 4° 27′.]

About 11 5	Altitude of the comet on the merid. with the Tych. quadr. [Circa 11 5 Altitudo Cometæ in Merid. per Quadr. Tych.]	38°34⅙′	
	with the portable quadrant [per Quadrantem portatilem]	38 34	
11H 8M	Distance between the comet and Aldebaran [Diſtantia inter Cometam & Aldeboram]	44 22⅓	*Declination 4 28* [*Declinatio 4 28*]
11 11		44 22½	
11 15		44 22	
11 26	Distance between the comet and the end of the wing of Pegasus [Diſtantia inter Cometam & extremam alæ Pegaſi]	22 41¾	
11 28		22 41⅚	with the Sext. △ [per Sext. △]
11 30		22 41⅚	
11 33		22 41¾	
11 35		22 41⅚	

11 37		22 41⅚	
11 48	Between the comet and ♄ [Inter Cometam & ♄]	5 25 5 26	ἐν πλάτει
11 55	Repeated declination of the comet with the subt. armillae [Repetita declinatio Cometæ per Armillas ſubt.]	4 32	
	With the other pinnule [Altero pinnacidio]	4 31	

DIE 19 OCTOBRIS A. M. [19 October, a.m.]

$0^{H}40^{M}$	Repeated distance of the comet and Aldebaran [Repetita diſtantia Cometæ & Aldeboram]	44 13⅓	
0 43		44 13	with the trig. sext. [per Sext. trig.]
0 45		44 13	
0 48		44 12¾	

H. M.	The eye of ♉ from the merid. toward the east [Oculus ♉ a Merid. verſus ortum]	Comet from the merid. toward the west [Cometa a Merid. verſus occaſum]	Difference of R. asc. of each [Differentia Aſc. R. vtriuſque]	
0 59	15°41½′	27°53′	43°34½′	with the armillae [per Armillas]
1 3½	14 4	29 30	43 34	

1^{H} $4½^{M}$	Declination of the comet N. [Declinatio Cometæ B.]	4°35′	with the armillae [per Armillas]
1 15	Repeated distance of the comet and Aldebaran [Repetita diſtantia Cometæ & Aldeboram]	44 10	
1 26	The same [Eadem]	44 9½	with the sextant [per Sextantem]
1 30½	The same [Eadem]	44 9½	

	Take the declination as 4 36½ or 37. [*Pone declinationem 4 36½ vel 37.*]		
1 49	Between the comet and the head of Andromeda [Inter Cometam & caput Andromedæ]	31 3	
1 56		31 2	with the sextant [per Sextantem]
2 6½		31 3	
2 26	Repeated distance between the comet and the end of the wing of Pegasus, with the trigonic sextant, but it was not clear enough. [Repetita Diſtantia inter Cometam & extremam alæ Pegaſi per Sextantem trigonicum, ſed non erat ſatis ſerenum.]	22 51	
2 44	The altitude of the comet was seen among clouds with the smallest quadrant; afterwards it was so covered by clouds that it could neither be observed nor seen any longer this night. [Viſa eſt inter nubes Altitudo Cometæ per Quadrantem minimum; poſtea nubibus ita obducebatur, vt diutius hac nocte neque obſeruari neque conſpici potuerit.]	24⅓	

N.B. All the times of the preceding observations are corrected from the distance of the eye of ♉ from the meridian. [N.B. Tempora omnia præcedentium obſeruationum ſunt ex diſtantia oculi ♉ a Meridiano correcta.]

The place of this comet, moreover, was computed for hour 10¼ P. M. and for hour 1 0 after midnight, as follows. [Supputatus autem eſt locus Cometæ huius ad horam 10¼ P. M. & ad horam 1 0 P. M. N., vt ſequitur.]

$10^{H}15^{M}$	Difference of the R. ascension of the comet and Aldebaran [Differentia Aſcenſionis R. Cometæ & Aldeboram]	43°46½′
	R. ascension of the eye of ♉ [Aſcenſio R. oculi ♉]	63 5½
	R. ascension of the comet [Aſcenſio R. Cometæ]	19 19
	Northern declination of the comet [Declinatio Cometæ Borealis]	4 25
	Hence comes the longitude of the comet [Hinc prouenit longitudo Cometæ]	19 29 39 ♈
	Latitude south [Latitudo merid.]	3 29 41 M.
13 0	R. ascension of the comet [Aſcenſio R. Cometæ]	19 31
	Northern declination of the comet [Declinatio Cometæ Borealis]	4 34½
	Corresponding longitude of the comet [Reſp. longitudo Cometæ]	19 44 11 ♈
	Latitude south [Latitudo merid.]	3 25 52 M.

DIE 20 OCTOBRIS. [20 October]

$9^{H}42^{M}$	Distance between the comet and Aldebaran with the trigonic sextant among clouds, *and therefore not certain enough*. [Diſtantia inter Cometam & Aldeboram per Sextantem trigonicum inter nubes *ideoque non ſatis certa*.]	40°35′	
11 34	Between the comet and Aldebaran [Inter Cometam & Aldeboram]	40 24⅓	with the sext., not certain enough [per Sext., non ſatis certa]
11 40	The same with the trig. sextant [Eadem per Sextantem Trig.] (H. 11½: take the distance as 40° 26′, the declination as 7° 40′) [(H. 11½ pone diſtantiam 40° 26′, declinationem 7° 40′)]	40 23	
11 55	Northern declination of the comet [Declinatio Cometæ borealis]	7 41½	with the subterranean armillae [per Armillas ſubterraneas]
	With the other pinnule [Altero pinnacidio]	7 42	

DIE 21 OCTOBRIS A. M. [21 October, a.m.]

In the following observations it was clearer. [In ſequentibus obſeruationibus erat ſerenius.]

H. M.	☌ from the merid. toward the east [☌ a Merid. verſus ortum]	Comet from the merid. toward the west [Cometa a Merid. verſus occaſum]	Difference of R. asc. of each [Differentia Aſc. R. vtriuſque]	
0 0	34° 4½′	11°35′	45°39½′	with the subt. armillae [per Armillas ſubt.]
0 4	33 7	12 33	45 40	
0 6	32 34	13 6½	45 40½	

$0^{H}12^{M}$	Distance between the comet and Aldebaran [Diſtantia inter Cometam & Aldeboram]	40°24′	uncertain [incerta]
0 14	The same with the trig. sext. [Eadem per Sext. trig.]	40 22	with the trig. sext. [per Sext. trig.]
0 17	The same [Eadem]	40 23	
0 21	The same [Eadem]	40 22¾	
0 26	Northern declination of the comet with the armillae [Declinatio Cometæ Borealis per Armillas]	7 43	
	With the other pinnule [Altero pinnacidio]	7 43½	

H. M.	Aldebaran from the merid. toward the east [Aldeboram a Merid. verſus ortum]	Comet from the merid. toward the west [Cometa a Merid. verſus occaſum]	Difference of R. asc. of each [Differentia Aſc. R. vtriuſque]	
0 30⅙	20°30′	19°56′	40°26′	
0 33¾	19 37	20 46	40 23	
0 37	18 43½	21 40	40 23½	
0 51	15 11	25 11	40 22	with the armillae [per Armillas]
0 54	14 34	25 46	40 20	

1H 6M	Repeated declination of the comet [Repetita declinatio Cometæ]	7 47½
	With the other pinnule [Altero pinnacidio]	7 48
1 15	Repeated distance of the comet and Aldebaran with the trigonic sext.; it was not clear enough. [Repetita diſtantia Cometæ & Aldeboram per Sext. trigonicum; non erat ſatis ſerenum.]	40 16

N.B. The times of the preceding observations are corrected. [N.B. Tempora præcedentium obſeruationum ſunt correcta.]

This night the comet was seen by us, as long as the sky was not misty, with the same dim and nebulous light, like the dark circle of ♋, and of the same size as it appeared at night on the 18th day, except that it seemed dimly to send out *the trace of a certain delicate little ray* toward the west, *so that on that side it did not shine perfectly round*. [Hac nocte viſus eſt nobis Cometa, quamdiu cœlum caliginoſum non fuit, eodem lumine obſcuro & nebuluſo inſtar tenebroſi gyri ♋ & eadem quantitate, qua diei 18 nocturno tempore apparuit, niſi quod obſcure *veſtigium cuiuſdam tenelli radioli* verſus occaſum effundere videbatur, *vt in ea parte non exquiſite rotundus luceret*.]

INQUISITIO LOCI COMETÆ AD PRÆCEDENTIUM DIEJ 20 OBSERUATIONUM TEMPORA ALIQUOT. [Investigation of the comet's place for some of the times of the preceding observations of day 20]

H.9 42′ P.M.	Distance between the comet and Aldebaran [Diſtantia inter Cometam & Aldeboram]	40°35′
	Northern declination of the comet [Declinatio Cometæ Borealis]	7 40
	Hence comes the difference of R. asc. of each [Hinc prouenit Differentia Aſc.R.vtriuſque]	40 42
	and the R. ascension of the comet [& Aſcenſio R. Cometæ]	22 23
	Hence the longitude of the comet becomes [Hinc fit longitudo Cometæ]	23 32⅔ ♈

Latitude [Latitudo]	1 37½ Mer.

But this place is not to be trusted exactly enough, because it was not clear enough at the time. [Sed huic loco non ſatis exacte fidendum, quia non erat tunc ſatis ſerenum.]

H.12°15′ Difference of R. asc. of the comet and Aldebaran, coming from the distance [Differentia Aſc. R. Cometæ & Aldeboram ex diſtantia proueniens]	40°30′

Diagram. A line figure set at the left of the computation block. From point B at the top, a curved line runs down to the lower left, passing through A and ending at D; a nearly straight line runs down to the lower right, passing through C and ending at E. A slightly curved line joins A and C, and a straight line joins D and E. Beneath the figure is the number [I].

- B (top apex): B
- A (left side, on the curved line): A
- C (right side, on the straight line): C
- D (lower left corner): D
- E (lower right corner): E
- caption (below): [I]

		R. asc. of the eye of ♉ [Aſc. R. oculi ♉]	63 5½	
		R. asc. of the comet [Aſc. R. Cometæ]	22 35½	
A Aldebaran [A Aldeboram]		Declination [Declinatio]	7 43	
C Comet [C Cometa]		Corresp. long. [Reſp. long.]	23°45′ 8″ ♈	
Side BA [Latus BA]	74°24′	latitude [latitudo]	1 38 55 Merid.	
Side BC [Latus BC]	82 17	H.12 54′ P.M.		trust these more safely [His tutius fide]
Side AC [Latus AC]	40 24	R. asc. of the comet [Aſc. R. Cometæ]	22 45 30	
Angle ABC [Ang. ABC]	40 30	Northern declination [Declinatio Borealis]	7 47	
		Longitude of the comet [Longitudo Cometæ]	23 55 52 ♈	
		Latitude south [Latitudo Merid.]	1 38 51	

This night, following the day of 20 October, because of clouds recurring again and again, we could not view the comet clearly before hour 12 of the night.

After midnight, however, when the clouds had been dispersed for some while, it was moderately clear, and at that time we made the observations recorded above a second time; afterwards, around hour 1½, the sky was again covered with clouds, and it was not possible to look at the comet any longer. Further, this too is to be noted: that on the 19th, after noon, the sky began to be covered with clouds, and was misty on the following night and also nearly on the day of the 20th, dark up to the aforementioned hour of the beginning 21st day; but the state of the air was nearly calm, with the north wind blowing lightly, not without frost. [Hac nocte, diem 20 Octobris ſequenti, propter nubes ſubinde recurrentes, Cometam liquido intueri ante horam noctis 12 non potuimus. Poſt mediam vero noctem, diſſipatis aliquandiu nubibus, fuit mediocriter ſerenum, atque tum temporis præſcriptas obſeruationes ſecundo fecimus; poſtea circa horam 1½ eſt cœlum rurſus nubibus obductum, & Cometam diutius aſpicere non licuit. Porro & illud notandum, quod die 19 poſt meridiem inceperit cœlum nubibus obduci, & caliginoſum ſequenti nocte ac die fere quoque 20, obſcurum vſque ad horam prænominatam inchoantis diej 21 fuerit, ſed fere tranquilla aëris, non citra gelu leuiter ſpirante Aquilone, conſtitutio.]

H.0 30 after midnight, 20 October, there was: [H.0 30 P.M.N. 20 Octobris fuit]

Difference of R. asc. of the comet and Aldebaran [Differentia Aſcenſ. R. Cometæ & Aldeboram]	40° 26′
Right ascension of the comet [Aſcenſio Recta Cometæ]	22 39½
Northern declination of the comet [Declinatio Cometæ Borealis]	7 45
Hence the longitude of the comet becomes [Hinc fit longitudo Cometæ]	23 49½ ♈
Latitude south [Latitudo Mer.]	1 38½

DIE 22 OCTOBRIS. [22 October]

$8^{H}24^{M}$	Declination of the new comet [Declinatio noui Cometæ]	10° 20′ B.
8 28	The same [Eadem]	10 21¾ B.

The comet appeared less, both because of the faintness of its own light and because of the brightness of the ☾. [Minus apparebat Cometa tum ob propriam luminis tenuitatem tum ob ☾ ſplendorem.]

8 41	Eye of ♉ from the merid. toward the east [Oculus ♉ a Merid. verſus ortum]	75 26	
	Comet from the merid., also toward the east [Cometa a Merid. etiam verſus ortum]	37 36	Altitude 35½ [Altitudo 35½]
	Difference of R. asc. of each [Differentia Aſcenſ. R. vtriusque]	37 50	

	Therefore the R. asc. of the comet was [Ergo erat Aſcenſ. R. Cometæ]	25 15
	Declination [Declinatio]	10 22 B.

In the following observations the comet was seen better. [In ſequentibus obſeruationibus melius conſpiciebatur Cometa.]

H. M.	Eye of ♉ from the merid. toward the east [Oculus ♉ a Merid. verſus ortum]	Comet from the merid., also to the east [Cometa a Merid. etiam ad ortum]	Equatorial dist. of each [Diſt. æquatoria vtriusque]
10 0	56° 6′	18° 25⅔′	37° 40⅓′
10 2	55 5¼	17 25¼	37 40
10 6	54 17	16 36¼	37 40¾

H. 10 10⅙ Decl. of the comet 10° 27½′ B. Alt. 43⅙°. [H. 10 10⅙ Decl. Cometæ 10° 27½′ B. Alt. 43⅙°.]

			Equatorial dist. [Diſt. æquatoria]
10 21	50 36¼	12 57¼	37 39
10 23	49 58	12 20	37 38
10 26	49 21	11 42½	37 38⅔

$10^{H}32^{M}$	Declination of the comet B. [Declinatio Cometæ B.]	10° 29½	Alt. of the com. 44G. [Alt.Com.44G.]
10 49	Declination of Capella B. [Declinatio Capellæ B.]	45 28	
	The equat. distance between the comet and Capella was then observed. [Diſtantia æquat. inter Cometam & Capellam tunc obſeruata eſt.]	46 8½	
10 55	Equatorial distance of the comet and Capella [Æquatoria diſtantia Cometæ & Capellæ]	46 11½	
	But you will not be able to trust sufficiently these two observations made of the comet to Capella. [Sed his duabus obſeruationibus Cometæ ad Capellam factis non poteris ſatis fidere.]		
11 7	Declination of the comet [Declinatio Cometæ]	10 30 B.	Alt. 44⅓°
11 12 40″	The comet passed through the meridian. [Tranſiuit Cometa per Meridianum.]		
11 14 30	Declination of the comet, repeated [Declinatio Cometæ repetita]	10 30¼ B.	

H. M.	Eye of ♉ from the mer. toward the east [Oculus ♉ a Mer. verſus ortum]	Comet from the merid. toward the west [Cometa a Merid. verſus occaſum]	Equatorial distance [Diſtantia æquatoria]	Altitude of the comet [Altitudo Cometæ]
11 26	34°14¾′	3°20′	37°34¾′	44°40′
11 29	33 30	4 5	37 35	

DIE 23 OCTOBRIS A. M. [23 October, a.m.]

H. M.	Eye of ♉ from the mer. toward the east [Oculus ♉ a Mer. verſus ortum]	Comet from the merid. to the west [Cometa a Merid. ad occaſum]	Equatorial distance [Diſtantia æquatoria]	Altitude of the comet [Altitudo Cometæ]
0 12	22°18½′	15°11′	37°29½′	43° 0′
0 17	21 30	16 2	37 32	42⅚
0 20	20 48⅙	16 43⅓	37 31½	42½
0 24	19 40	17 51½	37 31½	42 0

H. 0 M. 30. Declination of the comet 10° 33′ Bor. [H. 0 M. 30. Declinatio Cometæ 10° 33′ Bor.]

		Distance by the sext. [Diſtantia per Sext.]	Alt. of the com. [Altit. Com.]
0^H41^M	Between the comet and Capella [Inter Cometam & Capellam]	52°31′	41⅚°
0 44		52 29½	41½
0 51		52 29½	40¾
1 15	Between the comet and Aldebaran [Inter Cometam & Aldeboram]	36 53¼	38¾
1 18		36 52⅚	38⅓
1 21		36 52⅚	38⅙
1 24		36 52¾	38 0
2 24	Between the comet and Capella [Inter Cometam & Capellam]	52 24	31⅙
2 34		52 24	29½

2 41⅓	Declination of the comet [Declinatio Cometæ]	10°39¼′ Bor.	with the subt. arm. [per Arm. ſubt.]
	Altitude of the comet [Altitudo Cometæ]	29 0	with the smallest quadr. [per Quadr. minimum]
3 8½	Between Capella and the comet with the trigonic sext., not exactly enough. [Inter Capellam & Cometam per Sext. trigonicum, non ſatis exquiſite.]	52 20	

H. M.	Eye of ♉ from the merid. to the west [Oculus ♉ a Merid. ad occaſum]	Comet from the merid. toward the west [Cometa a Merid. verſus occaſum]	Equatorial distance [Diſtantia æquatoria]	Altitude of the comet [Altitudo Cometæ]
3 35	28° 4½′	65° 29′	37° 24½′	22° 10′
3 40½	29 18½	66 43¾	37 24¼ [1]	21 50
3 44	30 6½	67 31½	37 25	21 25
3 47	30 56⅙	68 21	37 24⅚ [2]	21 0

(At hour 3¾ take the equatorial distance 37° 24½′ at alt. 21½°, Declin. 10 42½). [*(Pone hora 3¾ diſtantiam æquatoriam 37° 24½′ in alt. 21½° Declin. 10 42½).*]

(At hour 3¾ the equat. dist. of the comet from Aldebaran 37° 24½, the declination of the comet B. 10° 42½, R. asc. 25 41. Hence comes the longitude of the comet 27° 41′ ♈, latitude north 0 1⅔). [(Ad horam 3¾ diſt. æquat. Cometæ ab Aldeboram 37° 24½, Declinatio Cometæ B. 10° 42½, Aſc. R. 25 41. Hinc prouenit Longitudo Cometæ 27° 41′ ♈, Latitudo Bor. 0 1⅔).]

				3 52	10 43
				11 7	10 30
$3^{H}52^{M}$	Declination of the comet B. [Declinatio Cometæ B.]	10° 43′	Alt.	4 45	13
4 5	Between the comet and Aldebaran [Inter Cometam & Aldeboram]	36 40½	Com. 18⅔		*Decl. 10 44*
4 9	The same [Eadem]	36 40	18 0		
	Take [*Accipe*]	*36 40¼*			

This night, especially after the setting of the ☾, the comet appeared with the same light and size with which it was seen above on the night following day 20, and it was sending out a certain ray toward the west, toward the star of ♄, *about one span in length; but it was necessary to look very sharply if that little tail could be seen, otherwise it did not appear*. As for the times of the observations, you may note that around the 9th hour on this day, 23 a.m., the error of the clock from the ☉ was insensible, *slower by two minutes at least, so that you will be able to use these assigned times safely enough, without any sensible error*. [Hac nocte præſertim poſt occaſum ☾ apparuit Cometa eodem lumine & quantitate, qua ſuperius nocte 20 diem ſecuta conſpiciebatur, atque radium quendam verſus occaſum ad $♄^{ni}$ ſtellam effundebat *quaſi vnius ſpitami longitudine, ſed oportebat admodum acute intueri, ſi caudula illa videri poßet, alias non apparuit*. Quod ad tempora obſeruationum attinet, notare poteris, quod circa 9 horam hoc die 23 A. M. ex ☉ horologij error inſenſibilis, *duobus ſaltem minutis tardior* fuerit, *quare ſatis tuto vti poteris hiſce temporibus aßignatis absque omni ſenſibili errore*.]

From these preceding observations the place of the comet was investigated for some times, in this manner, as follows. [Ex præcedentibus hiſce obſeruationibus ad tempora aliquot inueſtigatus eſt locus Cometæ in hunc modum vt ſequitur.]

DIE 22 OCTOBRIS. [22 October]

H. 10 0	Difference of R. asc. of the comet and Aldebaran [Differentia Aſc. R. Cometæ & Aldeboram]	37° 40½′
	R. ascension of the eye of ♉ [Aſcenſio R. Oculi ♉]	63 5½
	R. ascension of the comet [Aſcenſio R. Cometæ]	25 25
	Declination of the comet [Declinatio Cometæ]	10 27 B.
	Hence the longitude of the comet becomes [Hinc fit Longitudo Cometæ]	27 20 47″ ♈
	Lat. south [Latit. Mer.]	0 7 7
H. 11 26	Difference of R. asc. of the comet and Aldebaran [Differentia Aſc. R. Cometæ & Aldeboram]	37 34½
	R. asc. of Aldebaran [Aſcenſ. R. Aldeboram]	63 5½
	R. asc. of the comet [Aſcenſ. R. Cometæ]	25 31
	Declination of the same [Declinatio aiusdem] [recte: eiusdem]	10 31 Bor.
	Hence the longit. of the comet [Hinc longit. Cometæ]	27 27 46 ♈
	latitude of the same [latitudo eiusdem]	0 5 30 Mer.
H. 15 35	P. M. Difference of R. asc. of the comet and Aldebaran [P. M. Differentia Aſcenſ. R. Cometæ & Aldeboram]	37 24½
	R. ascension of Aldebaran [Aſcenſio R. Aldeboram]	63 5½
	R. ascension of the comet [Aſcenſio R. Cometæ]	25 41
	Its declination [Declinatio eius]	10 41 Bor.

[1] Thus in cod. C, but codex N has: H. 3 40, eye of ♉ from the merid. 29 18½, comet to the west 66 43⅔, equat. dist. 37 24⅙. [[1] Sic in cod. C, ſed codex N habet: H. 3 40, Oculus ♉ a merid. 29 18½, Cometa ad occ. 66 43⅔, Diſt. æq. 37 24⅙.]

[2] Thus in codex C, but in cod. N one reads: eye of ♉ from the merid. 30 56½, com. from the merid. 68 21, equat. dist. 37 24¾. [[2] Sic in codice C ſed in cod. N legitur: Oculus ♉ a merid. 30 56½, Com. a merid. 68 21, Diſt. æq. 37 24¾.]

Longitude of the comet [Longitudo Cometæ]	27° 40′ 33″ ♈
Latitude of the same [Latitudo eiusdem]	0 0 16 Bor.

(Better, otherwise: H. 15¾ equat. dist. [*(Melius aliter H. 15¾ diſt. æquat.*]	*37 24½*
Declination [*Declinatio*]	*10 42½*
Longitude [*Longitudo*]	*27 41 ♈*
Latitude [*Latitudo*]	*1 40 B)*

Diagram. A small line figure at the left of the page, beside the computation that follows. A line rises from D through A and runs on as a curve up to B; from B a line descends through C to E; a line joins A and C; a straight line joins D and E. The figure number "[I]" stands beneath it. To its right the page prints a key to two of the letters and the values of the computation (tabulated below).

- B (top): B
- A (left, at the junction with the line to C): A — keyed "A Oculus ☉" (A, the eye of ☉)
- C (right, at the junction with the line from A): C — keyed "C Cometa" (C, the comet)
- D (lower left): D
- E (lower right): E

A Eye of ☉ [A Oculus ☉]		H. 16 5	Difference of R. asc. of the comet [Differentia Aſcenſ. R. Cometæ]	
C Comet [C Cometa]			and Aldebaran [& Aldeboram]	37° 22½′
BA	74 24		from its dist. from Aldeb. [ex diſt. eius ab Aldeb.]	36 40¼ with the Sext. [per Sext.]
BC	79 16½		Hence the R. ascension of the comet becomes [Hinc fit AſcenſioR.Cometæ]	25 43
AC	36 40½		Its declination [Declinatio illius]	10 43 30 north [ſept.]
ABC	37 22½		Longitude of the comet [Longitudo Cometæ]	27 43 20 ♈
Aldeb. asc. [Aldeb. Aſc.]	63 5		Latitude of the same [Latitudo eiusdem]	0 1 54 Bor.
Com. asc. [Com. Aſc.]	25 42½			

It will be necessary to compare proportionally the motions from day 18 to 20 and from 20 to 22, so that it can be established how far the daily motion varies successively; and this in order to have a more exact account of the parallax of the comet, if perhaps it introduces any from the place of the 90th degree or the meridian, until, lower, it approaches the horizon. [*Oportebit conferre proportionaliter motus a die 18 in 20 & a 20 in 22, vt conſtare poßit, inquantum varietur ſucceßiue motus diurnus, idque pro habenda ratione exquiſitiore parallaxeos Cometæ, ſi quam forte ingerat a loco 90 gradus vel meridiano, donec decliuior horizonti appropinquet.*]

Note. On day 26, from the preceding night, but especially on day 26 itself, there was a most violent and very great storm of winds, the south wind blowing most intensely, and then the south-west wind [libanoto], with such force that very much damage was done on land and sea, and people could hardly walk about in the open; there were also rains mixed in. The ☾ then came to the place of the comet with almost the same northern latitude; but there was this besides, that around this day ♀ was rising with Arcturus, and ☿ was in ☌ with the Sun, or near it. [*Nota. Die 26 a nocte præcedente, præſertim vero ipſo die 26 fuit validiſſima & maxima tempeſtas ventorum,*

flante intenſißime noto, & deinde libanoto cum tanto impetu, vt terra marique plurima damna fierent, & homines vix ſub dio incedere poßent; aderant etiam intermixtæ pluuiæ. Applicuit tunc ☾ ad locum Cometæ cum eadem ferme latitudine ſeptentrionali, ſed acceßit & hoc, quod circa hunc diem ♀ oriretur cum Arcturo & ☿ erat in ☌ cum Sole vel prope.]

Note. It is gathered from the preceding observation that the little comet had crossed the ecliptic, in apparent motion, on 22 October, $14^h\ 40^m$ having elapsed from noon, P. M., and that its longitude was then 27° 38′ ♈. [*Nota. Colligitur ex antecedente obſeruatione, quod Cometula tranſiuerat Eclipticam, motu apparenti, die 22 Octobris horis a meridie elapſis 14 minutis 40 P. M., & quod tunc fuerit ipſius longitudo 27° 38′ ♈.*]

The new moon immediately preceding the comet was on 12 October, H. 10 50′ P. M., according to the rectified time. [*Nouilunium proxime antecedens Cometam erat Octobris die 12 H. 10 50′ P. M. iuxta tempus rectificatum.*]

Note. From the comparison of the motion in longitude observed on day 18 at H. 10¼ P. M., in long. 19 30 ♈ with south latitude 3° 30′, up to day 20 at H. 12¼, in 23 45 ♈ with south latitude 1 39, there results a proportional hourly motion [*Nota. Ex collatione motus longitudinis obſeruati die 18 H. 10¼ P. M. in long. 19 30 ♈, cum latitudine auſtrali 3° 30′ vſque in diem 20 H. 12¼ in 23 45 ♈, cum latitudine auſtrali 1 39, prouenit motus horarius proportionalis*]

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in longitude [*in longitudine*]	*5′ 6″*
in latitude [*in latitudine*]	*2 13*

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and again, from this last hour of day 20 up to hour 11 M. 26 of day 22, [*& rurſus ab hac vltima hora diei 20 vſque in horam 11 M. 26 diei 22,*]

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when the long. of the comet was [*quando fuit long. Cometæ*]	*27° 28′ ♈*
and the latitude still south [*& latitudo adhuc auſtrina*]	*0 5 M.*

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there results a corresponding hourly motion in longitude [*prouenit motus horarius reſpondens in longitudine*]	*4′ 43″*
in latitude [*in latitudine*]	*2 0.*

The motion of the comet therefore decreases, the daily as well as the hourly, both in longitude and in latitude; and taking account of these days, on day 22 the hourly motion will be [*Decreſcit itaque motus Cometæ tam diurnus quam horarius, & in longitudine & in latitudine, & habito reſpectu horum dierum, erit die 22 motus horarius*]

longit.	*4′ 30″*
latitud.	*1 55*

and hence, by taking it proportionally, an account can be had of the apparent motion, whether it is subject to parallax or not. [*atque hinc proportionaliter accipiendo poteſt haberi ratio motus apparentis, an parallaxi ſit obnoxius nec ne.*]

From this I found, by working it once, that from H. 10 M. 0 to H. 15 M. 45 the comet ought to have advanced by about 26′, whereas in the sky, by observation, it did not in the meantime advance in longitude beyond 20′ by [*Ego hinc inueni ſemel operando, quod ab H. 10 M. 0 in H. 15 M. 45 debuißet Cometa promotus fuißе 26 ſcrupulis proxime, cum tamen in cælo per obſeruationem longitudinem interea non promouerit vltra minuta 20 per*]

observation, so that it was retarded by about 6′ through parallax; and this as regards the motion in longitude with respect to the ecliptic. As regards the latitude, however, it ought in the meantime to have advanced 10⅓, yet that motion appears as only 8¾, so that here too the apparent latitude does not agree with the true by a little more than one and a half minutes, on account of some slight measure of parallax. [*obſeruationem, vt 6 quaſi ſcrupulis per parallaxin retardatus fuerit, idque quo ad motum longitudinis reſpectu Eclipticæ, quo ad latitudinem vero interea debuißet promotus eße 10⅓, qui tamen motus apparet ſaltem 8¾, vt & hic paulo vltra ſesquialterum ſcrupulum latitudo apparens non conſentiat veræ, ob parallaxeos aliquantulam rationem.*]

But if the comet had been in the nearest concavity of the lunar orb, it would have produced a variation in the apparent motion of longitude of 40 M. very nearly, i.e. greater by 34′, and in latitude of 14′, about 12 min. greater. [*Si vero fuißet Cometa in proxima concauitate orbis Lunaris, effecißet variationem in motu apparente longitudinis 40 M. quam proxime, i. e. 34 ſcrupulis maiorem & in latitudine 14 ſcrupulorum quaſi 12 ſcrup. maiorem.*]

For, supposing that the comet were at a distance from the earth of 52° 17′ semid. of the earth, in the nearest concavity of the orb of the ☾, then according to Copernicus there would have been at H. 10 0, at altitude 43′, a parallax in the circle of altit. of 48′; and since the comet was then about half an hour beyond the 90th degree, corresp. [Reſp.] from the Prutenic tables around the bottom of ♉: side of longitude about 12°, and side of latitude about 58′; and therefore the parallax in longitude was at most 10′, but in latitude it was 46½. [*Nam poſito, quod Cometa eßet in diſtantia a terra 52° 17′ ſemid. terræ in proxima concauitate orbis ☾, iuxta Copernicum fuißet H. 10 0 in altitudine 43′ parallaxis in circulo altit. 48′, cumque Cometa tunc fuerit quaſi dimidia hora vltra 90 gradum Reſp. e tabulis Prutenicis circa imum ♉ latus longitudinis quaſi 12 graduum & latus latitudinis 58′ quaſi, ideoque parallaxis in longitudine erat ad ſummum 10 minutorum in latitudine vero fuit 46½.*]

But afterwards, at H. 15 M. 45, at altitud. of the com. 21½, the parallax in the circle of altitude was about 61 minut. The comet, however, was distant from the 90th degree about H. 6¼. The side of longitude was 50½, of latitud. 32¼. [*At poſtea H. 15 M. 45 in Altitud. Com. 21½ fuit parallaxis in circulo Altitudinis quaſi 61 minut.*

Diſtabat vero Cometa a 90 gradu H. 6¼ quaſi. Latus longitudinis erat 50½, latitud. 32¼.]

And hence there results the parallax [*Atque hinc prouenit parallaxis*]	*longit.*	*51 M.*
	latit.	*32½ M.*

Comparison of the parallaxes that there would have been if the comet were in the nearest lunar concavity: [*Collatio parallaxium, quæ fuerint, ſi Cometa eßet in proxima concauitate Lunari:*]

H. 10	*parallax of longitude* [*parallaxis longitudinis*]	*10 M.*	*latitud.*	*46½*
H. 15¾	*longit.*	*50½*	*latitud.*	*32½*
	Differences of each, long. [*Differentiæ vtriusque long.*]	*40½ M.*	*lat.*	*M. 14*

From these it is most evidently concluded that the comet here is placed by no means below the ☾ or in the lunar orb, but far above it, yet below the solar sphere, and is by no means a participant in the elementary region; which will have to be investigated and demonstrated more thoroughly by triangles, without the numbers of the tables. [*Ex his euidentißime concluditur, quod Cometa hic nequaquam infra ☾ vel in orbe Lunari ſed longe ſupra hanc, infra tamen ſphæram Solarem conſtitui & nequaquam eße elementaris regionis participem, quod enucleatius per triangulos absque tabularum numeros perueſtigandum demonſtrandumque veniet.*]

DIE 4 NOUEMBRIS. [4 November]

Since, from the day on which we last observed this comet, no lasting clear weather presented itself up to 22 October, with clouds, darkness, rains and continual storms shutting off the view of the sky and the stars; and moreover there was the obstacle that the comet, during the momentary clear spells, if any had occurred, nevertheless could not be seen, because the Moon around these nights was shining with almost full light, and so outshone the comet, in itself very thin and endowed with very rare light, that it could be seen nowhere, even by one looking most diligently. But on this day, 4 November, when some clear weather was first restored, though with clouds repeatedly coming back from a sharply blowing west wind, I watched the sky more diligently immediately after evening twilight, to see whether it might be possible to notice the comet appearing anywhere; and, drawing a line roughly from the star of ♄ to the bright shoulder of Erichthonius (since, from the previously observed account of its motion, it was consistent that the comet should be moving in that tract), with the greatest difficulty some trace of it appeared. But as it was raised still higher from the horizontal vapours and made subject to purer air, I noticed some sort of trace of it, and this if a straight line were drawn from the middle of the Pleiades to the brighter of the two in the preceding horn of ♈, which is next to the first star of ♈ (which Copernicus used), and then from the bright foot of Andromeda to the little star [*Quoniam ab eo die, quo vltimo*

hunc Cometam obſeruauimus, nulla conſtans ſerenitas vsque in 22 Octobris ſeſe obtulit, nubibus, obſcuritatibus, imbribus & aßiduis tempeſtatibus cœli ſiderumque aſpectum intercludentibus; & præterea obſtaculo erat, quod Cometa per momentaneas ſerenitates, ſi quæ interciderant, nihilominus conſpici nequiuerit, quia Luna circa haſce noctes quaſi pleno lumine luceret, & Cometam per ſe admodum tenuem & rarißimo lumine præditum ita offuſcaret, vt nuſpiam, etiam diligentißime intuenti, conſpici potuerit. Verum hoc die 4 Nouembris, quo primum aliqualis ſerenitas reſtituta eſt, nubibus tamen ab occidentali vento acriter flante ſubinde recurrentibus, diligentius cœlum ſtatim poſt crepuſculum veſpertinum intuebar, an Cometam vspiam apparere animaduertere liceret, & ducendo lineam quaſi a ſtella ♄ni in lucidum humerum Erichtonij (ſiquidem in illo tractu Cometam verſari oportere, ex prius obſeruata motus ratione conſentaneum erat) difficillime aliquod eius veſtigium apparuit, verum cum adhuc altius a vaporibus horizontalibus eleuaretur & puriori aëri obnoxia redderetur, aliquale ipſius veſtigium animaduertebam, idque ſi a medio Pleiadum vsque in lucidiorem duarum in cornu præcedente ♈, quæ proxima eſt primæ ſtellæ ♈ (qua Copernicus vſus eſt) duceretur recta linea & deinde a lucido pede Andromedæ in ſtellulam infor-]

unformed, above the tail of ♈, another were drawn out, at the place where these two lines intersected each other, as near as could be, some residual trace of the comet was seen, like a nebulous and somewhat dim star, and much smaller than when it was last seen, 12 days before, so that it could then be observed only with difficulty; but afterwards, when it was raised higher, it presented itself to some extent to be observed with the instruments, in the manner that follows: [*-mem ſupra caudam ♈ alia protraheretur, in eo loco, vbi hæ duæ lineæ ſeſe interſecabant, quam proxime viſum eſt Cometæ aliquale veſtigium reſiduum, inſtar ſtellæ nebuloſæ & ſubobſcuræ ac multo minoris quam vltimo ante die 12 conſpectus eſt, ita vt difficulter tunc obſeruari potuerit, verum poſtea, cum altior eleuaretur, aliquatenus ſe inſtrumentis obſeruandum exhibuit in hunc, qui ſequitur, modum:*]

At hour 6¾ it was distant, by the radius, from the Pleiades P. 10⅔, and at hour 7 from the first star of ♈, which Copernicus used, 15⅚, by a moderately good observation. [*Hora 6¾ diſtabat per radium a Pleiadibus P. 10⅔ & hora 7 a prima ſtella ♈, qua Copernicus vſus eſt, 15⅚ mediocriter bona obſeruatione.*]

In appearance, moreover, it was almost as large as the first of ♈ is, but by no means as bright; rather, it appeared still livid and pale with a dim, nebulous and thin light, and it was not seen to stretch out any tail in any direction, or any rays, even to one looking as keenly as possible, but it appeared round on every side all about: [*Fuit autem fere quoad aſpectum tam magnus, atque eſt prima ♈, ſed nullatenus tam lucidus, verum adhuc obſcuro, nebuloſo & raro lumine liueſcens & palleſcens apparebat, nullamque in vllam partem viſus eſt protendere caudam vel vllos radios etiam quam acutißime intuenti, ſed circum vndique rotundus apparuit:*]

Hour 6 [*Hora 6*]	*Declination of the comet* [*Declinatio Cometæ*]	21°53′	7 12	*Declination of the comet, north* [*Declinatio Cometæ B.*]	21 51½
$6^{H}11^{M}$	*Diff. of asc. of the comet* [*Diff. Aſc. Cometæ*]			*Altitude then about* [*Altitudo tunc quaſi*]	34⅔
	from the bright star of ♈ [*a capite lucido* ♈]	12 45	7 20	*The comet, east* [*Cometa or.*]	58 52
	Altitude of the comet [*Altitudo Cometæ*]			*The head of* ♈ [*Caput* ♈]	46 10
	was about [*erat quaſi*]	21		*Equatorial distance* [*Diſtantia æquatorea*]	12 42
6 15	*The same difference* [*Eadem differentia*]	12 50	7 25	*Declination of the comet* [*Declinatio Cometæ*]	21 51
	Declination was then [*Declinatio tunc erat*]	21 51½[1]			
6 35	*Between the comet and* [*Inter Cometam &*]			*Altitude* [*Altitudo*]	36⅓
	the bright star of ♈ [*lucidum caput* ♈]	11 33 }	7 28½	*The comet* [*Cometa*]	56 51
	which, however, is uncertain [*quæ tamen eſt incerta*]	*with the* } [*per*]		*The head of* ♈ [*Caput* ♈]	44 7
	and taken only [*& ſemel tantum*]	*Sext.* } [*Sext.*]		*Equatorial distance* [*Diſtantia æquatoria*]	12 44
	once. [*accepta.*]				*uncertain* [*incerta*]
6 37	*Difference of right asc.* [*Differentia Aſc. rectæ*]		7 30	*The comet* [*Cometa*]	56 0
	of the comet and the bright star of ♈ [*Cometæ & cap. luc* ♈]	12 46½			43 15
	Declination of the comet [*Declinatio Cometæ*]				12 45
	then seen [*tunc viſa*]	21 50½			*uncertain* [*incerta*]
	Altitude of the comet was [*Altitudo Cometæ erat*]	29°	7 34	*The comet* [*Cometa*]	55 27½
6 43	*Between Capella and* [*Inter Capellam &*]				42 45
	the comet [*Cometam*]	35 47 }		*Equatorial distance* [*Diſt. æquat.*]	12 42½

		with the trig. sext. } [per Sext. trig.]			*good [bona]*
6 46	*The same repeated [Eadem repetita]*	35 46		*Altitude [Altitudo]*	37
6 49	*The same [Eadem]*	35 45	7 40	*The comet [Cometa]*	53 57
6 52	*The same [Eadem]*	35 44			
	You can use about [Potes vti circa]			*The head of ♈ [Caput ♈]*	41 14
	the middle of these [medium harum]	35 45½		*Equatorial distance [Diſt. æquat.]*	12 43
	Altitude of the comet [Altitudo Cometæ]				*mod-erately good [med. bona]*
	was about [erat quaſi]	30	7 45	*Declination of the comet [Declinatio Cometæ]*	21 50½
7 5	*The comet, east [Cometa orient.]*	62 40	7 53	*The same repeated [Eadem repetita]*	21 52
	The bright star of the head of ♈, east [Lucida cap. ♈ or.]	49 59½		*The altitude was then [Altitudo erat tunc]*	39½
	Equatorial distance [Diſt. æquat.]	12 40½	7 55	*The comet from the Goat [Cometa a Capra]*	35 43
	Alt. of the comet [Alt. Com.]	32½	7 59	*The same from the Goat [Idem a Capra]*	35 41
	And this one is perhaps more certain than the earlier ones, because it was taken with the armillae now fixed in their own way. [Atque hæc forte eſt certior prioribus eo, quod Armilis iam fixatis ſuo modo ſit habita.]			*the last was a little [vltima erat paulo]*	
				clearer. Altitude [ſerenior. Altitudo]	40⅔
			8 4	*The same distance [Eadem diſtantia]*	35 40½

[1] Added later: *Note. The first observations from hour 6 to hour 6⅝ are not exact enough because of the horizontal vapours. Hour 6¾, from the Goat 35 45. Good.* [[1] Poſtea adſcriptum: *Nota. Primæ obſeruationes ab hora 6 in horam 6⅝ non ſunt ſatis exactæ propter vapores horizontales. Hora 6¾ a Capra 35 45. Bene.*]

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8 10	*The same repeated* [*Eadem repetita*]	35 40⅓	H. M.	*Comet, east* [*Cometa or.*]	*Head of ♈, west* [*Caput ♈ occid.*]	*Equinoctial dist.* [*Diſt. æquinoctialis*]	*Alt. of the comet* [*Alt. Cometæ*]
	In these last three [*In his vltimis tribus*]						
	it was clear enough. [*fuit ſatis ſerenum.*]		10 30	11° 32½′	1° 10′	12 42½	53⅔°
	You can therefore rely [*Potes itaque hiſce fi-*]					*but this is not to be trusted enough* [*ſed huic non ſatis fidendum*]	
	on these, putting at [*dere ponendo ad ſum-*]						
	most H. 8 M. 0 [*mum H. 8 M. 0*]	35 40½	10 35	10 6¾	2 37½	12 44½	
8 15	*Declination of the comet* [*Declinatio Cometæ*]	21 54 }				*this is better than the preceding* [*hæc eſt melior anteced.*]	
	repeated [*repetita*]	21 53½ }					
		doubtful [*dubiæ*]	10 44	7 54	4 56	12 50	

8 22	*Quite clear, and the* [*Bene ſerenum & re-*]			
	declina-tion was repeated [*petita eſt Declina-tio*]	21 51½		*This last is not certain because of the rather sparse clouds coming between.* [*Hæc vltima non eſt certa propter rariuſculas nubes interuenientes.*]
8 25	*The same* [*Eadem*]	21 52½ }		
8 29	*The same* [*Eadem*]	21 52½ }	10 52	*The head of ♈ was distant from the comet with the sextant* [*Caput ♈ diſtabat a Cometa per Sextant.*] 11 55
	Trust these last. [*fide hiſce poſtremis.*]	*good* [*bonæ*]		
8 40	*The comet from the Goat* [*Cometa a Capra*]	35 39½	11 22	*Declination* [*Declinatio*] 21 57½
	Altitude [*Alti-tudo*]	45⅓		
8 43	*The same, quite clear* [*Eadem, bene ſerena*]	35 39½		
	Altitude [*Alti-tudo*]	46		*When the comet was near the south, its declination was taken, 21 56, but on both occasions through very thin and transparent small clouds.* [*Cum Cometa iuxta meridiem verſaretur, ipſius declinatio accepta eſt 21 56, ſed vtrobique per tenuiſsimas & transparentes nubeculas.*]
8 45	*The same* [*Eadem*]	35 39⅓		
8 54	*The comet from the bright star of ♈* [*Cometa a lucida ♈*]	11 50½ }		

8 56	*The same repeated* [*Eadem repetita*]	}	
	with the sext. [*per Sext.*]	11 50½ }	*Afterwards, this night, it was not possible to observe anything more in the comet because of intervening clouds.* [*Poſtea hac nocte in Cometa nihil amplius obſeruare licuit propter interuenientes nubes.*]
		good [*bonæ*]	
	Altit. was then about [*Altit. tunc erat quaſi*]	47⅔	

DIE 5 NOUEMBRIS. [5 November]

$7^{H}14^{M}$	*The northern declination of the comet was seen* [*Viſa eſt declinatio Cometæ Borealis*]	22°25′ *with the armillae, subt.* [*per Armillas ſubt.*]
7 21	*The same was seen* [*Eadem viſa eſt*]	22 23 *and that at an alt. of the comet of p. 36½* [*idque in Alt. Com. p. 36½*]
	But it was not clear enough on either occasion; so around this time you can use the declination which is P. 22 M. 24, roughly intermediate. [*Verum non fuit vtrobique ſatis ſerenum; potes itaque circa hoc tempus vti declinatione, quæ eſt P. 22 M. 24 quaſi intermedia.*]	

H. M.	*Comet, east* [*Cometa orient.*]	*Head of ♈, east* [*Cap. ♈ or.*]	*Equatorial distance* [*Diſtantia æquatoria*]	*Altitude of the comet* [*Altitudo Cometæ*]	*Comet from Capella with the sextant* [*Com. a Capella per Sextantem*]
7 28	56° 34′	43° 8½′	13° 25½′	37½°	34° 52′
7 31	55 49½	42 25	13 24½	38	
7 34	54 59	41 32	13 27	38	34 53 *better than the preceding* [*melior priore*]
7 36	54 25	41 0	13 25		
7 38	54 3½	40 35½	13 28 *does not agree well* [*non bene con-*]		34 53
7 41	53 3	39 36½	13 26½ [*-uenit*]		

$7^{H}45^{M}$	*The declination of the comet was taken again* [*Declinatio Cometæ denuo accepta eſt*]	22° 24′
7 47	*The same repeated* [*Eadem repetita*]	22 24½ *Altitude* [*Altitudo*] 39½°

Note. Helias carried out the preceding observations with the armillae together with Rodolphus, but the following ones the same Helias with Johannes the goldsmith, from which I judge the following ones to be more exact; for this one is stronger in sight. [*Nota. Antecedentes obſeruationes per Armillas Helias vna cum Rodolpho peregit, ſequentes vero idem Helias cum Johanne aurifabro, vnde ſequentes exactiores eßе autumo; valet enim hic plus viſu.*]

H. M.	*Comet, east* [*Cometa or.*]	*Head of ♈, east* [*Cap. ♈ or.*]	*Equatorial distance* [*Diſtantia æquatoria*]	*Altitude of the comet* [*Altitudo Cometæ*]	*Comet from the bright star of ♈ with the sext.* [*Cometa a luc. ♈ per Sext.*]
7 51					12° 30′ *good* [*bona*]
7 57					12 31½ *but then it was not* [*ſed tunc non*]
8. 6	47° 2½′	33° 37½′	13° 25′ *fair* [*mediocris*]	42°	*clear enough* [*erat ſatis ſerenum*]
8 10	46 18	32 41	13 27[1] *a little better* [*paulo melior*]		12 30 *as before* [*vt prius*]
8 13	45 33½	32 5½	13 28	42½	
8 17	44 50	31 21½	13 28½	43	12 31
8 20	43 37	30 10	13 27	44	

8 24	*Declination of the comet* [*Declinatio Cometæ*]	22 24.

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

Then after supper, since it was very clear and the little comet presented itself to the eyes much more conspicuously, we observed the following most diligently. The clock, moreover, had been rectified about the eighth hour to the head of ♈. [*Deinde poſt cœnam cum admodum eßet ſerenum & multo conſpectius Cometula ſeſe oculis ingereret, ſequentia diligentißime obſeruauimus. Erat autem horologium circa horam octauam rectificatum ad cap. ♈.*]

$10^{H}28^{M}$	Between the comet and the bright star of ♈ [Inter Cometam & caput ♈ lucidum]	12°37½′
10 30	Distance of the comet from the bright star of ♈ [Diſtantia Cometæ a luc. ♈]	12 37½
10 31½	The same distance [Eadem diſtantia]	12 37½

Altitude of the comet 56° [does not agree with the preceding nor with the following][1].
[Altitudo Cometæ 56° [non conſentit cum antecedentibus neque cum ſequentibus][1].]

These three observations with the trigonic sextant were good enough, the sky being very clear; you can safely trust them. Helias and the Goldsmith observed. *[But they do not agree with other observations before and after, so I suspect there was a doubt in the counting][1].* [Hæ tres obſeruationes per Sextantem trigonicum erant ſatis bonæ, cœlo admodum ſereno, quibus tuto potes fidere. Helias & Aurifaber obſeruabant. *[Sed non conſentiunt cum alijs obſeruationibus ante & poſt, vnde dubium in numeratione fuiße ſuſpicor][1].*]

$10^{H}39^{M}$	Between Capella and the comet [Inter Capellam & Cometam]	34°46½′	
10 44	The same with the sext. △ [Eadem per Sext. △]	34 46¼ }	Alt. of com. [Alt.Com.] 56¼°
10 47½	The same [Eadem]	34 46¼ }	— 56⅓
	and these three were very good. [& hæ tres fuere admodum bonæ.]		
10 52	Declination of the comet, north [Declinatio Cometæ B.]	22 27 }	— 56½
10 55	With the other pinnule [Altero pinnacidio]	22 26½ }	
10 59	Repeated declination of the comet [Reiterata declinatio Cometæ]	22 27½ }	— 56⅔
	With the other pinnule [Altero pinnacidio]	22 28 nearly [fere] }	
	Take, therefore, the declination of the comet here as 22°27½′, and you will err imperceptibly. [Pone itaque declinationem Cometæ hic 22°27½′ & inſenſibiliter aberrabis.]		
	The comet was now near the meridian. [Cometa nunc erat iuxta Meridianum.]		
11 9	The comet was distant from Capella [Cometa diſtabat a Capella]	34 45 with the sextant [per Sextantem]	
11 14	The comet was in the meridian. [Cometa fuit in Meridiano.]		

H. M.	Head of ♈, west [Cap. ♈ occ.]	Comet, west [Cometa occ.]	Equat. dist. [Diſt. æquat.]	Altitude of the comet [Altitudo Cometæ]	Declin. of the com. with one pin. [Declin. Com. vna pin.]	by the arm., other pin. [per Arm. alt. pin.]	Dist. of the com. from Capella with the sext. [Diſt. Com. a Capella p. Sext.]
11 15½	13°50¼′	0°19′	13°31¼′[2]				
11 19	14 48⅓	1 7½	13 31[3]				34°47′ doubtful [dubia]
11 24½				56⅓°	22°27½′	22°28′	
11 29							34 46½ about [quaſi]

	The comet from Aldebaran by degrees of the Equator. [Cometa ab Aldeboram per Gradus]		11 47	Aldeb., east [Aldeb. orient.]	15 8
	[Æquatoris.]			Comet, west [Cometa occid.]	8 20
$11^{H}30½^{M}$	Aldeb., east [Aldeb. orientalis]	19°19′		Equat. distance [Distantia æquat.]	23 28
	Comet, west [Cometa occid.]	4 12½		after the pinnules were narrowed, and therefore the following are more exact. [post coarctata pinnacidia, ideo-]	
	Equator. distance [Distantia æquator.]	23 31½		[que sequentia sunt exactiora.]	
11 33½	Aldeb., east [Aldeb. orient.]	18 33	11 52	Aldeb., east [Aldeb. orient.]	14 0
	Comet, west [Cometa occid.]	4 56		Comet, west [Cometa occid.]	9 30¼
	Equat. distance [Distantia æquat.]	23 29		Equat. distance [Distantia æquat.]	23 30¼
11 42½	Distance of the comet [Distantia Cometæ]		11 53	Aldebaran and the comet [Aldeboram & Cometa]	
	from the eye of ♉ [ab Oculo ♉]	23 15		were distant [distabant]	23 16
		with the sextant [per Sextantem]		with the trig. sext. [per Sext. trig.]	
11 43	Aldeb., east [Aldeb. orient.]	16 10⅔	11 55	Aldeb., east [Aldeb. orient.]	13 16¾
	Comet, west [Cometa occid.]	7 20½		Comet, west [Cometa occid.]	10 13¾
	Equat. distance [Distantia æquat.]	23 31		Equat. distance [Distantia æquat.]	23 30½

[1] Added later. [1 Postea adscriptum.] [2] Added by Tycho: *H. 11 M. 15 Dist. eq. 13 31¼, declin. 22 28.* [2 Adscriptum a Tychone: *H. 11 M. 15 Dist. æq. 13 31¼, declin. 22 28.*] [3] Thus in the codex [3 Sic in codice]

11 59	Aldeb., east [Aldeb. orient.]	12 18⅔	1 35	the declination of the comet was observed again [rursus obseruabatur Declin. Co-]		
	Comet, west [Cometa occid.]	11 12⅓		with one pinnule [metæ vno pinnacidio]	22 30 }	
	Equat. distance [Distantia æquat.]	23 31	1 39	with the other pinnule [altero pinnacidio]	22 29¼ }	
				Alt. of com. [Alt. Com.]	47^{P} about [q.]	

	You can trust these last three, since they were taken after the pinnules were narrowed, and are good enough. [His tribus vltimis potes fidere,]		1 45	from the eye of ☿ to the comet with the trig. sext. [ab Oculo ☿ ad Come-]	
	[quia poſt coarctata pinnacidia]			[tam per Sext. Trig.]	23 15 }
	[captæ, & ſunt ſatis bonæ.]		1 52	Again, the comet from the eye of ☿. Doubtful because of the ☾ [Rurſus ab oculo ☿ Co-]	}
12 3	Distance of the comet [Diſtantia Cometæ]			[meta. Dubia propter ☾]	23 11 }
	from Aldebaran [ab Aldeboram]	23 15½		Alt. of com. [Alt. Com.]	46° nearly [fere]
		with the trig. sext. [per Sext. trig.]	1 55	Repeated declination of the comet [Repetita Declin. Come-]	
12 5	Head of ♈, west [Cap. ♈ occident.]	26 25		with one pinnule [tæ vno pinnacidio]	22 29½
	Comet, west [Cometa occident.]	12 51½		the other [altero]	22 28½
	Equat. distance [Diſtantia æquat.]	13 33½		The altitude of the comet was then 45⅓ [Tunc fuit Altitudo Cometæ 45⅓]	
12 9	Distance again [Diſtantia rurſus]			Nevertheless you can use, without perceptible error, the declination 22°30′ [Potes tamen abſque ſenſibili er-]	
	from the eye of ☿ [ab oculo ☿]	23 14½		[rore vti Declinatione 22°30′]	
		with the sext. [per Sext.]	1 58	Again with the sextant [Rurſus per Sextantem]	
12 13	Declination of the comet [Declinatio Cometæ]			from the eye of ☿ [ab oculo ☿]	23 15
	with one pinnule [vno pinnacidio]	22 28½		But the comet scarcely appeared. [Sed vix apparuit Cometes.]	

	with the other pinnule [altero pinnacidio]	22 28	2 6	We observed the declination of the brighter star in the head of ♈ to verify the instrument [Obſeruauimus Declinationem]	
	Altitude of the comet 54½° [Altitudo Cometæ 54½°]			[lucidioris in Capite ♈ pro veri-]	
12 30	Distance of the comet [Diſtantia Cometæ]			[ficando inſtrumento]	22 28 north [B.] }
	from the head of ♈ [a capite ♈]	12 38 }		With the other pinnule [Altero pinnacidio]	22 28½ }
12 36	The same dist. repeated [Eadem diſt. reiterata]	12 38½ }		Alt.	36½
		with the sext. [per Sext.]	2 17	Head of ♈, west [Caput ♈ occid.]	59 24
	These last are good. [Hæ vltimæ ſunt bonæ.]			Comet, west [Cometa occid.]	45 47
				Equatorial distance [Diſtantia æquatoria]	13 37
	Distance with the trig. sext. [Diſtantia per Sext. trig.]			The altitude of the comet was then 42½ [Altitudo Cometæ tunc fuit 42½]	
12 54	Between the comet [Inter Cometam]		2 20	Head of ♈, west [Caput ♈ occid.]	60 20
	and Capella [& Capellam]	34 40		Comet, west, very faint because of the ☾ [Cometa occid. admo-]	
12 58	The same repeated [Eadem repetita]	34 41½		[dum tenuis propter ☾]	46 46
1 3	Repeated [Reiterata]	34 42		Equatorial distance [Diſtantia æquatoria]	13 34
1 6	Repeated [Repetita]	34 41	2 23	Bright head of ♈, west [Lucid. Caput ♈ occid.]	61 2½
	you can use 34°41½′ [potes vti 34°41½′]			Comet, west [Cometa occid.]	47 32½
	The Moon began to rise H. 1 M. 13 [Luna incepit oriri H. 1 M. 13]			Equatorial distance [Diſtantia æquatoria]	13 30

1 15	Between the comet [Inter Cometam]		2 26	Head of ♈, west [Caput ♈ occid.]	61 43½
	and the head of ♈ [& caput ♈]	12 39 }		Comet, west [Cometa occid.]	48 7
1 18	The same, between the bright star of ♈ [Eadem inter lucidam ♈]	}		Alt. of com. 41⅔° [Alt. Com. 41⅔°]	
	and the comet [& Cometam]	12 40 }			
1 20	The same repeated [Eadem repetita]	12 40½ }		Equat. distance [Diſtantia æquat.]	13 36½
1 27	The same repeated [Eadem reiterata]	12 39¾ }	2 29	Bright head of ♈, west [Caput ♈ lucid. occid.]	62 24
		with the sext. [per Sext.]		Comet [Cometa]	48 45
					13 39
	The comet appeared entirely like the nebulous star called the Praesepe of Cancer, as to form and colour, except that it seemed a little smaller than the nebulous ring of ♋ is; otherwise it differed imperceptibly as to appearance; it cast no perceptible rays or hair in any direction. [Apparuit Cometa ſimilis plane ne-]		2 32	Head of ♈, west [Caput ♈ occid.]	63 9¾
	[buloſæ ſtellæ cancri præſepe dictæ,]			Comet [Cometa]	49 32¾
	[quoad formam & colorem, niſi quod]			Alt. of com. 40⅓^{p} [Alt. Com. 40⅓^{p}]	
	[paulo minor viſus ſit, quam eſt gyrus]			Equat. dist. [Diſtant. æquat.]	13 37
	[nebuloſus ♋ alias inſenſibiliter, quoad]		2 35	Bright head of ♈, west [Cap. ♈ luc. occ.]	63 50
	[adſpectum differebat, nullos in vllam]			Comet, west [Cometa occid.]	50 19
	[partem ſenſibiles proiecit radios vel] [crines.]			Equat. dist. [Diſt. æquat.]	13 31

2 38	Bright head of ♈, west [Cap. ♈ lucid. occid.]	64 55 }
	Comet, west [Cometa occid.]	51 17½ }
	Equat. dist. [Diſtant. æquæat.]	13 37½ }
	Alt. of com. [Alt. Com.] 40^{p}	

The Moon's growing brightness produced this variation, as the Moon gradually raised itself. You can, however, without perceptible error, about the hour

5.30 M., use the equinoctial distance 13.36, where you will either attain the truth or come as near to it as possible. [Hanc varietatem peperit Lunæ ſplendor increbeſcens, Luna paulatim ſeſe eleuante. Potes autem absque ſenſibili errore circa horam 5.30 M. vti diſtantia æquinoctiali 13.36, vbi vel veritatem attinges vel quam proxime accedes.]

The comet from the eye of ♉ by the subt. armillae [Cometa ab oculo ♉ per Armillas ſubt.]

2 54	Comet, west [Cometa occid.]	54°31′ }
	Aldeb., west [Aldeb. occid.]	31 1½ }
	Equat. distance [Diſtantia æquat.]	23 29½ }
		Altit. of com. [Altit. Com.] 39[P]
2 56½	Comet, west [Cometa occid.]	55 40 }
	Aldeb., west [Aldeb. occid.]	32 12½ }
		Alt. of com. [Alt. Com.] 38
	Equat. distance [Diſtantia æquat.]	23 27½
3 0	Comet, west [Cometa occid.]	56 22½
	Aldeb., west [Aldeb. occid.]	32 58
	Equat. distance [Diſtantia æquat.]	23 24½
	use [vtere]	23 27

This variation too was produced by the brightness of the ☾, increased by its rising elevation. But about H.2 M.58 you can use the equatorial distance of the comet from Aldebaran, 23 Gr. 27 M., without any perceptible error. About Hour 3 M. 5 the declination of the comet was observed again, in the way that was possible because of the faintness and the Moon: [Hanc etiam varietatem peperit ☾ ſplendor, adauctus per ipſius creſcentem eleuationem. Sed potes circa H.2 M.58 vti diſtantia æquatoria Cometæ ab Aldeboram 23 Gr. 27 M. absque omni ſenſibili errore. Circa Horam 3 M. 5 rurſus modo poßibili ob tenuitatem & Lunam obſeruabatur Declinatio Cometæ]

	with one pinnule [vno pinnacidio]	22°32½′	
	with the other [altero]	22 34½	Altit. of the ☾ [Altit. ☾] 35.

The presence of the Moon produced this variation; you can, however, without perceptible error use the declination of the comet P. 22° M. 33′ about hour 3 in the morning. [Hanc varietatem peperit præſentia Lunæ, potes autem absque ſenſibili errore vti Declinatione Cometæ P. 22° M. 33′ circa horam 3 matutinam.]

And afterwards it no longer appeared in such a way, as much because of its own faintness as because of the elevation and brightness of the ☾, that its position could be traced with the instruments. That comet, moreover, was very faint, shining with a thin and dark light, nor did it anywhere throw out any

tail. [Atque poſtea non amplius ita apparuit tam ob propriam exilitatem quam ob ☾ eleuationem & fulgorem, vt inſtrumentis eius ſitus indagari potuerit. Erat autem Cometes ille admodum exilis raro & tenebroſo lumine lucens, nec ullam caudam vsquam proiecit.]

N.B. All the preceding times are in fairly good order. [N.B. Tempora omnia præcedentia ſatis bene ſe habent.]

DIE 6 NOUEMBRIS AD VESPERAS. [6 November, in the evening]

$5^{H}31½^{M}$ The bright star of the head of ♈ was distant from the meridian toward the east 72° 40′ by the subterranean armillae. From this the time comes out H.5 M.26. Therefore the clock was running 5½ M. faster than it should, and so it was corrected. Hence the following observations of the comet were made this night. [$5^{H}31½^{M}$ Diſtabat lucida Capitis ♈ a Meridiano verſus ortum 72° 40′ per armillas ſubterraneas. Hinc prouenit tempus H.5 M.26. Ergo horologium iuſto velocius 5½ M. mouebatur vnde correctum eſt. Hinc ſequentes Cometæ obſeruationes hac nocte factæ ſunt.]

5 57	Declination of the comet [Declinatio Cometæ]	22°53′ by the subterr. armill. [per armill. ſubterr.]
6 1	Between the comet [Inter Cometam] and the bright star of ♈ [& lucidam ♈]	13 8 }
6 9	The same distance [Diſtantia eadem] *take* 13 9. [*pone* 13 9.]	13 9 } with the sext. [per Sext.]
6 9½	Decl. of the comet repeated [Decl. Cometæ repet.]	22 53 Alt. 26¼
	having regard to the following, it should be 52′. [*habito reſpectu ſequentium debet eße 52′.*]	

The comet from the bright star of ♈ by the subterr. arm. [Cometa a lucida ♈ per arm. ſubterr.]

6 15½	Bright head of ♈, east [Lucid. Cap. ♈ orient.]	60 22¾ }	27½
	Comet, east [Cometa orient.]	74 30 }	
	Equat. distance [Diſtantia æquat.]	14 7¼	
6 19	Between the comet [Inter Cometam] and the head of ♈ [& caput ♈]	13°10′	with the trig. sext.; good [per Sext.] [trig. bona]
6 20	Comet, east [Cometa orient.]	73 22 }	Altit. 28^{p}
	Head of ♈, east [Cap. ♈ or.]	59 15½ }	good [bona]
	Equat. dist. [Diſt. æquat.]	14 6½ }	
6 23½	Comet, east [Cometa or.]	72 25⅓	
	Head of ♈, east [Cap. ♈ or.]	58 25½	

	Equat. dist. [Diſtant. æquat.]	13 59⅚	
	This one is uncertain because of a certain small star near the comet. [Hæc incerta eſt propter paruam quandam ſtellam Cometæ vicinam.]		
6 24	Between the comet [Inter Cometam]		
	and Capella [& Capellam]	34 6½ }	
6 27	The same with the trig. sext. [Eadem per Sext. trig.]	34 8 }	
		fair [mediocres]	
6 28	Comet, east [Comet. or.]	71 19 }	Altit. 29¼
	Head of ♈, east [Caput ♈ or.]	57 15⅔ }	
	Equat. dist. [Diſt. æquat.]	14 3⅓	uncertain [incerta]
6 29	Between the comet [Inter Cometam]		
	and Capella [& Capellam]	34 7¼	
6 32	The same with the trig. sext. [Eadem per Sext. trig.]	34 8	
		good [bona]	
6 32½	Comet, east [Cometa orientalis]	70 11	
	Head of ♈, east [Caput ♈ orientalis]	56 11	
	Equat. distance [Diſtantia æquat.]	14 0	
		uncer-tain [incerta]	

These three immediately preceding equatorial distances of the head of ♈ and the comet are not to be trusted, for we think there is some error in them because of that small star which seemed closely joined to the comet. The comet also appeared very faint *and was without any tail, and, round on every side, it presented to the eyes a certain nebulous body with a dimmish, thin and sparse light.* [Hiſce tribus diſtantijs æquatorijs capitis ♈ & Cometæ proxime præcedentibus non eſt fidendum, ijs enim ob paruam illam ſtellam, quæ Cometæ arcte iuncta videbatur, errorem quendam ineße putamus. Cometa etiam exilis admodum apparuit *& omni cauda deſtituebatur, circumundique rotundus & ſubobſcuro tenui & raro lumine nebuloſum quoddam corpus oculis ingerebat.*]

Note[1]. Compare the distance of the comet from the Goat with that which was about the meridian, and moreover after the meridian the one it had, and this with the motion toward Capella on the following and the preceding day. [*Nota[1]. Confer diſtantiam Cometæ a Capra cum ea quæ fuit circa Meridianum & inſuper poſt Meridianum eam quam habuit idque cum motu verſus Capellam die ſequente & antecedente.*]

H. M.		*Alt.*
6 30	*34° 8′*	*30*
11 25	*34 1*	*57*
1 30	*[2]33 54½*	*47*

The Moon was observed on the preceding day, and this diligently, both near the limits of the east and near degree 90, and also a little later both from the fixed stars and from the Sun; from which the parallax of the ☾, once traced, will show that the comet's is smaller, and therefore that this one stands above the Moon. Look for these observations of the Moon in the book of observations of the planets and fixed stars. [*Luna obſeruabatur die antecedente & hoc diligenter tam iuxta Orientis limites quam iuxta 90 Gradum, & etiam paulo poſt tam a fixis quam Sole, vnde paralaxis ☾ indagata oſtendet minorem eße Cometæ, ideoque ſupra Lunam hunc exiſtere. Obſeruationes haſce Lunæ quære in libro obſeruationum planetarum & fixarum.*]

$6^{H}34^{M}$	Between the comet [Inter Cometam] and Capella [& Capellam]	34° 7½′	with the sext. [per Sext.]
6 37	Declin. of the comet [Declin. Cometæ]	22 52	uncertain [incerta]
6 37½	Between the comet [Inter Cometam] and Capella [& Capellam]	34 7	with the sext. [per Sext.] good [bona]
6 40½	Repeated declination of the comet [Declinatio Co-] [metæ repetita]	22 53½′	middling [medio-] [cris]

H. M.	Between the comet and Capella [Inter Cometam & Capellam]			Altitude of the comet [Altit. Cometæ]	
6 47		Com. east [Com. orient.]	66°35′ }	31½	
		Head of ♈, east [Cap. ♈ or.]	52 28 }		
		Equat. dist. [Diſt. æquat.]	14 7		good [bona]
6 48½	34° 6¾				fair [mediocris]
6 50		Com. east [Com. or.]	65 45 }	32	
		Head of ♈, east [Cap. ♈ or.]	51 39½ }		
		Equat. dist. [Diſt. æquat.]	14 5½		doubtful [dubia]
6 52½	34 7½				with the sext. [per Sext.]
6 55		Com. east [Com. or.]	64 39 }	33	

H. M.	Between the comet and Capella [Inter Cometam & Capellam]				Altitude of the comet [Altit. Cometæ]	
			Head of ♈, east [Cap. ♈ or.]	50 31 }		
			Equat. dist. [Dist. æquat.]	14 8		
6 56	34 7¾					good [bona]
7 0½			Com. east [Com. or.]	63 14 }	34½	
			Head of ♈, east [Cap. ♈ or.]	49 7 }		
			Equat. dist. [Dist. æquat.]	14 7		
7 4½			Com. east [Com. or.]	62 15 30	34½	
			Head of ♈, east [Cap.♈or.]	48 8		
	Between com. and the head of ♈ [Inter Com. & caput ♈]	Declination of the comet [Declinat. Cometæ]				
				14 7 30		
7 8½		22 52½				good [bona]
7 11	13 11					with the sext. [per Sext.]
7 11⅓		22 52½			35½	
7 16	13 12					with the sext. [per Sext.]
7 21¾			Com. east [Com. or.]	57 50 }	36½	
			Head of ♈, east [Cap. ♈ or.]	43 41 }		
			Equat. dist. [Dist. æquat.]	14 9		
7 27	13 10 with the sext., fair [per Sext. mediocris]					
7 27⅓			Com. east [Com. or.]	56 37 }	38⅙	
			Head of ♈, east [Cap. ♈ or.]	42 28½ }		

H. M.	Between the comet and Capella [Inter Cometam & Capellam]			Altitude of the comet [Altit. Cometæ]	
		Equat. dist. [Diſt. æquat.]	14 8½		

[1] Added later. [1 Poſtea adſcriptum.] [2] A line has been drawn through the distance and the altitude. [2 Per diſtantiam & altitudinem linea ducta eſt.]

H. M.	Between com. and head of ♈, with the sext. [Inter Com. & Cap. ♈ p. Sext.]	Declin. of com. [Declin. Com.]			Altitude of the comet [Altitudo Cometæ]	
7 29	13°12′	with the sext. [per Sext.]				
7 36			Com. east [Com. or.]	54°22½39 }		
			Head of ♈, east [Cap. ♈ or.]	40 15 }		
			Equat. dist. [Diſt. æquat.]	14 7½		
7 40		22 55				
7 45		22 53 precisely [exquiſite]			39⅔	
7 51	13 14					} good [bonæ]
7 54	13 14⅔	with the trig. sextant [per Sextantem trig.]				}
7 55	13 14	22 53				}
7 56	13 14⅔					}
	Between com. and Capella [Inter Com. & Capellam]					
8 53	34 4½	with the sext. [per Sext.]				
8 56	34 2½	better [melior]				
8 56½			Com. east [Com. or.]	34 2⅔		
			Head of ♈, east [Cap. ♈ or.]	19 59⅔		
			Equat. dist. [Diſt. æquat.]	14 3		uncertain [incerta]
8 58½	34 2½				49	

H. M.	Between com. and head of ♈, with the sext. [Inter Com. & Cap. ♈ p. Sext.]	Declin. of com. [Declin. Com.]			Altitude of the comet [Altitudo Cometæ]	
9 1½	34 1½					with the sext. △ [p. Sext. △]
9 4½	34 2					good, with the sext. △ [bona p. Sext. △]
9 10			Com. by the arm., east [Com. p. Arm. or.]	30 50 }	50¼	
			Head of ♈, east [Cap. ♈ or.]	16 39 }		
			Equat. dist. [Dift. æquat.]	14 11		by the armil. [p. Armil.]
9 27		22 55			51⅔	
9 31½	34 2		} good [bonæ]			
9 33	34 2	with the trig. sext. [per Sext. trig.]	}			
9 35½	34 1⅔	the same repeated [eadem repet.]	}		53⅙	
	Between com. and head of ♈ [Inter Com. & Cap. ♈]					
9 45	13 15½					
9 53	13 16½	with the sext. [per Sext.]				
10 2½			Com. by the arm., east [Com. p. Arm. or.]	17 42 }	54½	
			Head of ♈, east [Cap. ♈ orient.]	3 30 }		
			Equat. dist. [Dift. æquat.]	14 12		
10 10		22 54¾			55⅙	
	The comet about the meridian [Cometa circa Meridianum]					
	Between the comet and Capella [Inter Cometam & Capellam]					
10 44	34 1		}		57	

H. M.	Between com. and head of ♈, with the sext. [Inter Com. & Cap. ♈ p. Sext.]	Declin. of com. [Declin. Com.]			Altitude of the comet [Altitudo Cometæ]	
10 47	34 0½	} with the trig. sext. [per Sext. trig.]	}			
10 56½	34 2	}	}			
10 59	34 1½	}	}			
11 2½	34 2	}	}			
11 15½		22 59				
11 25½	34 1	} good [bonæ]				
11 28	34 1	} repeated with the sext. [per Sext. repetita]				
	Between com. and the bright star in the head of ♈ [Inter Com. & Cap. lucid. ♈]					
11 37	13 17	} good [bonæ]				
11 42	13 16¾	} repeated with the sext. [repetita per Sext.]				
11 53			Head of ♈, west [Cap. ♈ occ.]	24 16⅔		
			Com. west [Com. occid.]	10 5½		
			Equat. dist. [Dift. æquat.]	14 11⅙		uncertain [incerta]

Clock time [Temp. Horol.]	Emended time [Temp. emend.]	Between com. and the bright star in the head of ♈ [Inter Com. & Cap. luc. ♈]	Declin. of com. [Declin. Com.]			Altit. of com. [Altit. Com.]
	11 59			Head of ♈, west [Cap. ♈ occid.]	25 42 }	56
				Comet, west [Comet. occid.]	11 25 }	

Clock time [Temp. Horol.]	Emended time [Temp. emend.]	Between com. and the bright star in the head of ♈ [Inter Com. & Cap. luc. ♈]	Declin. of com. [Declin. Com.]			Altit. of com. [Altit. Com.]	
				Equat. dist. [Diſt. æquat.]	14 17		this one better [hæc melior]
	12 3			Head of ♈, west [Cap. ♈ occ.]	26 49⅓		
				Com. west [Com. occid.]	12 30		
				Equat. dist. [Diſt. æquat.]	14 19⅓		uncertain [incerta]
12 23½	12 24		23 2½			54⅓	uncertain [incerta]
12 47½	12 47½	13 29					uncertain because of the little star joined to the comet [incerta propter ſtellulam iunctam Cometæ]
12 55	12 55	13 18 }	} good, with the sext. [bonæ per Sext.]			50⅔	
1 0½	1 0	13 18 } Between com. and Capella [Inter Com. & Capellam]	}				
1 28½	1 28	33 58					
1 31⅚	1 31	33 54¼ }	} with the trig. sext. [per Sext. trig.]				
1 35½	1 35½	33 54¼ }	} *barely good* [*vix bonæ*]				
1 40	1 40	33 52 Capella was then at the zenith, so that it could scarcely be observed. [Erat tunc Capella in vertice vt vix poßet obſeruari.] Between com. and head of ♈ [Inter Com. & Cap. ♈]				46⅔	

Clock time [Temp. Horol.]	Emended time [Temp. emend.]	Between com. and the bright star in the head of ♈ [Inter Com. & Cap. luc. ♈]		Declin. of com. [Declin. Com.]	Altit. of com. [Altit. Com.]	
1 50⅔	1 47			23 0	46¼	*doubtful* [*dubia*]
1 58⅓	1 54⅓	Bright star of ♈, west [Lucid. ♈ occ.]	54 43½			
		Com. west [Com. occid.]	40 26			
		Equat. dist. [Dift. æquat.]	14 17½			
2 1¾	1 58	Bright star of ♈, west [Lucid. ♈ occ.]	55 37			
		Com. west [Com. occid.]	41 21½			
		Equat. dist. [Dift. æquat.]	14 15½			
2 4⅔	2 0	Bright star of ♈, west [Lucid. ♈ occ.]	56 21			
		Com. west [Com. occid.]	42 2½			
		Equat. dist. [Dift. æquat.]	14 18½			
2 7	2 3	Bright star of ♈, west [Lucid. ♈ occ.]	56 53½			
		Com. west [Com. occid.]	42 39½			

Clock time [Temp. Horol.]	Emended time [Temp. emend.]	Between com. and the bright star in the head of ♈ [Inter Com. & Cap. luc. ♈]	Declin. of com. [Declin. Com.]			Altit. of com. [Altit. Com.]
				Equat. dist. [Dift. æquat.]	14 14	
2 9⅔	2 5			Bright star of ♈, west [Lucid. ♈ occ.]	57 39	
				Com. west [Com. occid.]	43 21½	
				Equat. dist. [Dift. æquat.]	14 17½	45
2 12½	2 8½			Bright star of ♈, west [Lucid. ♈ occ.]	58 14½	
				Com. west [Com. occid.]	43 57½	
				Equat. dist. [Dift. æquat.]	14 17	
2 16	2 12		23 3½			43⅙
2 20	2 16		23 2½			
2 44½	2 40	13 18⅔				
2 51	2 47	13 21 }	} good [bonæ]			
2 55	2 50	13 21½ }	} with the trig. sext. [p. Sext. trig.]			
2 58½	2 55	13 21 }	} repeated [repetita]			

Note. [*Nota.*]

After noon, H. 6 M. 0. [*P. M. H. 6 M. 0.*]	
Dist. of com. from head of ♈ [*Diſt. Com. a Cap.* ♈]	*13 9*
and declination [*& declinatio*]	*22 53*
After midnight, H. 3 M. 0. [*P. M. N. H. 3 M. 0.*]	
Dist. of com. from head of ♈ [*Diſt. Com. a Cap.* ♈]	*13 21*
and declination [*& Declinatio*]	*23 4*

From this the parallax can be investigated from the interval of 9 hours, account being taken of the diurnal motion. [*Hinc poteſt inquiri paralaxis ex interuallo 9 horarum habita ratione motus diurni.*]

Note. This night it was indeed quite clear, and the air almost calm, with the south wind blowing gently; but no one, especially through the axis in the armillae, could exactly distinguish the body of the comet from that little star joined to it, which produced the variation in the equatorial distances. [Nota. Nocte hac erat bene ſerenum quidem, & aër fere tranquillus, leuiter flante Auſtro: ſed nemo præſertim per axem in armillis corpus Cometæ a ſtellula illa ſibi iuncta exacte diſcernere potuit, quod varietatem in diſtantijs æquatorijs peperit.]

DIE 7 NOUEMBRIS. [7 November]

Clock time [Temp. Horol.]	Emended time [Temp. emend.]	Between com. and head of ♈, with the sext. [Inter Com. & Cap. ♈ p. Sext.]	Declin. of com. [Declin. Com.]			Altit. of com. [Altit. Com.]	
6 23	6 28		23°20′ }			31°	
6 25	6 30		23 19¾ }				
6 41	6 46			Com. east [Com. or.]	66°16′ }	32⅔	
				Head of ♈, east [Cap. ♈ or.]	51 39 }		
				Equat. dist. [Diſt. æquat.]	14 37		uncertain because com. was not then sufficiently visible [incerta quia Com. non erat tum ſatis conſpicuus]
6 45	6 49⅝			Com. east [Com. or.]	65 24 }	33¼	

Clock time [Temp. Horol.]	Emended time [Temp. emend.]	Between com. and head of ♈, with the sext. [Inter Com. & Cap. ♈ p. Sext.]	Declin. of com. [Declin. Com.]			Altit. of com. [Altit. Com.]	
				Head of ♈, east [Cap. ♈ or.]	50 40 }		
				Equat. dist. [Dift. æquat.]	14 44		this one better [hæc melior]
6 55½	7 0			Com. east [Com. or.]	62 47 }	34¼	
				Head of ♈, east [Cap. ♈ or.]	48 1 }		
				Equat. dist. [Dift. æquat.]	14 46		
6 59	7 4			Com. east [Com. or.]	61 55		
				Head of ♈, east [Cap. ♈ or.]	47 6		
				Equat. dist. [Dift. æquat.]	14 49		
7 3½	7 8½	13° 50′	with the sext. [per Sext.]				uncertain [incerta]
7 5	7 10			Com. east [Com. or.]	60 21⅔	36¼	
				Head of ♈, east [Cap. ♈ or.]	45 37½		
				Equat. dist. [Dift. æquat.]	14 44⅙		

Clock time [Temp. Horol.]	Emended time [Temp. emend.]	Between com. and head of ♈, with the sext. [Inter Com. & Cap. ♈ p. Sext.]	Declin. of com. [Declin. Com.]			Altit. of com. [Altit. Com.]	
7 7	7 12	13 48⅔	with the sext. [per Sext.]				
7 11	7 16⅙			Com. east [Com. or.]	58 55 }	36¾	
				Head of ♈, east [Cap. ♈ or.]	44 5 }		
				Equat. dist. [Dift. æquat.]	14 50		
7 14	7 19	13 49	with the sext. [per Sext.]				
7 18	7 23	13 51	with the sext., fair [per Sext. mediocris]			38¼	
7 27	7 32			Com. east [Com. or.]	54 46½		
				Head of ♈, east [Cap. ♈ or.]	40 3		
				Equat. dist. [Dift. æquat.]	14 43½		Was not sufficiently visible [Non ſatis conſpiciebatur]
7 30	7 35			Com. east [Com. or.]	54 2		
				Head of ♈, east [Cap. ♈ or.]	39 13		
				Equat. dist. [Dift. æquat.]	14 49		

Clock time [Temp. Horol.]	Emended time [Temp. emend.]	Between com. and head of ♈, with the sext. [Inter Com. & Cap. ♈ p. Sext.]	Declin. of com. [Declin. Com.]	Altit. of com. [Altit. Com.]	
7 32	7 37	13 52	with the sext., doubtful [per Sext. dubia]		
7 35	7 40		23 18¾	40½	
7 40	7 45		23 20		by the armillae [per Armillas]
		Between com. and Capella [Inter Com. & Capellam]			
7 45	7 50	33 21¾		42	
7 46½	7 52	33 22⅔	the same, with the sext. [ead. per Sext.]		
7 48	7 54	33 22 }	} certain [certæ]		
7 57	8 3	33 20 }	}	43½	
7 59	8 5	33 22 }	}		
		Between com. and the bright star of ♈ [Inter Com. & luc. ♈]			
8 7½	8 14	13 51	good [bona]		
	8 15	13 51	23 21	46	
8 10½	8 16½	13 51 }	} good [bonæ]		
8 13	8 19½	13 50½ }	} with the sext. [per Sext.]		
10 3½	10 8½		23 23	57	among clouds [inter nubes]
10 26	10 30	13 49			it was not clear enough [non erat ſatis ſerenum]
10 29	10 36	13 56	with the sext. [per Sext.]		better [melior]

Because of clouds darkening the whole sky, it was not possible to view the comet any further [Vlterius propter nubes totum cœlum offuſcantes Cometam intueri non licuit]. This evening, however, that comet appeared, once the small clouds by which it was at times covered had dispersed, not unlike in form, colour and light to what it had on the preceding night.

DIE 9 NOUEMBRIS. [9 November]

This evening it was not so very clear, except at intervals. For clouds returned from time to time and shut off the view of the stars; the wind, however, was calm, with the south wind blowing; but the comet *appeared very faint, of the same form as on the previous nights, except that it seemed a little smaller, and it put forth no tail or any hair from any part of itself; rather, it appeared round on every side, not unlike the nebulous circle of Cancer.*

H. M.	Between the bright star of ♈ and com. [Inter luc. ♈ & Com.]	Declin. of comet [Declin. Comet.]			Altit. of com. [Altit. Com.]	
8 0		24° 9′ B 24 9½ with the other pinnule [altero pinn.]			43⅙°	
8 11			Com. east [Com. or.]	44°37½ }		by the larger subterranean armillae [per Armillas ſubterraneas maiores]
			Head of ♈, east [Cap. ♈ or.]	28 32 }		
			Equat. dist. [Diſt. æquat.]	16 5½	44½	good [bona]
8 20	15 5½	good [bona]			45½	
8 25½	15 4				46⅔	It was not then clear enough [Non erat tunc ſatis ſerenum]
8 43	15 6				49	It was moderately clear [Erat mediocriter ſerenum]
8 48½			Com. east [Com. or.]	35 20½ }	49½	
			Bright star of ♈, east [Luc. ♈ or.]	19 16½ }		
			Equat. dist. [Diſt. æquat.]	16 4		moderately clear [mediocriter ſerenum]
8 55⅚			Com. east [Com. or.]	33 30½		

H. M.	Between the bright star of ♈ and com. [Inter luc. ♈ & Com.]	Declin. of comet [Declin. Comet.]			Altit. of com. [Altit. Com.]
			Head of ♈, east [Cap. ♈ or.]	17 25	
			Equat. dist. [Diſt. æquat.]	16 5½	
8 58½			Com. east [Com. or.]	32 53½	
			Bright star of ♈, east [Luc. ♈ or.]	16 46	
			Equat. dist. [Diſt. æquat.]	16 7½	
9 1½			Com. east [Com. or.]	32 10	
			Bright star of ♈, east [Luc. ♈ or.]	16 3	
			Equat. dist. [Diſt. æquat.]	16 7	
9 4⅓			Com. east [Com. or.]	31 28	51
			Bright star of ♈, east [Luc. ♈ or.]	15 20	
			Equat. dist. [Diſt. æquat.]	16 8	
9 9		24 8½			
9 14		24 10 It was then clear [Erat tunc ſerenum]			
9 27½	15 7 }	}			
9 30⅓	15 7½ }	} with the sext. △ [per Sext. △]			

H. M.	Between the bright star of ♈ and com. [Inter luc. ♈ & Com.]	Declin. of comet [Declin. Comet.]	Altit. of com. [Altit. Com.]
9 33	15 9 }	} It was moderately clear [Erat mediocriter ſerenum]	
10 57½	15 7½		56⅔
11 6⅚	15 8		58
	Between com. and Capella [Inter Com. & Capellam]		
11 15⅓	31 51		58⅓
11 18⅓	31 51½	Among clouds, however, was moderately visible [Inter nubes tamen mediocriter conſpiciebatur]	
11 20⅓	31 51¾	with the sext. △ [per Sext. △]	

Afterwards, with the sky covered over by clouds, the comet was not seen any further this night.

DIE 12 NOUEMBRIS. [12 November]

This day, towards evening, it was at times moderately clear, with clouds returning now and then and the south wind blowing gently; the comet, however, was seen very faint, and much less in light than it had appeared before; but, so far as was possible, it was observed in this way. [Hoc die ad veſperas fuit interdum, recurrentibus ſubinde nubibus, mediocriter ſerenum, leuiter ſpirante Auſtro, conſpiciebatur autem Cometa valde tenuis, & lumine multo minor, quam antea apparuerit, ſed quoad licuit in hunc modum obſeruabatur.]

H. M.	Dist. between com. and the bright star of ♈, with the sext. △ [Diſt. inter Com. & luc. ♈ p. Sext. △]	Decl. of the comet by the larger subterranean armillae [Decl. Cometæ per arm. ſubterraneas mai.]	Altit. of com. [Altit. Com.]
8 43⅓	16°44′ }		51°
8 46	16 43 }		
8 48⅓	16 45½[1] }		
8 50⅓	16 49 }		
8 52	16 44 }		
8 54	16 48 }		
9 11		25°15′B.	53 quadr.

H. M.	Dist. between com. and the bright star of ♈, with the sext. △ [Diſt. inter Com. & luc. ♈ p. Sext. △]	Decl. of the comet by the larger subterranean armillae [Decl. Cometæ per arm. ſubterraneas mai.]	Altit. of com. [Altit. Com.]
9 17	16 47 }		54½
9 20	16 46 }		
	Between the comet and the bright star of Capella [Inter Cometam & lucidam Capellæ.]		
9 26	30 13 }	}	
9 28	30 11¾ }	} with the sext. △ [per Sext. △]	
9 31	30 12 }	}	
9 37		25 14 B.	

N.B. The times of the observation are in fairly good order. Because of clouds darkening all the stars, it was not possible to view the comet any further this evening. [N. B. Tempora obſeruationis ſe ſatis bene habent. Vlterius hoc veſperi propter nubes omnes ſtellas offuſcantes Cometam intueri non licuit.]

DIE 14 NOUEMBRIS. [14 November]

The following night there was at times a clear sky of a sort, but the comet was seen only as a kind of small cloud. [Nocte ſequenti fuit interdum qualiscunque ſerenitas, ſed Cometa tanquam nubecula quædam ſolummodo videbatur.]

DIE 15 NOUEMBRIS. [15 November]

Towards evening, when the clouds had at times dispersed, a very slight trace of the comet was judged by the sharp-sighted to remain; but its position could not be observed with any instrument[2]. [Diſperſis ad veſperas interdum nubibus, Cometæ exile admodum ſupereße veſtigium ab acute videntibus iudicabatur; ſed nullo inſtrumento eius ſitus obſeruari potuit[2].]

From this time that comet appeared nowhere. [Ex hoc tempore Cometes ille nuſpiam apparuit.]

N.B. All the assigned times of the observation of this comet are in fairly good order, so that you can use them safely. [N. B. Tempora omnia obſeruationis huius Cometæ aßignata ſatis bene ſe habent, vt ijs tuto poßis vti.]

Investigation of the place of this comet at some definite hour of each of the days on which it was observed. [Inquiſitio loci huius Cometæ ad certam aliquam horam ſingulorum dierum, quibus obſeruabatur.]

Die 4 Nou. [4 Nov.] H. 10⅝

Distance between the comet and the bright star of the head of ♈ [Diſtantia inter Cometam & lucid. cap. ♈]	11°55′
Declination of the comet B. [Declinatio Cometæ B.]	21 57
R. asc. of the bright star of ♈ [Aſc. R. luc. ♈]	26
	2½
add [adde]	12 47
Asc. of com. [Aſc. Com.]	38
	49½

A. Comet. [A. Cometa.]	Side BC [Latus BC]	68°32
C. Head of ♈ [C. Cap. ♈]	Side BA [Latus BA]	68 3
	Side CA [Latus CA]	11 55
	Angle ABC [Angul. ABC]	12 47

Die 7. [Day 7] H. 8⅓.

	Between the comet and the bright star of ♈ [Inter Cometam & lucid. ♈]	13°57′
	Declination of the comet [Declinatio Cometæ]	23 23
[I].	Side BC [Latus BC]	68°32′
	Side BA [Latus BA]	66 37
	Side AC [Latus AC]	13 51
	Angle ABC [Ang. ABC]	14 51
	Diff. of R. asc. of both [Diff. Afc. R. vtriusque]	

Die 9 Nou. [9 Nov.] H. 9.

	Between the comet and the bright star of ♈ [Inter Cometam & luc. ♈]	15° 7
	Declination of com. [Declinatio Com.]	24 9½
	Side BC [Latus BC]	68°33′
	Side BA [Latus BA]	65 50
	Side AC [Latus AC]	15 7
	Hence results the diff. of R. asc. ABC [Hinc prouenit Diff. Afc. R. ABC]	16.9

Die 12 Nou. [12 Nov.] H. 9⅓.

	Between the comet and the head of ♈ [Inter Cometam & Cap. ♈]	16°46′
	Declin. of com. [Declin. Com.]	25 15
	Side BC [Latus BC]	68°37′
	Side BA [Latus BA]	64 45
	Side AC [Latus AC]	16 46
	Angle ABC [Ang. ABC]	17 48⅚
	Dist. of R. asc. of both [Dift. Afc. R. vtriusque]	

[1] Written beside it in the margin: 16° 45′. [[1] Adſcriptum in margine 16° 45′.]

[2] Thus in codex C: 15 November, morning. This night it was at times moderately clear, but we could see the comet only as a kind of small white cloud. [[2] Sic in codice C: Die 15 Nouembris mane. Hac nocte fuit interdum mediocriter ſerenum, ſed Cometam tanquam nubeculam quandam albam ſolummodo videre potuimus.]

Changed declination: [*Declinatio mutata:*]

		Diff.
18		
	1,37	
19		5
	1,32	
20		4
	1,28	
21		3
	1,25	
22		

D. H.	R. asc. [Aſc. R.]	Declin.	Longit.	Latit.
October [Octobris.]				
18 13	19°31′	4°34′B	19°44♈	3°26 M
20 13	22 46	7 47 B	23 56♈	1 39 M
22 13	25 34	10 34 B	27 31½♈	0 3¾M
November [Nouembris.]				
4 11	38 50	21 57 B	13 21⅚♉	6 21⅓ B
5 12	39 35	22 28 B	14 11⅓♉	6 38 B
6 12	40 15	23 2 B	14 57 ♉	6 58 B
7 8⅓	40 53	23 23 B	15 37½♉	7 8¼ B
9 9	42 10	24 9 B	16 59 ♉	7 31 B
12 9⅓	43 50½	25 15 B	18 46½♉	8 7 B

Investigation of the angles of inclination of this comet of the year 1585 to the equator, and of the place of intersection, from the day of 18 October. [Inueſtigatio angulorum inclinationis huius Cometæ Anni 1585 ad æquatorem & loci interſectionis a die 18 Octobris.]

Diagram. A circle. Inside it two curved lines run from the left side of the circle to its right side, where they meet; one passes C and D, the other, above it, passes B and E. From F, on the circle at the top, two lines run down: one through B to C, the other through E to D. Beside the circle at the right stands "[II]". Caption below: "CDA. Portion of the equator. F. Pole. / BEA. Portion of the comet's path." [CDA. Portio Æquatoris. F. Polus. / BEA. Portio viæ Cometæ.]

- F (top, on the circle)
- B (on the upper curve, where the line from F to C crosses it)
- E (on the upper curve, where the line from F to D crosses it)
- C (on the lower curve, at the foot of the line from F through B)
- D (on the lower curve, at the foot of the line from F through E)
- A (at the right, where the two curves meet)
- [II] (outside the circle, at the right)

The right ascensions and declinations, noted according to the times on the immediately preceding page, served the following calculation. [Aſcenſiones rectæ & declinationes iuxta tempora in proxime præcedenti pagina annotatæ calculo ſequenti inſeruiebant.]

	R. asc. [Aſc. R.]	Declination [Declinatio]
20 Oct. [20 Octob.]	22 46 C	7 47 Bor.
18 Oct. [18 Octob.]	19 31 D	4 34 Bor.
Angle BFE [Angul. BFE]	3 15	Triangle DEA [Triangul. DEA]
Side FE [Latus FE]	85 26	DEA 44°58
Side BF [Latus BF]	82 13	is equal to BEF [eſt æqual. BEF]
Hence by VI, BE [Hinc per VI BE]	4 33½	DE 4 34
Angle BEF [Angul. BEF]	44 58	Declin.
by 9 dogma [per 9 dogma]		of the comet [Cometæ]

Angle DAE [Angulus DAE]	45°12′53″	p. 27 of the IVth [p. 27 IV^{ti}]
Side DA [Latus DA]	4 32 38	p. 26 of the same [p. 26 eiusd.]
The angle of inclination is therefore [Eſt ergo angul. inclinationis]	45°13	
Place of intersection [Locus interſectionis]	14 58	

	R. ascension [Aſcenſio R.]	De-clin.		R. ascension [Aſcenſio R.]	De-clin.
22 Oct.	25 34	10 34B	5 Nov. [5 Nou.]	39 35	22 28
18 Oct.	19 31	4 34B	18 Oct.	19 31	4 34
BFE	6 3		BFE	20 4	
BF	79 26		BF	67 32	
EF	85 26		EF	85 26	
BE	8 28 53″		BE	26 24 18″	
Angle { DEA [Ang. { DEA]	44 38 28		DEA }	45 28 39	
{ BEF			BEF }		
DE	4 34		DE	4 34	
Inclin.					
DAE	45 32 16		Incl. DAE	44 42 27	
DA	4 29 13		DA	4 38 20	
R. asc. [Aſc. R.]	19 31 0		R. asc. [Aſc. R.]	19 31 0	
Intersect. [Interſ.]	15 1 47		Intersect. [Interſ.]	14 53 40	

	R. ascension [Aſcenſio R.]	Declin.		R. ascension [Aſcenſio R.]	Declin.
4 Nov. [4 Nou.]	38 50	21 57	6 Nov. [6 Nou.]	40 15	23 2
18 Oct.	19 31	4 34	18 Oct.	19 31	4 34
BFE	19 19		BFE	20 44	
BF	68 3		BF	66 58	
EF	85 26		EF	85 26	
BE	25 32 27″		BE	27 14 24″	
DEA }	45 22 2		DEA }	45 22 51	
BEF }			BEF }		
DE	4 34		Incl. BAE	44 48 13	
Incl. }	44 49 1		DA	4 36 45	
DAE }			R. asc. [Aſc. R.]	19 31	
DA	4 36 37		Intersect. [Interſ.]	14 54 15	
R. asc. [Aſc. R.]	19 31				
Intersect. [Interſ.]	14 54 23				

	R. ascension [Aſcenſio R.]	Decl.		R. ascension [Aſcenſio R.]	Decl.
7 Nov.	40 53	23 23	12 Nov. [12 Nou.]	43 50	25 15
18 Oct.	19 31	4 34	18 Oct.	19 31	4 34
BFE	21 22		BFE	24 19	
BF	66 37		BF	64 45	
EF	85 26		EF	85 26	
BE	27 54 40		BE	31 10 40	
BEF	45 36		DEA BEF	46 0 17	
Incl. }	44 35½		DE	4 34	
DAE }			Inclin. DAE	44 11 10	
DA	4 37		DA	4 44 55	
R. asc. [Aſc. R.]	19 31		R. asc. [Aſc. R.]	19 31	
Intersect. [Interſ.]	14 54		Intersect. [Interſ.]	14 46 5	

	R. ascension [Aſcenſio R.]	Decl.
9 Nov. [9 Nou.]	42 10	24 9
18 Oct.	19 31	4 34
BFE	22 39	
BF	65 51	
EF	85 26	
BE	29 18 28″	
DEA BEF	45 52 45	
DE	4 34	
Inclin. DAE	44 18 22	
DAE	4 39 59	
R. asc. [Aſc. R.]	19 31	

	R. ascension [Aſcenſio R.]	Decl.
Intersect. [Interſ.]	14 51 1	

Collection of the angles found and of the place of intersection. [Collectio inuentorum angulorum & loci interſectionis.]

Day [Die]	Ang. inclin.	Intersect. [Interſect.]
20 Oct.	45 13	14 58
22 Oct.	45 32	15 2
4 Nov. [4 Nou.]	44 49	14 54½
5 Nov. [5 Nou.]	44 42	14 54
6 Nov. [6 Nou.]	44 48	14 54
7 Nov. [7 Nou.]	44 35	14 54
9 Nov. [9 Nou.]	44 18	14 51
12 Nov. [12 Nou.]	44 11	14 46

If you take the inclination to the equator as 44 40 and the place of intersection as 14 55, you will come as close to the mark as possible. [*Si acceperis inclinationem ad æquatorem 44 40 & locum interſectionis 14 55 quam proxime collimabis.*]

Investigation of the comet's apparent motion in its own course from the place of intersection on the equator, 14 55, from which the daily motion may be derived. [Inquiſitio motus Cometæ apparentis in proprio ſuo ductu a loco interſectionis in æquatore 14 55 vnde diurnus eliciatur.]

Diagram. Two curved lines that cross at C. The upper curve passes A near its left end and runs to the right, down to C and a little beyond; the lower curve passes B near its left end and runs to the right, up to C and a little beyond. A straight line joins A and B. Below the figure stands "[III]". The key is set to the right of the figure: "BC Portion of the equator / AC Portion of the comet's path / C Place of intersection." [BC Portio æquatoris / AC Portio viæ Cometæ / C Locus interſectionis.]

- A (upper left, at the top of the straight line, on the upper curve)
- B (lower left, at the foot of the straight line, on the lower curve)
- C (right, where the two curves cross)
- [III] (below the figure)

Die 18 Oct. [18 Oct.] H. 10 15 M.

R. asc. Com. [Aſc. R. Com.]	19 19
Intersect. [Interſ.]	14 55
Side BC [Latus BC]	4 24
Declin. BA	4 25

Hence, since two sides about the right angle ABC are given, AC is given by 25 of the IVth of Regiomontanus. [Hinc quia dantur duo latera circa angulum rectum ABC datur per 25 IV^{ti} Regimontani AC.]

Side AC [Latus AC]	6 13 53
the comet's motion in its own course. [motus Cometæ in ſuo ductu.]	

Die 22 Oct. [22 Oct.] H. 10 M. 6.

R. ascension Com. [Aſcenſio R. Com.]	25 24½
Declination AB [Declinatio AB]	10 27⅓
Side BC [Latus BC]	10 29¼
Side CA [Latus CA]	14 46 3

For the motion at other hours on the same days. [Pro motu ad alias horas in ijsdem diebus.]

Die 18 Octob. [18 Oct.] H. 13 0.

R. asc. Com. [Aſc. R. Com.]	19 31
Declin. AB	4 35
Side BC [Latus BC]	4 36
Side AC [Latus AC]	6 29 25

Die 20. [Day 20] H. 11. 30.

R. asc. Com. [Aſc. R. Com.]	22 33
Declin. AB	7 41
Side BC [Latus BC]	7 38
Side AC [Latus AC]	10 48 41

Die 20. [Day 20] H. 12. 37.

by the armillae [per Armillas] {	R. asc. Com. [Aſc. R. Com.]	22 42
{	Decl. BA	7 44½
	BC	7 47
The side sought, CA [Latus quæſitum CA]		10 57 40

Die 22. [Day 22] H. 15. M. 45.

R. asc. Com. [Aſc. R. Com.]	25 40½
Decl. AB	10 42½

BC	10 45½
Side AC [Latus AC]	15 8 5

N.B. Below, about the time when it was in the meridian, you will find the motion. [N.B. Infra circa tempus, cum in Meridiano eßet, motum inuenies.]

For investigating the parallax of this comet from some preceding observations. [*PRO PARALAXI HUIUS COMETÆ INDAGANDA EX ALIQUOT PRÆCEDENTIBUS OBSERUATIONIBUS.*]

On 22 October at H. 10 M. 5 the right ascension of the comet was found to be p. 29 24¼ (it could rather have been 25 25½ — 25 24½), with a declination of 10 27⅓ B., and this at an altitude of about 43°. In the same way, on the same night at H. 15 M. 45, its right ascension was 25 40½ and its northern declination 10 42½, at an altitude of 21½. Therefore the distance of both places, along the intercepted arc of a great circle, is by the methods of triangles about 22′; and only that much did this comet appear, by appearance, to move in its circle over an interval of 5⅔ hours. Yet, taking account of the daily motion, which at that time, from a comparison of the preceding days[1], was 1° 55′ at most, the motion of 5⅔ hours therefore ought to have been 27′, exceeding the apparent and observed one by only five minutes, by which the parallax seemed to retard the true motion. Whereas, if this comet had stood in the nearest concavity of the lunar orb, at a distance from the earth of 52 semidiameters, then according to Copernicus the parallax would have retarded the true motion, in so long a time and in such a situation, by at least 38′; so that the comet, from Hour 10 M. 6 to Hour 14¾, would not merely have seemed to advance those 27′ with its customary motion, but would rather have been noticed to have a motion in antecedentia, so that it would have been seen to have checked its former course by almost 9′. And this by no means appeared in the heavens; rather, by only five minutes, as I said, was the true motion retarded by parallax in the meantime, the difference amounting to more than half of one degree. That interval could certainly have been detected very well and very easily by instruments which, for one who observes diligently, distinguish exactly not merely single minutes but also aliquot parts of minutes. It is therefore evidently clear that this comet by no means completed its course in the nearest concavity of the lunar orb, and much less in a place still nearer the earth, and therefore by no means existed in the elementary region, as all the Peripatetics had hitherto been persuaded, but far above the Moon, in the aether itself, either in the solar sphere or certainly not much below, claimed this seat for itself; and this is demonstrated by triangles in this way. [*Die 22 Octobris H. 10 M. 5 deprehenſa eſt Cometæ Aſcenſio Recta p. 29 24¼ (poterat potius eße 25 25½— 25 24½) cum declinatione 10 27⅓ B. idque in altitudine 43 partium proxime. Pari ratione eadem nocto H.15 M.45 fuit eiusdem aſcenſio recta 25 40½ & declinatio borea 10 42½ in altitudine 21½, quare vtriusque loci diſtantia per arcum circuli magni interceptum eſt per triangulorum rationes ſcrupulorum fere 22, atque tantum per apparentiam viſus eſt hic Cometa in circulo moueri interuallo horarum 5⅔, cum tamen habito reſpectu motus diurni, qui tunc ex collatione antecedentium dierum[1], erat 1° 55′ ad ſummum, quare motus horarum 5⅔ eße debebat 27′ exuperans apparentem &*

obſeruatum ſcrupulis ſaltem quinis, quibus paralaxis motum verum retardare videbatur, cum tamen ſi in proxima concauitate orbis lunaris extitißet hic Cometa in diſtantia a terra 52 ſemidiametrorum, iuxta Copernicum retardaßet paralaxis motum verum in tanto tempore & tali ſitu ſcrupulis ad minimum 38, ita vt Cometes ab Hora 10 M. 6 in Horam 14¾, non ſaltem conſueto motu 27 illis ſcrupulis progreßus videretur, ſed potius motum in antecedentia habere animaduerteretur, ita vt 9 pene ſcrupulis priorem curſum inhibuiße conſpiceretur, idque minime in cœlo apparuit, ſed ſaltem quinis, vt dixi, ſcrupulis, interea temporis verus motus per paralaxin eſt retardatus, differentia exiſtente plus ſemiße vnius Gradus, quod ſane interuallum per inſtrumenta, quæ non ſaltem ſingula ſcrupula ſed etiam ſcrupulorum aliquotas partes diligenter obſeruanti exacte diſcernunt, quam optime & facillime deprehendi potuißet. Euidenter itaque patet, hunc Cometam nequaquam in proxima concauitate orbis lunaris, & multo minus in loco adhuc terris proximiore, curſum ſuum abſoluiße ideoque minime in elementari regione vt hactenus Peripateticis omnibus perſuaſum erat extitiße, ſed longe ſupra lunam in ipſo æthere vel in ſphæra ſolari vel certe non multum infra hanc ſedem ſibi vendicaße, id quod per triangulos hac ratione demonſtratur.]

For the right ascension of the comet about the time when it was in the meridian. [Pro Aſcenſione recta Cometæ circa illud tempus quo in Meridiano fuit.]

[I] **Die 18, 20 & 22 Octobris.** [18, 20 and 22 October]

A. Aldebaran [Aldeboram],

AD its declination [AD eius Declinatio]	15° 35⅔′

C. The comet's place as seen. [C. Locus Cometæ viſus.]

Die 18 [Day 18] H. 11. 8.

Dist. between Com. and Aldeb. [Diſt. inter Com. & Aldeb.]	44 22½
CE. Declination Com. [CE. Declinatio Com.]	4 28 B.
Triangle ABC. [Triangulum ABC.]	
Side BA [Latus BA]	74 24⅓
BC	85 32
AC	44 22½
Ang. ABC	43 44
Asc. of the eye of ☿ [Aſc. oculi ☿]	63 5
subtr. [ſubtr.]	43 44
Asc. Com. [Aſcenſ. Com.]	19 21
with the distance taken as [poſita diſtantia]	44 22
the comet's asc. becomes [fit Aſc. Cometæ] H. 11⅙	19 21½

Die 20. [Day 20] H. 11 30.

Dist. of Com. from Aldeb. [Diſt. Com. ab Aldeb.]	40 26
Declin. Com.	7 40
Side BA [Latus BA]	74 24
BC	82 20
AC	40 26
Ang. ABC	40 33⅙
Asc. of Aldeb. [Aſcen. Aldeb.]	63 5
R. asc. of the comet [Aſcenſ. R. Cometæ]	22 31⅚

Die 22. [Day 22] H. 11 30.

Equat. dist. of the comet from Aldeb. [Diſt. æq. Cometæ ab Aldeb.]	37 35
Declination [Declinatio]	10 31
Hence the right asc. [Hinc Aſc. Recta]	25 30

With these known, we investigated the comet's own daily motion, as follows. [His cognitis motum diurnum Cometæ proprium inquiſiuimus vt ſequitur.]

[1] Here written in the margin by Tycho: *from one transit through the meridian to the other, where all variation of parallax is entirely excluded.* [[1] Hic a Tychone in margine adſcriptum: *ab vno tranſitu per meridianum ad alterum, vbi omnis varietas paralaxeos plane excluditur.*]

Hence is gathered the daily motion of the two preceding days: 4° 28′ from day 18 to day 20. [Hinc colligitur motus diurnus duorum præcedentium dierum 4° 28′ a die 18 in diem 20.]

[III] **Die 18 Octob.** [18 October] H. 11 8.

R. ascension Com. [Aſcenſio R. Com.]	19°21′
Intersection [Interſectio]	14 55
Side BC [Latus BC]	4 26
Declination BA [Declinatio BA]	4 28
Side AC [Latus AC]	6 17⅖

The daily motion of the two following, 4° 5′ from day 20 to 22. When the comet was near the meridian on each of these days, as on the following page. [Motus diurnus duorum ſequentium 4° 5′ a die 20 in 22. Cum Cometa eßet iuxta Meridianum in ſingulis hiſce diebus vt in ſequenti pagina.]

[I] **Die 20.** [Day 20] H. 11 30.

Right ascension of the comet [Aſcenſio Recta Cometæ]	22 32
Declination BA [Declinatio BA]	7 40

BC	7 37
AC	10 47 27″

Die 22. [Day 22] H. 11 30.

Right ascension of the comet [Aſcenſio Recta Cometæ]	25 30
Declination AB [Declinatio AB]	10 31
BC	10 35
AC	14 52 40″

For the proper motion over a space of 5⅔ hours. [Pro motu proprio ſpatio horarum 5⅔.]

Die 22 Octob. [22 October]

H. 15 45 Asc. Com. [H. 15 45 Aſc. Com.]	25 40½
Declin. Com.	10 42½
H. 10 6 Ascension [H. 10 6 Aſcenſio]	25 24¼
Declination [Declinatio]	10 27⅓
Side BA [Latus BA]	79 17½
BC	79 32⅔
Angul. ABC	0 16¼
Hence AC [Hinc AC]	0 21 50

The motion sought, corresponding to 5⅔ hours. [Motus quæſitus congruens horæ 5⅔.]

In the equator [In Æquatore]		Differ.
Day 18. H. 11½ Dist. from intersect. [Die18. H.11½ Diſt. ab interſ.]	6°19½′ }	4°28′
20. 11½	10 47½ }	
22. 11½	14 52½ }	4 5

Hence is gathered the daily motion of the single days, in this way. [Hinc colligitur motus diurnus ſingulorum dierum in hunc modum.]

		Differ.	Sum [Summa]
from day 18 to 19 [a Die 18 in 19]	2°17 }	— 6	
19 to 20 [19 in 20]	2 11 }		4 28
20 to 21 [20 in 21]	2 5 }	— 6	4 5
21 to 22 [21 in 22]	2 0 }	— 5	

Therefore again, taking it proportionally from day 22 to 23, the daily motion was at most 1° 55′. [Ergo rurſus a Die 22 in 23 proportionaliter accipiendo erat motus diurnus ad ſummum 1° 55′]

And therefore to hours 5 40, Corresponding [Reſp.] in motion, 27. [Ideoque horis 5 40 Reſp. in motu 27]

Above, on day 22 Oct. H. 15 45, the comet's proper motion from the intersect. in the equator was [Superius Die 22 Oct. H. 15 45 ab interſect. in æquatore fuit proprius motus Com.]	15° 8′ 5″
H. 10 6 it was [H. 10 6 fuit]	14 36
	3
Diff. H. 5⅔ Corresponding [Diff. H. 5⅔ Reſp.]	22

So much for the daily motion of the days 18, 19, 20, 21, 22 October. [Hactenus pro motu diurno dierum 18, 19, 20, 21, 22 Octob.]

For discerning the parallax of the comet in the equator. [PRO PARALAXI COMETÆ IN ÆQUATORE DISCERNENDA.]

Diagram. A semicircle standing on a straight base line, crossed by straight lines; a short dotted segment runs between C and H. Figure number "[IV]" printed to its right.

- A (top of the arc): A
- B (on the arc, upper right): B
- C (interior, upper middle): C
- H (interior, right of C, at the foot of the dotted segment): H
- D (interior, below C): D
- G (on the left, inside the arc): G
- F (interior, below G): F
- E (below the base line, lower left): E
- [IV] (right of the figure): figure number

Method of working. [Ratio operandi.]

Let, then, the declination seen be at D, and the altitude DE observed. I want to know the varied right ascension GF and the varied declination HD. The altitude DE, if it has not been observed, must be computed from the given right ascension, the declination of the comet, and the time. [Sit itaque viſa declinatio in D, altitudo DE obſeruata. Volo ſcire aſcenſionem rectam variatam GF & declinationem variatam HD. Altitudo DE, ſi non eſt obſeruata debet ſupputari ex data aſcenſione recta, declinatione Cometæ & tempore.]

In triangle ABD, side AD is the complement of the altitude; AB, of the elevation of the pole; DB, of the observed declination. Therefore the angle ABD will be given by IX dogma. [In Triangulo ABD Latus AD, Complementum altitudinis: AB eleuationis poli: DB Declinationis obſeruatæ. Ergo dabitur Angulus ABD per IX dogma.]

Next, in triangle CDB the side DC must be given from the parallax which the Moon at its nearest would make at such an altitude, in the circle of altitude. And so, since in triangle CBD each side about the angle just given is given,

CB, the complement of the true declination, will not be hidden. And since in triangle CBD all three sides are known, the angle CBD, which is the difference of the true and the seen right ascension, will not be unknown, by 9 dogma. Or thus. When you have the angle ADB as before, and the side DC is given, with the perpendicular CH drawn, since the angle CDH is given and the side DC, HD, the difference of declination, will be given, and HC, the difference of right ascension. The same is to be done on the other side, after the comet has passed the meridian and is approaching the ho- [Deinde in Triangulo CDB oportet latus DC eße datum ex ea paralaxi, quam luna proxima in tali altitudine faceret, in circulo altitudinis. Ideoque cum in Triangulo CBD detur vtrumque latus circa modo datum angulum, non latebit CB complementum declinationis veræ. Cumque in triangulo CBD nota ſint omnia tria latera, non ignorabitur per 9 dogma angulus CBD, qui eſt differentia aſcenſionis rectæ veræ & viſæ. Vel ſic. Quando habes angulum ADB vt prius & latus DC datum eſt, ducta perpendiculari CH, quia datur angulus CDH & latus DC dabitur HD differentia declinationis & HC differentia Aſcenſionis Rectæ. Idem faciendum venit in altera parte poſtquam Cometa tranſiuit Meridianum & Ho-]

rizon where it sets; and it must be seen there what parallax it makes, by the same method, with respect to the equator, both in declination and in right ascension. And these parallaxes, as far as declination is concerned, are in both cases to be added to the observed declination, so that from the seen one the true is rendered. But the parallax of right ascension in the eastern quarter is to be taken away from the right ascension of the morning observation, and added, however, in the afternoon one, so that in both cases the true declination and the true right ascension may be established. The distance of these is to be taken in this way. [rizonti occiduo appropinquat, videndumque ibi qualem eadem ratione faciat reſpectu æquatoris paralaxin tam in declinatione, quam in Aſcenſione Recta. Atque hæ paralaxes, quantum ad declinationem attinet, vtrobique addendæ obſeruatæ declinationi, vt ex viſa reddatur vera. At paralaxis Aſcenſionis rectæ in orientali plaga auferatur ab Aſcenſione recta obſeruationis antemeridianæ, addatur vero in pomeridiana, vt conſtet vtrobique vera declinatio, veraque aſcenſio recta. Horum capienda eſt diſtantia in hunc modum.]

Diagram. Two curved lines meeting at a point at the top, joined lower down by a short straight line and at the foot by a straight base line. Figure number "[V]" printed below.

- C (top, at the meeting point): C
- A (left curve, lower part): A
- B (right side, lower part): B
- D (lower left corner): D
- E (lower right corner): E
- [V] (below the figure): figure number

Let AC be the complement of one declination, AB of the other. [Sit AC complementum vnius declinationis AB alterius.]

The angle ACB, the difference between the two right ascensions found in this way. Therefore by 6 dogma the side AB is given, the distance of the two places, which is to be considered together with the observed motion; for if it differs by more than five minutes, the comet is not in the nearest concavity of the orb of the ☾; and the more it differs from five minutes, the more the comet will be removed from us above the ☾, towards the solar orb. [Angulus ACB differentia inter vtramque aſcenſionem rectam ſic inventam. Ergo per 6 dogma datur latus AB, diſtantia vtriusque loci, quæ conſideranda venit cum motu obſeruato, nam ſi differt plus quinis ſcrupulis, Cometa non eſt in proxima concauitate orbis ☾ & quo plus differt a quinis ſcrupulis eo plus Cometa ſupra ☾ verſus orbem ſolarem a nobis remouebitur.]

Die 18 Octobris. [18 October] H. 10 15

Daily motion above, for this day. [motus diurnus ſupra ad hunc diem.]

Equatorial distance between the comet and Aldebaran [Diſtantia æquatorea inter Cometam & Aldeboram]	43°46′
R. ascension of Aldeb. [Aſcenſio R. Aldeb.]	63 5
R. ascension of the comet [Aſcenſio R. Cometæ]	19 19
Declination B. [Declinatio B.]	4 25

Die eodem [The same day] H. 13 30.

Diagram. Two curved lines meeting at a point at the top, joined lower down by a straight line and at the foot by a straight base line. Figure number "[VI]" printed below.

- C (top, at the meeting point): C
- B (left side, lower part): B
- A (right curve, lower part): A
- D (lower left corner): D
- E (lower right corner): E
- [VI] (below the figure): figure number

Dist. between Com. and Aldeb. [Diſt. inter Com. & Aldeb.]	44 9½
Declin. of the comet [Declin. Cometæ]	4 36½
CA	85 23½
BC	74 24
BA	44 9½
BCA	43 33
Difference of ascens. of both [Differentia Aſcenſ. vtriusq.]	
Ascension of Aldeb. [Aſcenſio Aldeb.]	63 5
Subt.	43 33
Ascension Com. [Aſcenſio Com.]	19 32

Having learned these right ascensions with the declinations, we shall first inquire into the comet's own motion. [His cognitis aſcenſionibus rectis cum declinationibus, initio proprium Cometæ motum inquiremus.]

For the apparent motion. [Pro motu apparenti.]

H. 10¼ Ascension of the comet [H. 10¼ Aſcenſio Cometæ]	19°19′
Intersection [Interſectio]	14 55
BC	4 24
[III] Declination BA [[III] Declinatio BA]	4 25
AC	6 13 53″
H. 13½ Ascens. Com. [H. 13½ Aſcenſ. Com.]	19 32
Intersection [Interſectio]	14 55
Side BC [Latus BC]	4 37
Declination BA [Declinatio BA]	4 36½
Side CA [Latus CA]	6 31 10
previously it was [prius fuit]	6 13 53
Difference [Differentia]	0 17 17

The comet's proper motion over a space of 3¼ hours. [Motus Cometæ proprius ſpatio horarum 3¼.]

For the same, another way: [Pro eodem alia via:]

[V] H. 13½ Ascension [[V] H. 13½ Aſcenſio]	19 32
H. 10¼ Ascension [H. 10¼ Aſcenſio]	19 19
Angle ACB [Angulus ACB]	0 13
I. Declination [I. Declinatio]	4 25
II. Declination [II. Declinatio]	4 36½
Side AC [Latus AC]	85 23½
BC	85 35
Side BA [Latus BA]	0 17 28

the motion sought, which almost agrees with the former. [motus quæſitus, qui cum priori fere conſentit.]

For the true right ascension and true declination of the comet, if it had stood at the lowest distance of the ☾ from the centre of the earth, which is of 52 semidiameters and 17 minutes [ſcrup.], according to Copernicus. [Pro vera Aſcenſione recta veraque declinatione Cometæ, ſi in ima diſtantia ☾ a centro terræ extitißet quæ eſt ſemidiametrorum 52 & ſcrup. 17 ſecundum Copernicum.]

For the true motion of this day, 18 October, for 3¼ hours. [Pro motu vero huius diei 18 Octobris ad Hor. 3¼.]

H. 10 15 Right ascens. Com. [H. 10 15 Aſcenſ. recta Com.]	19 19
Declination B. [Declinatio B.]	4 25

Diagram. A circle with a horizontal straight line across it, a line from the top of the circle down to that line, and two further straight lines crossing the interior; figure number "[VII]" printed below.

- A (top of the circle): A
- B (on the circle, upper right): B
- C (interior, upper middle): C
- D (left end of the horizontal line): D
- E (below the horizontal line, at the foot of the line from A): E
- F (right end of the horizontal line): F
- [VII] (below the figure): figure number

Place of the ☉ at this time [Locus ☉ ad hoc tempus]	5 16 ♏
Right ascension of the ☉ [Aſcenſio recta ☉]	212 58
Hours 10¼ give [Horæ 10¼ dant]	153 45
MC	6 43
Ascension Com. [Aſcenſio Com.]	19 19
Ang. ABC	12 36

Side BC [Latus BC]	85°35′
AB	34 5½
Side AC [Latus AC]	52 28
	Com. Alt.
Therefore Altitude Com. [Ergo Altitudo Com.]	37½
Parallax of altit. DC [Paralaxis Altit. DC]	0 52 6″
[IV] Triangle ADB. [[IV] Triangulum ADB.]	
Side AB [Latus AB]	34 5½
AD	52 30
DB	85 35
Ang. ADB	8 59 55
Triangle CBD. [Triangulum CBD.]	
Side BD [Latus BD]	85 35
DC	0 52 6
Ang. CDB	8 59 55
Side BC [Latus BC]	84 43 32
Therefore complement of declin. [Ergo complementum declin.]	
True declination [Declinatio vera]	5 16 28
Declination seen [Declinatio viſa]	4 25
Parallax of declination [Paralaxis Declinationis]	0 51 28
Angle CBD [Angulus CBD]	0 8 8

Parallax of ascension R. [Paralaxis Aſcenſionis R.]	
Right ascension seen [Aſcenſio recta viſa]	19 19
subtract [ſubtrahe]	0 8 8
True asc. R. [Aſc. R. vera]	19 10 52

For the same in triangle CHD. [Pro ijsdem in triangulo CHD.]

Angle DCH [Angulus DCH]	81 0 5
CDH	8 59 55
Parallax of declinat. DH [Paralaxis declinat. DH]	0 51 27
From the given DC [Ex dato DC]	0 52 6

and from the angle DCH, the complement of the other, CDH, to a right angle, by 27 IV^{ti} of Regiomontanus is given. [& angulo DCH complementum alterius CDH ad rectum, per 27 IV^{ti} Regiomontani datur.]

Parallax of ascension CH [Paralaxis aſcenſionis CH]	0 8 0

so the matter comes back almost to the same. [ita res fere eodem redit.]

H. 10¼ True ascension R. [H. 10¼ Aſcenſio R. vera]	19 10 52
True declination [Declinatio vera]	5 16 28
Hour 13 30 [Hora 13 30]	
Ascension Com. seen [Aſcenſio Com. viſa]	19 32
Declination [Declinatio]	4 36½

For the altitude of the comet. [Pro Altitudine Cometæ.]

☉	5 24 ♏
Ascension of the ☉ [Aſcenſio ☉]	213 6
H. 13½	202 30
MC	55 36
Ascension Com. [Aſcenſio Com.]	19 32
Ang. BCA	36 4

Diagram. A circle with a horizontal straight line across it; a curved line from B at the top of the circle down to A; a short straight line from A down to the horizontal line; a straight line from A to C on the circle. Figure number "[VIII]" printed below.

- B (top of the circle): B
- C (on the circle, upper right): C
- A (interior, just above the horizontal line): A
- [VIII] (below the figure): figure number

BC	34° 5½′
CA	85 23½
BA	58 48
Complement of the altitude sought. [Complementum altitudinis quæſitæ.]	
Therefore Altitude [Ergo Altitudo]	31 10
Take its parallax [Pone paralaxin eius]	0 56 16

Triangle ADB. [Triangulum ADB.]

Diagram. A circle with a horizontal straight line across it; a curved line from A at the top of the circle down to E on the horizontal line; two curved lines from B on the circle running to the right and meeting near G; a straight line from the lower left of the circle to its upper right. Figure number "[IX]" printed to the right.

- A (top of the circle): A
- B (on the circle, upper left): B
- C (interior, upper middle): C
- D (interior, below C): D
- F (interior, right of D): F
- G (interior, right of F): G
- E (on the horizontal line, at the foot of the curve from A): E
- [IX] (right of the figure): figure number

Side AB [Latus AB]	34 5½
AD	58 50
BD	85 23½
Ang. ADB	22 44⅝
Triangle CBD. [Triangulum CBD.]	
Side DC [Latus DC]	0 56 16
Side DB [Latus DB]	85 23½
Angul. CDB	22 44⅝
Side BC [Latus BC]	84 31 37
	Com. Dec.
Angul. DBC	0 21 50
	Par. Asc. R. [Par. Aſc. R.]
Ascension seen [Aſcenſio viſa]	19 32
add [adde]	0 21 50
True ascension [Aſcenſio vera]	19 53 50
True declination [Declinatio vera]	5 28 23
H. 13 30 True ascension [H. 13 30 Aſcenſio vera]	19 53 50

10 15 True ascension [10 15 Aſcenſio vera]	19 10 52
Difference [Differentia]	0 42 58
I. True declination [I. Declinatio vera]	5 16 28
II. True declination [II. Declinatio vera]	5 28 23
[V] CA	84 31 37
BC	84 43 32
ACB	0 42 58
AB	0 44 25

The comet's true motion, account being taken of the parallax, over a space of H. 3¼. [Motus verus Cometæ habita ratione paralaxeos, ſpatio H. 3¼.]

DIE 18 OCTOBRIS. [18 October]

The daily motion you will find further up, and the apparent one also above, over a space of 3¼ hours. [Motum diurnum ſuperius & apparentem ſupra quoque inuenies ſpacio horarum 3¼.]

AB	0°44′25″	with respect to parallax. [reſpectu parallax.]
further up [ſuperius]	0 17 28	without parallax. appar. [ſine parallax. appar.]
daily [diurnus]	2 17	from day 18 to 19 [a die 18 in 19]
H. 3¼ Corresponding [H. 3¼ Reſp.]	18 33	from the daily motion. [ex motu diurno.]

DIE 22 OCTOBRIS. [22 October]

The comet's daily motion found above [Motus Cometæ diurnus ſupra inuentus]	1°55′
The apparent motion from H. 10 M. 6 to H. 15 M. 45, over a space of 5⅔ hours, was [Motus apparens a H. 10 M. 6 in H. 15 M. 45 ſpacio horarum 5⅔ fuit]	0 22

which you will also find further up. [quem etiam ſuperius inuenies.]

For the true motion. [Pro motu vero.]

H. 10 M6 Ascension of the comet [H. 10 M6 Aſcenſio Cometæ]	25 24½
Declination B. [Declinatio B.]	10 27⅓
Altitude [Altitudo]	43 0
Parall. Altit.	0 48 0″
[IV] Triang. ADB.	
AB	34 5½
AD	47 0
DB	79 32⅔
Angul. ADB	11 39 24
Triang. CDB.	
Side DB [Latus DB]	79 32⅓

Side DC [Latus DC]	0 48
Angle CDB [Angulus CDB]	11 39 24
Complement of declinat. [Complementum declinat.]	
Side BC [Latus BC]	78 45 40
Parallax of ascension [Parallaxis Aſcenſionis]	
Ang. CBD	0 9 52
BC	78 45 40
True declination [Vera Declinatio]	11 14 20
Ascension seen [Aſcenſio viſa]	25 24½
Subtract [Subtrahe]	0 9 52
True ascension [Aſcenſio vera]	25 14 22
H. 10 M. 6.	

Eodem die [The same day]

Hour 15¾ Ascens. Com. [Hora 15¾ Aſcenſ. Com.]	25 40½
Declination [Declinatio]	10 42½
Altitude Com. [Altitudo Com.]	21 30
Parallax of altitude [Parallaxis Altitudinis]	1 1 10
[IX] Triangle BDA. [[IX] Triangulum BDA.]	
BA	34 5½
DB	79 17½
DA	68°30′
Angle BDA [Angulus BDA]	33 45 40″
Triang. CDB.	
Side DC [Latus DC]	1 1 10
Angle BDC [Angulus BDC]	33 45 40
Side BD [Latus BD]	79 17 30
Side BC [Latus BC]	78 26 39
Complement of true declin. [Complementum Declin. veræ.]	
Angle DBC [Angulus DBC]	0 34 37
Ascension seen [Aſcenſio viſa]	25 40 30 add [adde]
True ascension [Aſcenſio vera]	26 15 7
True declination [Declinatio vera]	11 33 21

H. 15 45			
True asc. [Aſc. vera]	26°15′7″	True decl. [Decl. vera]	11°33′21″
H. 10 6			
True asc. [Aſc. vera]	25 14 22	True decl. [Decl. vera]	11 14 20
Ang. ACB	1 0 45	Diff. true asc. [Diff. Aſc. vera]	[V]

Side AC [Latus AC]	78°26′39″	Complem. Declinat.	
Side BC [Latus BC]	78 45 40		
Side AB [Latus AB]	1 0 20	mot. Com. account being taken of par. [mot. Com. habita ratione par.]	Over a space of H. 5⅔ [Spacio H. 5⅔]
Above AB [Supra AB]	0 21 50	mot. Com. apparent [mot. Com. apparens]	
Mot. diurn.	1 55	from day 22 to 23 Oct. [a die 22 in 23 Oct.]	

Therefore H. 5⅔ Corresponding 0° 27′ 9″ from the daily motion. [Ergo H. 5⅔ Reſp. 0° 27′ 9″ ex motu diurno.]

Eodem die 22 Octobr. [The same day, 22 October]

H. 13 15 Right asc. [H. 13 15 Aſc. recta]	25°32′	Decl.	10°36′B.
H. 16 10 Right asc. [H. 16 10 Aſc. recta]	25 42	Decl.	10 44 B.

For the motion of the comet in its own course [Pro motu Cometæ in ſuo ductu]

Diurn. motion Com. [Diurn. motus Com.]	1°53′
[VI] Side CA [[VI] Latus CA]	79 24
Side BC [Latus BC]	79 16
Angle ACB [Angulus ACB]	0 10
Side BA [Latus BA]	0 12 44″

mot. of the comet, apparent, over a space of hours 2^{H} 55^{M}; from the daily motion Corresponding 0 13 45; from which the apparent motion falls short by a single minute. But if the comet had stood in the lowest concavity of the lunar orb, the discrepancy would have been far greater. [mot. Cometæ apparens ſpacio Horarum 2^{H} 55^{M} ex motu diurno Reſp. 0 13 45 a quo motus apparens in vnico minuto deficit, quod ſi Cometa in infima concauitate orbis lunaris extitiſſet, longe maior fuiſſet diſcrepantia.]

N.B. These right ascensions were found from the comet's distance from the eye of ☿ by the Sext. △. [N.B. Hæ aſcenſiones rectæ ex diſtantia Cometæ ab oculo ☿ per Sext. △ inuentæ ſunt.]

N.B. The motion of day 5 Nov. you will find below. [N.B. Diei 5 Nou. motum infra inuenies.]

DIE 6 NOUEMBRIS. [6 November]

For the daily motion. [Pro motu diurno.]

Day 5 Nov. H. 8¼ distance between Com. and the bright star of ♈ [Die 5 Nov. H. 8¼ diſtantia inter Com. & luc. ♈]	12°31′
Declination of the comet [Declinatio Cometæ]	22 24
Declination of the head of ♈ [Declinatio Cap. ♈]	21 28½
Triangle ABC. [Triangulum ABC.]	
[I] Side AB [[I] Latus AB]	67 36
Side BC [Latus BC]	68 31½
Side AC [Latus AC]	12 31
Angul. ABC	13 27
	36
Diff. Asc. of both [Diff. Aſc. vtriusque]	
Ascen. R. of the bright star of ♈ [Aſcen. R. luc. ♈]	26 1½
Day 5 Ascen. R. of the comet [Die 5 Aſcen. R. Cometæ]	39 29
H. 8¼.	

Die 6 Nouembr. H. 7 55. [6 November, H. 7 55.]

Distance between Com. and the bright star of ♈ [Diſtantia inter Com. & luc. ♈]	13 14
Declination of the comet [Declinatio Cometæ]	22 53

For the difference of right ascension from the bright star of ♈, following the immediately preceding figure. [Pro differentia aſcenſionis rectæ a lucid. ♈ iuxta proxime præcedentem figuram.]

Side BA [Latus BA]	67° 7′	Asc. of the bright star of ♈ [Aſc. luc. ♈]	26 1½
Side BC [Latus BC]	68 31½	add [adde]	14 13
Side CA [Latus CA]	13 14	Asc. Com. [Aſc. Com.]	40 14½
Ang. ABC	14 13		

Die 7 Nouembris H. 8 15. [7 November, H. 8 15.]

Distance between the Comet. and the bright star of the head of ♈ [Diſtantia inter Comet. & luc. cap. ♈]	13 51
Declination of the comet [Declinatio Cometæ]	23 21
[V] Side BC [[V] Latus BC]	68 31½
Side AB [Latus AB]	66 39
Side AC [Latus AC]	13 51
Angle ABC [Angulus ABC]	14 51 3
Diff. Asc. R. [Diff. Aſc. R.]	
Ascension of the bright star of ♈ [Aſcenſio luc. ♈]	26 1½
Ascension of the comet [Aſcenſio Cometæ]	40
	52½

Day 7 Nov. H. 8¼. [Die 7 Nou. H. 8¼.]

From day 5 to 6 Nov. [A Die 5 in 6 Nou.]		Declin.
Day 6. H. 7 55. Asc. Com. [Die6. H.7 55. Aſc.Com.]	40°14½	22°53′
Day 5. H. 8 15. Asc. Com. [Die5. H.8 15. Aſc.Com.]	39 29½	22 24
Ang. ACB	0 45½	
Side AC [Latus AC]	67 3	
Side BC [Latus BC]	67 36	
Side AB [Latus AB]	0 50⅔	

The apparent motion of the comet over a space of hours 23 M. 40. [Motus apparens Cometæ ſpacio horarum 23 M. 40.]

Hence you will find how much corresponds to 24 Hours. [Hinc quantum 24 Horis conueniat, inuenies.]

For the same daily motion from 5 to 6 Nov., when the comet was near the Merid. [Pro eodem motu diurno a 5 in 6 Nouembr., cum eßet Cometa prope Merid.]

Die 5 Nouembris H. 11 15. [5 November, H. 11 15.]

Difference of Ascen. R. between the bright star of ♈ and the comet by the Arm. subt.	13
[Differentia Aſcen. R. inter luc. ♈ & Cometam per Arm. ſubt.]	31¼
Ascension of the bright star of ♈ [Aſcenſio luc. ♈]	26 1½
Ascension R. of the comet [Aſcenſio R. Cometæ]	39 32¾
Declination of the comet [Declinatio Cometæ]	22 28

Die 6 Nouembris H. 11 40. [6 November, H. 11 40.]

Distance by the Sext. △ of the comet and the bright star of ♈ [Diſtantia per Sext. △ Cometæ & lucidæ ♈]	13 17	Decl. Com.
[VI] CA	68 31½	22°58′
BC	67 2	
BA	13 17	
Angle ACB [Angulus ACB]	14 15¾	Diff. Asc. R. of both [Diff.Aſc.R. vtriusque]
Asc. R. of the head of ♈ [Aſc. R. Cap. ♈]	26 1½	
H. 11 40. Day 6. [H. 11 40. Die 6.]		Declin.
Ascen. Com. [Aſcen. Com.]	40 17¼	22 58
H. 11 15. Day 5. [H. 11 15. Die 5.]		

Ascen. Com. [Aſcen. Com.]	39 32¾	22 28

Diagram. Two lines descend from a point E at the top, the left one curving down to the left end of a horizontal straight line at the foot, the right one curving down to its right end; a straight line runs from D on the left line to F on the right line. Figure number "[X]" printed below.

- E (top, at the meeting of the two lines): E
- D (on the left line, lower part): D
- F (on the right line, level with D's line): F

☒ (below the figure): figure number

Angul. DEF	0 44½
Side EF [Latus EF]	67 2
DE	67 32
DF	0 50 50″

the apparent motion of the comet over a space of 24 M. 25 from day 5 to 6. [motus Cometæ apparens ſpacio 24 M. 25 a die 5 in 6.]

For the daily motion of the comet from day 6 to 7 November. [Pro motu diurno Cometæ a die 6 in 7 Nouembris.]

Day 7 H. 8 15. [Die 7 H. 8 15.]		Declination [Declinatio]
Ascens. R. Com. [Aſcenſ. R. Com.]	40 52½	23 21
Day 6 H. 7 55. [Die 6 H. 7 55.]		
Ascens. R. Com. [Aſcenſ. R. Com.]	40 14½	22 53
Angle ACB [Angulus ACB]	0 38	
[V] Side AC [[V] Latus AC]	67 7	
Side BC [Latus BC]	66 39	
Side AB [Latus AB]	0 44 48″	

Apparent motion of the comet from day 6 to 7 Nov. over a space of hours 24 M. 20. [Motus Cometæ apparens a die 6 in 7 Nouembr. ſpacio horarum 24 M. 20.]

[VI]	
For the apparent motion from H. [Pro motu apparenti ab H.]	6° 5′
to Hour [in Horam]	14 55
Space H. [Spacio H.]	8 50

H. 6 5. Dist. between Com. and the bright star of the head of ♈ [H.6 5. Diſt. inter Com. & luc. Cap. ♈]	13 9
Declination of the comet [Declinatio Cometæ]	22 52
Side BC [Latus BC]	68 31½
Side CA [Latus CA]	67 8
Side BA [Latus BA]	13 9
Angle BCA [Angulus BCA]	14 7 36
Ascension R. of the bright star of ♈ [Aſcenſio R. luc. ♈]	26 1 30
Ascension of the comet [Aſcenſio Cometæ]	40 9 6
[V] H. 14 55.	
Between the comet and the bright star of ♈ [Inter Cometam & luc. ♈]	13 21
Declin. Com.	23 4
Side AC [Latus AC]	68 31½
Side BC [Latus BC]	66 56
Side AB [Latus AB]	13 21
Angle ACB [Angulus ACB]	14 19 45
	Diff. Asc. [Diff. Aſc.]
The bright star of ♈ [Luc. ♈]	26 1½
H. 14 55. Ascension of the comet [H. 14 55. Aſcenſio Cometæ]	40 21¼
Decl.	23 4
6 5 Asc. R. Com. [6 5 Aſc. R. Com.]	40 9 5
Decl.	22 52

Diagram. Two lines descend from a point A at the top, the left one curving down to the left end of a horizontal straight line at the foot, the right one running down to its right end; a straight line runs from C on the left line to B on the right line. Figure number "[XI]" printed below.

- A (top, at the meeting of the two lines): A
- C (on the left line, lower part): C
- B (on the right line, level with C's line): B
- [XI] (below the figure): figure number

Angle CAB [Angulus CAB]	0 12⅙
Side CA [Latus CA]	66 56
Side BA [Latus BA]	67 8
Side CB [Latus CB]	0 16 47″

the apparent motion of the comet over a space of Hor. 8⅚. [motus Cometæ apparens ſpacio Hor. 8⅚.]

Otherwise, for the apparent motion over the same interval of time, from the place of intersection. [Aliter pro motu apparenti ad idem temporis interuallum a loco interſectionis.]

H. 6 5. Asc. R. Com. [H. 6 5. Aſc. R. Com.]	40 9 5
Intersection [Interſectio]	14 55
[III] Side BC [[III] Latus BC]	25 14 5
Declination AB [Declinatio AB]	22 52
Side AC [Latus AC]	33 32 30
H. 14 51. Ascension R. [H. 14 51. Aſcenſio R.]	40 21¼
BC	25°26¼′
Declin. AB	23 4
AC	33 48 50

33°48′50″
33 32 30
0 16 20

The apparent motion sought over a space of H. 8⅝, which almost agrees with the earlier one, found by the VI dogma. [Motus apparens quæſitus ſpacio H. 8⅝ qui cum priori fere conſentit per VI dogma inuento.]

For the true motion over the same interval of time, of Day 6 Nov. [Pro motu vero ad idem temporis interuallum, Diei 6 Nou.]

For the altitude of the comet at time I. [Pro altitudine Cometæ ad I tempus.]

H. 6 5. Asc. R. Com. [H. 6 5. Aſc. R. Com.]	40° 9′
Declination [Declinatio]	22 52
Place of the ☉ [Locus ☉]	24 15 ♏
Ascension R. of the ☉ [Aſcenſio R. ☉]	231 52
H. 6 5. give [H. 6 5. dant]	91 15
[VI] MC	323 7
Comet [Cometa]	40 9
	360
Angle ABC [Angulus ABC]	77 2
Side AB [Latus AB]	34 5½
Side BC [Latus BC]	67 8
Side AC [Latus AC]	64 4
Therefore Altitude of the comet [Ergo Altitudo Cometæ]	25 56
Paral. of altitude [Paral. Altitudinis]	0 59 5″
[IV] Triangle ADB. [[IV] Triangulum ADB.]	
Side AB [Latus AB]	34 5½
Side AD [Latus AD]	64 4
Side DB [Latus DB]	67 8
Angle ADB [Angulus ADB]	37 24 30
Triangle CDB. [Triangulum CDB.]	
Side DC [Latus DC]	0 59 5
Side DB [Latus DB]	67 8

Angle CDB [Angulus CDB]	37 24 30
Side BC [Latus BC]	66 21 4
	Complem. true Decl. [Complem. Decl. veræ]
Angle CBD parallax [Angulus CBD parallaxis]	
Ascens. Rec. [Aſcenſ. Rec.]	0 39 5
Ascension seen [Aſcenſio viſa]	40 9 5
True Asc. R. [Vera Aſc. R.]	39 30 0
True declination [Vera declinatio]	23 38 56
H. 14 55. Ascen. R. [H. 14 55. Aſcen. R.]	H. 6 5
of the comet, seen [Cometæ viſa]	40 21¼
For altit., Declin. [Pro altit., Declin.]	23 4
Place of the ☉ [Locus ☉]	24 37 ♏
Ascens. R. [Aſcenſ. R.]	232 15
For H. 5 55 [Pro H. 5 55]	223 45
[VII] MC	96 0
Ascen. Com. [Aſcen. Com.]	40 21¼
BCA	55 38¾
Side BC [Latus BC]	34 5½
Side AC [Latus AC]	66 56
Side BA compl. Alt. [Latus BA compl. Alt.]	52 0
Therefore Altitude of the comet [Ergo Altitudo Cometæ]	38 0
Parallax Alt. [Parallaxis Alt.]	0 51 45

[IX] Triangle BDC. [[IX] Triangulum BDC.]	
Side AD [Latus AD]	52 0
Side BD [Latus BD]	66 56
Side BA [Latus BA]	34 5½
Angle ADB [Angulus ADB]	35 56 56
Triangle DBC. [Triangulum DBC.]	
Side DB [Latus DB]	66 56
Side DC [Latus DC]	0 51 45
Angle BDC [Angulus BDC]	35 56 56
Side BC complem. [Latus BC complem.]	
true Decl. [Decl. veræ]	66 14 10
Angle DBC parall. [Angulus DBC parall.]	
As. R. AD [Aſ. R. AD]	0 33 15
Ascension R. seen H. 14 55 [Aſcenſio R. viſa H.14 55]	40 21 15
True Ascension R. [Aſcenſio R. vera]	40 54½
True declination [Declinatio vera]	23 45 50

H. 14 55. True Asc. [H. 14 55. Aſc. vera]	40 54½	23 45 50
6 5. True Asc. [6 5. Aſc. vera]	39 30	23 38 56

Angle ACB [Angulus ACB]	1 24½	true [veræ]
Side AC [Latus AC]	66 14 10	
Side BC over a space of hours 8⅝ [Lat. BC ſpatio hor. 8⅝]	66 21 4	
Day 6 Nov.: Side AB [Die 6 Nou. Latus AB]	1 17 41	

motion of the comet over a space of 8⅝ H. by reason of the parallaxes. [motus Cometæ ſpacio 8⅝ H. ratione parallaxium.]

Above it was [Superius fuit]	0 16½	apparent motion [motus ap- / parens]
From the diurnal, 46 M. Corresponding [Ex diurno 46 M. Reſp.]	0 16 56	

The apparent falls short of the motion arising from the diurnal by 0′26″. [Apparens a motu ex diurno proueniente deficit in 0′26″.]

The apparent falls short of the lunar motion by 1° 1′ 11″. [Apparens a motu lunari deficit in 1° 1′ 11″.]

[VI] **DIE 5 NOUEMBRIS.** [5 November]

H. 7 50. Between Com. and the bright star of ♈ [H. 7 50. Inter Com. & luc. ♈]	12 30
Declination of the comet B. [Declinatio Cometæ B.]	22 24
Side BC [Latus BC]	67 36
Side CA [Latus CA]	68 32
Side BA [Latus BA]	12 30
Angle BCA [Angulus BCA]	13 26½
Difference of asc. of the comet from the bright star of ♈. [Differentia aſc. Cometæ a lucida ♈.]	
Ascension rect. of the bright star of ♈ [Aſcenſio rect. luc. ♈]	26 1½
Right ascension Com. [Aſcenſio recta Com.]	39 28 0
H. 7⅝.	
H. 1 30. Distance of Com. from the bright star of ♈ [H. 1 30. Diſtantia Com. a luc. ♈]	12 40
Declination of the comet [Declinatio Cometæ]	22 29½
Side BC [Latus BC]	67 30½
Side CA [Latus CA]	68 32
Side BA [Latus BA]	12 40
Angle BCA [Angulus BCA]	13 37⅙
	Diff. Ascens. [Diff. Aſcenſ.]
Ascension R. of the bright star of ♈ [Aſcenſio R. lucidæ ♈]	26 1½
Ascension R. of the comet [Aſcenſio R. Cometæ]	39 38⅔
H. 13½.	

For the apparent motion of the comet over this interval of time, H. 5 M. 40, from the given difference of right ascension and the declinations. [Pro motu Cometæ apparenti ad hoc temporis interuallum H. 5 M. 40 ex data differentia Aſcenſionis rectæ & declinationibus.]

AC	67 36
BC	67 30½
BCA	0 10⅔
Hence side BA [Hinc latus BA]	0 11$^{3}/_{10}$
	the motion sought [motus quæſitus]

Inquiry into the motion of the comet if it had stood in the lowest concavity of the lunar orb. [Inquiſitio motus Cometæ ſi in infima orbis Lunaris concauitate extitißet.]

Diagram. A circle. A horizontal straight line runs across it from D on the left of the circle to F on the right. A straight line runs from G at the lower left of the circle to K at the upper right, crossing the horizontal line at H. A curved line runs from B on the upper left of the circle to A. A curved line runs from C at the top of the circle down through A to E on the horizontal line. J stands beside the curve just below A, by the straight line G–K. Figure number "[XII]" printed to the right of F.

- C (top of the circle): C
- B (upper left, on the circle): B
- K (upper right, on the circle): K
- A (inside the circle, where the curve from B meets the curve from C): A
- J (inside, below A, by the line G–K): J
- D (left end of the horizontal line, on the circle): D
- H (on the horizontal line, where the line G–K crosses it): H
- E (on the horizontal line, right of H, at the foot of the curve from C): E
- F (right end of the horizontal line, on the circle): F
- G (lower left, on the circle): G
- [XII] (right of F): figure number

For the altit. of the Com. at time I, H. 7 M. 50. [Pro altit. Com. ad I tempus H. 7 M. 50.]

Ascension R. of the comet [Aſcenſio R. Cometæ]	38 28
AI Declin.	22 24
Place of the ☉ [Locus ☉]	23 3 ♏
Ascension R. [Aſcenſio R.]	230 39
MC	348 9
Angle ABC [Angulus ABC]	51 19
Side BC [Latus BC]	34 5½
Side BA [Latus BA]	67 36

Side CA Complem. Alt. [Latus CA Complem. Alt.]	50 15
Therefore Alt. of the Com. [Ergo Alt. Com.]	39 45

For the altitude of the comet at time II. [Pro altitudine Cometæ ad II Tempus.]

H. 1 30. Ascens. R. Com. [H. 1 30. Aſcenſ. R. Com.]	39 38⅔
Declination [Declinatio]	22 29½
Place of the ☉ [Locus ☉]	23 17½ ♏
Ascension of the ☉ [Aſcenſio ☉]	230 53
MC	73 23

Diagram. A circle. A horizontal straight line runs across it from the left edge of the circle to the right edge. A straight line runs from the upper left of the circle down to the lower right of the circle, crossing the horizontal line. A curved line runs from C at the top of the circle down through A to the horizontal line, which it meets left of centre. A curved line runs from A to B on the upper right of the circle. Figure number "[XIII]" printed to the right of the circle, level with the horizontal line.

- C (top of the circle): C
- A (inside, upper left, at the meeting of the two curves): A
- B (upper right, on the circle): B
- [XIII] (right of the circle): figure number

Angle CBA [Angulus CBA]	33 44
Side BC [Latus BC]	34 5½
[IV] Side BA [[IV] Latus BA]	67 30½
Side CA Complem. Alt. [Latus CA Complem. Alt.]	41 37½
Therefore Altitude [Ergo Altitudo]	48 22
H. 7 50. Declination of the Com. [H.7 50. Declinatio Com.]	22 24 B.
Altitude [Altitudo]	39 45
Parallax of Altit. [Parallaxis Altit.]	0 50 30
Triangle ADB. [Triangulum ADB.]	
Side AB [Latus AB]	34 5½
Side AD [Latus AD]	50 15
Side DB [Latus DB]	67 36
Angle ADB [Angulus ADB]	34 41 25
Triangle CDB. [Triangulum CDB.]	
Side DC [Latus DC]	0 50 30
Side DB [Latus DB]	67 36 0
Angle CDB [Angulus CDB]	34 41 25
Side BC [Latus BC]	66 54 31

Complement of the true declination [Complementum declinationis veræ]	
Angle CBD [Angulus CBD]	0 31 16
Parallax of the right Asc. [Parallaxis Aſc. Rectæ]	
Ascension R. seen [Aſcenſio R. viſa]	39 28 0
Subtract [Subtrahe]	0 31 16
True ascension [Aſcenſio vera]	38 56 44
True declination [Declinatio vera]	23 5 29
H. 13 30. Declination [H. 13 30. Declinatio]	22 29½
[VIII] Altitude [[VIII] Altitudo]	48 22
Paral. of Altit. [Paral. Altit.]	0 43 38
Triangle ADB. [Triangulum ADB.]	
Side AB [Latus AB]	34 5½
Side AD [Latus AD]	41 38
Side BD [Latus BD]	67 30½
Angle ADB [Angulus ADB]	27 56 29
Triangle DBC. [Triangulum DBC.]	
Side DB [Latus DB]	67 30½
Side DC [Latus DC]	0 43 38
Angle BDC [Angulus BDC]	27 56 29
Side BC compl. Decl. [Latus BC compl. Decl.]	66 51 59
Angle DBC [Angulus DBC]	0 22 6
parall. Asc. add. [parall. Aſc. add.]	
Ascension seen [Aſcenſio viſa]	39 38 40
True ascension [Aſcenſio vera]	40 0 46
True declination [Declinatio vera]	23 8 1

For the motion of the comet, taking account of the parallax. [Pro motu Cometæ habita ratione parallaxeos.]

	Asc. R. [Aſc. R.]	Declin.
H. 13 M. 30	40° 0′ 46″	23° 8′ 1″
H. 7 M. 50	38 56 44	23 5 29
BCA	1 4 2	

[VI] CA	66 54 31
BC	66 51 59
BA	0 58 58

the motion of the comet sought, taking account of the parallax, over a space of Hor. 5⅔. [motus Cometæ quæſitus habita ratione parallaxeos ſpacio Hor. 5⅔.]

The apparent was [Apparens fuit]	0 11 18
From the diurnal motion of the comet, 0°50′, there results proportionally [Ex diurno Cometæ motu 0°50′ prouenit proportionaliter]	0 11 48
The apparent falls short of the motion arising from the diurnal by [Apparens deficit a motu ex diurno proueniente in]	0 0 30
The apparent falls short of the motion taking account of the parallax by [Apparens deficit a motu habita ratione parallaxeos in]	47 40

For the ascensions of the comet from the distances from the fixed stars, by the Trigonic Sext. [Pro Aſcenſionibus Cometæ ex diſtantijs a fixis per Sext. Trigonicum.]

Die 18 Octob. H. 1 30. [18 October, H. 1 30.]

Between the Comet. and Aldebaran [Inter Comet. & Aldeb.]	44 9½
[VI] Declination [[VI] Declinatio]	4 36½ B.
Side CA [Latus CA]	74 24
Side BC [Latus BC]	85 23½
Side BA [Latus BA]	44 9½
BCA	43 33 2
Ascens. of Aldebaran [Aſcenſ. Aldeb.]	63 5 0
Ascension of the comet [Aſcenſio Cometæ]	19 31 58
H. 13½.	

The same day, a little earlier. [Eodem die paulo ante.]

H. 0 45 after midnight. Between the Comet. and Aldebaran [H. 0 45 P. M. N. Inter Comet. & Aldeboran]	44 13
Declination of the comet [Declinatio Cometæ]	4 34 B.
CA	74 24
BC	85 26
BA	44 13
BCA Diff. Ascens. [BCA Diff. Aſcenſ.]	43 35 56
Ald.	63 5 0
Asc. Com. H. 12¾. [Aſc. Com. H. 12¾.]	19 29 4

DIE 22 OCTOBRIS. [22 October]

H. 13 15. Between the Com. and Aldebaran [H. 13 15. Inter Com. & Aldeb.]	36°53⅓′BA
Side BC [Latus BC]	79 24
Side BA [Latus BA]	74 24
Angle BCA [Angul. BCA]	37 33
	63 5

Ascens. of the Com. [Aſcenſ. Com.]	25 32
H. 1¼ after midnight. [H. 1¼ P.M.N.]	

The same day [Eodem die]

H. 16 10. Between the Com. and Aldebaran [H. 16 10. Inter Com. & Aldeb.]	36 40¼ BA
Side BC [Latus BC]	79 16
Side CA [Latus CA]	74 24
Angle BCA [Angulus BCA]	37 22 58″
	63 5
Ascens. of the Com. [Aſcenſ. Com.]	25 42
H. 4⅙ after midnight. [H. 4⅙ P.M.N.]	

[VI] **DIE 5 NOUEMBRIS.** [5 November]

H. 12 30. Between the Comet and the bright star of ♈ [H. 12 30. Inter Cometam & luc.♈]	12°38′
Declin. of the Com. [Declin. Com.]	22 29
Side CA [Latus CA]	68 32
Side BC [Latus BC]	67 31
Side BA [Latus BA]	12 38
Angle BCA [Angul. BCA]	13 35 1″
Bright star of ♈, asc. [Luc.♈ aſc.]	26 1½
Ascens. R. of the Com. [Aſcenſ. R. Com.]	39 36½
H. 12½.	
H. 13½. The same day [H. 13½. Eodem Die]	
Between the Com. and the bright star of ♈ [Inter Com. & luc.♈]	12 40
Declination [Declinatio]	22 29½
Hence Asc. of the Com. [Hinc Aſc. Com.]	39 38⅔

DIE 6 NOUEMBRIS. [6 November]

H. 12 55. The comet from the bright star of ♈ [H. 12 55. Cometa a lucida ♈]	13° 18′
Declination of the comet [Declinatio Cometæ]	23 1
Side AC [Latus AC]	68 32
Side BC [Latus BC]	66 59
Side BA [Latus BA]	13 18
Angle BCA [Angulus BCA]	14 16⅔
Ascens. R. of the Com. [Aſcenſ. R. Com.]	40 18⅙

DIE 7 NOUEMBRIS. [7 November]

H. 7 20. Between the Com. and the bright star of ♈ [H. 7 20. Inter Com. & luc.♈]	13° 50½
Declination of the comet [Declinatio Cometæ]	23 19½
Side AC [Latus AC]	68 32
Side BC [Latus BC]	66 40½
Side BA [Latus BA]	13 50½
Angle BCA [Angulus BCA]	14 50 3
Ascens. of the bright star of ♈ [Aſcenſ. lucid.♈]	26 1½
Ascens. of the Com. [Aſcenſ. Com.]	40 51½

DIE 9 NOUEMBRIS. [9 November]

H. 8 43. The comet from the bright star of ♈ [H. 8 43. Cometa a luc.♈]	15° 6′
Declination of the comet [Declinatio Cometæ]	24 9½
CA	68 32
BC	65 50½
BA	15 6
BCA	16 7 46″
Hence Ascens. of the Com. [Hinc Aſcenſ. Com.]	42 9⅙

DIE 12 NOUEMBRIS. [12 November]

H. 8 45. The comet from the bright star of ♈ [H. 8 45. Cometa a luc.♈]	15° 6′
Declination of the Com. [Declinatio Com.]	25 14½
Side AC [Latus AC]	68 32
BC	64 45½
BA	16 45
BCA	17 46 42
Hence Ascension R. of the Com. [Hinc Aſcenſio R. Com.]	43 48⅙

Inquiry into the place of the comet at that time at which it could be observed nearest to the meridian on the individual days, with a clear sky. [Inquiſitio loci Cometæ ad illud tempus quo proxime apud Meridianum in ſingulis diebus cœlo ſereno obſeruari potuit.]

October. [OCTOBER.]

Days [Dies]	H. M.	Asc. R. [Aſc. R.]	Declination B. [Declinatio B.]	Longit. ♈	Latitud. Mer.
18	11 10	19 21½	4 28	19 33	3 28
20	11 30	22 32	7 40	23 40¾	1 40⅓
22	11 30	25 30	10 31	27 26⅚	0 5⅙

November. [NOUEMBER.]

			B.	☿	B.
4	10 30	38 45	21 53½	13 16⅓	6 19½
5	11 15	39 32¾	22 28	14 9⅓	6 38½
6	11 40	40 17	22 58	14 58	6 54½
7	8 15	40 52½	23 21	15 36⅓	7 6¼
9	9 30	42 10⅓	24 10½	16 59¾	7 32¼
12	9 20	43 50½	25 15	18 46½	8 7

For the angle of inclination of the path of the comet to the ecliptic and the place of intersection. [PRO ANGULO INCLINATIONIS VIÆ COMETÆ AD ECLIPTICAM & LOCO INTERSECTIONIS.]

Days [Dies]	H. M.	Longit.	Latitude. [Latitudo.]
20	11 30	23 40 45♈	1 40⅓ M.
18	11 10	19 33 5♈	3 27⅚ M.
Angle BCA [Angulus BCA]		4° 7′ 40″	

Triangle BCA. [Triangulum BCA.]

Diagram. A circle. A horizontal straight line runs across it from F at the left edge of the circle to G at the right edge. A straight line runs from the upper left of the circle down to the lower right of the circle, crossing the horizontal line at E. Two curved lines rise from C at the bottom of the circle: one runs up to D on the horizontal line, crossing the oblique line at B; the other runs up to the horizontal line to the right of D, crossing the oblique line at A. Figure number "[XIV]" printed to the right of G.

- F (left end of the horizontal line, on the circle): F
- E (on the horizontal line, at the crossing of the oblique line): E
- D (on the horizontal line, where the left-hand curve meets it): D
- B (on the left-hand curve, at its crossing with the oblique line): B
- A (on the right-hand curve, at its crossing with the oblique line): A
- C (bottom of the circle, where the two curves start): C
- G (right end of the horizontal line, on the circle): G
- [XIV] (right of G): figure number

The angle at C known from the difference of longit. [Angulus ad C ex differentia longit. cognitus.]

Side CA [Latus CA]	86° 32′ 10″
Side BC [Latus BC]	88 19 40
Side BA [Latus BA]	4 29 43
Angle CBA [Angulus CBA]	66 25 47

Triangle BED. [Triangulum BED.]

Side BD [Latus BD]	1 40 20
Angle EBD equal to CBA [Angulus EBD æqual. CBA]	
Hence BED [Hinc BED]	23 37 34
Side DE [Latus DE]	3 49 25
Difference of the longitude of the place of intersection from the post. long. [Differentia longitudinis loci interſectionis a poſt. long.]	
D long.	23 40¾ ♈
DE add [DE adde]	3 49¾
Place of intersection [Locus interſectionis]	27 30½ ♈
Angle of inclination [Angulus inclinationis]	23 37 34

Days [Dies]	H. M.	Longit. ♈	Latit. Mer.
22	11 30	27 26⅝	0 5⅛′
18	11 10	19 33 5″	3 27⅝

Angle BCA [Angulus BCA]	7°53′45″
Side CA [Latus CA]	86 32⅛
Side BC [Latus BC]	89 54⅝
Side BA [Latus BA]	8 35
Angle EBD [Angulus EBD]	66 59 14″
Side BD [Latus BD]	3 27 50
Angle BED [Angulus BED]	23 15 29
Side ED [Latus ED]	8 5 44
Long.	19 33 5
Intersection [Interſectio]	27 38 49
Inclination [Inclinatio]	23 15 29

Diagram. A circle. A horizontal straight line runs across it from the left edge of the circle to G at the right edge, passing D, E and F. A straight line runs from the left edge of the circle, above the horizontal line, down to the lower right of the circle, passing B, crossing the horizontal line near E, and passing A. A curved line runs from C at the top of the circle down to the left to B on the oblique line. A second line runs from C down to H, and from H straight down through F on the horizontal line to A on the oblique line. A dotted line joins B and H. Figure number "[XV]" printed to the right of G.

- C (top of the circle): C

- B (left, on the oblique line, at the end of the left-hand curve): B
- H (above the horizontal line, at the end of the dotted line): H
- D (below the horizontal line, left): D
- E (below the horizontal line, near the crossing of the oblique line): E
- F (on the horizontal line, where the line from H crosses it): F
- A (below, on the oblique line, at the foot of the line from H): A
- G (right end of the horizontal line, on the circle): G
- [XV] (right of G): figure number

	Longit. in D and A [Longit. in D & A]	Latit. BD and FA [Latit. BD & FA]
Day 6. H. 11⅔ Nov. [Die 6. H. 11⅔ Nou.]	14 57 55♉	6 54½ B.
Day 18. H. 11⅙ Oct. [Die 18. H. 11⅙ Octb.]	19 33 5♈	3 27⅚M.
Angle BCA [Angulus BCA]	25 24 50″	
Side BC [Latus BC]	83 5 30	
Side CA [Latus CA]	93 27 50	

Triangle BCH, right-angled. [Triangulum BCH rectangulum.]	
Side BC [Latus BC]	83° 5′ 30″
Angle BCH [Angul. BCH]	25 24 50
Hence BH [Hinc BH]	25 12 59
and CH [& CH]	82 21 36
Angle CBH [Angulus CBH]	86 43 46
Triangle BDE. [Triangulum BDE.]	
Side DB [Latus DB]	6 54 30
Angle DBE [Angulus DBE]	68 32 4
Hence angle BED [Hinc angulus BED]	22 30 0
inclin. of the circle of the comet to the Ecliptic. [inclin. Cometæ circuli ad Eclipticam.]	
Side DE [Latus DE]	17 0 29
Differ. of the place of intersection from the II longit. [Differ. loci interfectionis a II longit.]	
Day 6 Nov. [Die 6 Nou.]	14 57 55♉
Longitude of the comet. [Longitudo Cometæ.]	27 57 26
Place of intersection of the path of the comet in the Ecliptic. [Locus interfectionis viæ Cometæ in Ecliptica.]	
Triangle BAH. [Triangulum BAH.]	
Side HA is the difference [Latus HA eſt differentia]	
of HC from AC [HC ab AC]	11° 6′ 14″
BH became known [BH innotuit]	25 12 59
Hence BA [Hinc BA]	27 24 13
And angle ABH [Et angulus ABH]	24 44 10
Add CBH [Adde CBH]	86 43 46
Sum [Summa]	111 27 56

Its complement to 180 gives [Huius complementum ad 180 dat]	
Angle DBE [Angulum DBE]	68 32 4

Since it has been sufficiently detected from the calculation now set up for the third time that the angle of inclination of the path of the comet to the Ecliptic was variable, we therefore, presupposing the place of intersection known by observation in 27° 38′ ♈, investigated the angle of inclination of the circle of the comet to the Ecliptic from the distance from that point and the given latitude, in the manner that follows. [Quoniam ex calculo iam tertio inſtituto ſatis deprehenſum eſt, angulum inclinationis viæ Cometæ ad Eclipticam fuiße variabilem, præſuppoſito igitur loco interſectionis per obſeruationem cognito in 27° 38′ ♈ ex diſtantia ab illo puncto et latitudine data, angulum inclinationis circuli Cometæ ad Eclipticam inquiſiuimus in hunc modum vt ſequitur.]

	D.	H. M.	Longitud. of the comet [Longitud. Cometæ]	Lat-itud. BC	Dist. from the place of intersect. [Diſt. a loco interſect.]	Motion to the intersect. [Motus ad interſect.]	Inclin. to the Eclip. CAB [Inclin. ad Eclip. CAB]
Octo-ber [Octo-bris] [XVI]	18	11 10	19° 33′ ♈	3° 27⅝8° 5′ M.		8 47⅓′	23 17⅓′
	20	11 30	23 40¾ ♈	1 40⅓ M.	3 57¼	4 17½	22 56½

Diagram. Two curved lines meet at A at the left. The upper curve rises from A to C and runs on to the right beyond C; the lower curve runs from A to the right through B and on, falling away, beyond B. A short straight line joins C on the upper curve to B on the lower curve. Figure number "[XVI]" printed to the right of the figure.

- A (left, where the two curves meet): A
- C (on the upper curve, at the top of the short line): C
- B (on the lower curve, at the foot of the short line): B
- [XVI] (right of the figure): figure number

Diagram. Two curved lines run from the left towards the right and cross at E, each continuing a short way beyond E. The upper curve passes through D and falls to E; the lower curve passes through F and rises gently to E. A straight vertical line joins D on the upper curve to F on the lower curve. Figure number "[XVII]" printed to the upper right of E.

- D (on the upper curve, at the top of the vertical line): D
- F (on the lower curve, at the foot of the vertical line): F
- E (right, where the two curves cross): E
- [XVII] (upper right of E): figure number

	D.	H. M.	Long. of the Com. F. [Long. Com. F.]	Latit. DF	Dist. from inclin. FE [Dift. ab inclin. FE]	Motion from inclin. DE [Motus ab inclin. DE]	In-clin. DEF
November [Nouem-bris] [XVII]	4	10 30	13° 16⅓′ ♉	6° 19½′ B.	15° 38⅓′	16° 50⅓′	22° 21⅙′
	5	11 15	14 9⅓	6 38½	16 31⅓	17 46⅓	22 16
	6	11 40	14 58	6 54½	17 20	18 37⅙	22 8
	7	8 15	15 36⅓	7 6 25″	17 58⅓	19 17	22 0
	9	9 30	16 59¾	7 32¼	19 21¾	20 43½	21 45½
	12	9 20	18 46½	8 7	21 8½	22 34¾	21 34½

For the angle of inclination of the path of the comet to the Equator. [Pro angulo inclinationis viæ Cometæ ad Æquatorem.]

	D.	H.	Asc. R. E and D [Afc. R. E & D]	Declin. B.
Nov. [Nouembr.]	6.	11⅔	40° 17′	4 28 DB
Oct. [Octobr.]	18.	11⅙	19 21½	22 58 CE

Diagram. A circle. A horizontal straight line runs across it from G at the left edge of the circle to H at the right edge. Two curved lines run down from F at the top of the circle to the horizontal line: the left-hand one ends at E, the right-hand one at D. A straight line runs from J on the upper left of the circle down to K on the lower right of the circle, crossing the left-hand curve at C, the right-hand curve at B, and the horizontal line at A. Figure number "[XVIII]" printed to the right of H.

- F (top of the circle, where the two curves start): F
- J (upper left, on the circle, at the upper end of the oblique line): J
- C (on the left-hand curve, at its crossing with the oblique line): C
- B (on the right-hand curve, at its crossing with the oblique line): B
- G (left end of the horizontal line, on the circle): G
- E (on the horizontal line, where the left-hand curve meets it): E
- D (on the horizontal line, where the right-hand curve meets it): D
- A (on the horizontal line, at its crossing with the oblique line): A
- H (right end of the horizontal line, on the circle): H
- K (lower right, on the circle, at the lower end of the oblique line): K
- [XVIII] (right of H): figure number

Triangle CFB. [Triangulum CFB.]
Side BF [Latus BF] 85° 32′

Side FC [Latus FC]	67 2
Angle CFB [Angulus CFB]	20 55½
Side BC [Latus BC]	27 24 14″
Angle FCB [Angulus FCB]	129 19 15
	180
Angle ECA [Angulus ECA]	50 40 45

Triangle ECA. [Triangulum ECA.]	
Side EC [Latus EC]	22° 58′
Angle ECB [Angulus ECB]	50
	40¾
Angle CAB [Angulus CAB]	44
	34¾
Inclin. of the circle of the comet to the equator. [Inclin. Cometæ circuli ad æquatorem.]	
Side EA [Latus EA]	25 28
	25″
Diff. of the place of intersection, to be subtracted from the later right ascension. [Diff. loci interſectionis a poſteriori aſcenſione recta ſubtrahenda.]	
Therefore angle of inclin. [Ergo Angulus inclin.]	44° 35′
Place of intersection [Locus interſectionis]	14 49

	D.	H.	Ascens. R. [Aſcenſ. R.]	Declin. B.
Nov. [Nouembr.]	5.	11¼	39° 33′	22° 28′
Oct. [Octobr.]	22.	11½	25 30	10 31

Angle CFB [Angulus CFB]	14° 3′
Side CF [Latus CF]	67 32
Side BF [Latus BF]	79 29
Side BC [Latus BC]	17 58 59″
Angle CBF [Angulus CBF]	46 36 25

Triangle BAD. [Triangulum BAD.]	
Side BD [Latus BD]	10° 31′
Angle ABD [Angulus ABD]	46 36 25″
Angle BAD [Angulus BAD]	44 24 4
	Inclin.
Side DA [Latus DA]	10 55 27
Ascension I [Aſcenſio I]	25 30 0

Place A [Locus A]	14 34½ Intersection [Interſectio]

	D.	H.	Ascens. R. [Aſcenſ. R.]	Declin. B.
Oct. [Octobr.]	22	11½	25° 30	10° 31′
	18	11⅙	19 21½	4 28

Triangle CBF. [Triangulum CBF.]	
Side FC [Latus FC]	79° 29′
Side BF [Latus BF]	85 32
Angle CFB [Angulus CFB]	6 8½
Side BC [Latus BC]	8 34 54″
Angle DBA CBF [Angulus DBA CBF]	44 49 30
Side BD [Latus BD]	4 28
Angle DAB [Angulus DAB]	45 20 52
Side DA [Latus DA]	4 25 33
Ascension R. [Aſcenſio R.]	19 21½
Subt.	4 25½
Intersection [Interſectio]	14 56
Inclination [Inclinatio]	45 21

It is established in this place, and above as well, that the angle of inclination of the path of the comet to the Equator was also changeable; therefore, by the difference of right ascension from the place of intersection, put at 14° 55′ of the Equator, and the given declination, we found the inclination of the path of the comet to the Equator on the individual days of the observations, as follows. [Conſtat hoc loco & ſuperius quoque, angulum inclinationis viæ Cometæ ad Æquatorem etiam fuiße mutabilem, quare per differentiam aſcenſionis rectæ a loco interſectionis in 14° 55′ Æquatoris poſito, & declinationem datam, Inclinationem viæ Cometæ in ſingulis obſeruationum diebus ad Æquatorem inuenimus, vt ſequitur.]

[XVI] October [OCTOBRIS]

D.	H. M.	Asc. R. B [Aſc. R. B]	De-clin. B. BC	Dist. from intersect. BA [Diſt. ab interſ. BA]	Motion of the Com. in its own course CA [Motus Com. in ſuo ductu CA]	Inclin. to the Equat. CAB [Inclin. ad Æquat. CAB]
18	11 10	19° 21½′	4° 30′	4° 26½′	6° 19⅙′	45° 27⅔′
20	11 30	22 32	7 39	7 37	10 46¾	45 22⅚
22	11 30	25 30	10 31	10 35	14 52⅔	45 18⅛

D.	H. M.	Asc. R. B [Aſc. R. B]	De-clin. B. BC	Dist. from intersect. BA [Diſt. ab interſ. BA]	Motion of the Com. in its own course CA [Motus Com. in ſuo ductu CA]	Inclin. to the Equat. CAB [Inclin. ad Æquat. CAB]
November [NOUEMBRIS]						
4	10½	38 45	21 53½	23 50	31 55⅓	44 50½
5	11¼	39 33	22 28	24 38	32 52	44 46½
6	11⅔	40 17	22 58	25 22	33 42	44 41⅓
7	8¼	40 52½	23 21	25 57½	34 21⅚	44 36¼
9	9½	42 10½	24 10½	27 15½	35 48½	44 25½
12	9⅓	43 50½	25 15	28 55½	37 39¾	44 16⅔

With the daily motion of the comet known proportionally, we investigated, for the individual days of its appearance, its motion in its own course from the intersection in the Equator. Then, from the angle of inclination of the path of the comet to the Equator, taken proportionally for the individual days as well, the Ascension R. and Declination of the comet were found according to the demonstration set below. And from this we constructed an ephemeris from midnight of the day 18 Oct. up to 15 November. [Cognito motu diurno Cometæ proportionaliter, ad ſingulos ſuæ apparitionis dies, motum ipſius in proprio ductu ab interſectione in Æquatore perquiſiuimus. Deinde ex angulo inclinationis viæ Cometæ ad Æquatorem, etiam proportionaliter ad ſingulos dies accepto, Aſcenſio R. & Declinatio Cometæ iuxta ſubjectam demonſtrationem ſunt inuentæ. Atque hinc Ephemeridem a media nocte diei 18 Octobr. vſque in 15 Nouembris conſtruximus.]

Diagram. Two curved lines meet at G at the right. The upper curve runs from the upper left through F and falls to G; the lower curve runs from the lower left through E and rises gently to G. A line joins F on the upper curve to E on the lower curve. Figure number "[XIX]" printed below the figure.

- F (on the upper curve, at the top of the line FE): F
- E (on the lower curve, at the foot of the line FE): E
- G (right, where the two curves meet): G
- [XIX] (below the figure): figure number

In this triangle, right-angled at E, the side FG, the motion of the comet in its own course, is known, and the angle FGE, the inclination to the Equator. Therefore by 27 of the fourth of Regiomontanus FE, the declination of the comet, is given, and by 25 of the same GE, the distance from the intersection in the Equator; and therefore the right ascens. and the declination are also known for the individual days. [In hoc triangulo rectangulo in E notum eſt Latus FG motus Cometæ in ſuo ductu & angulus FGE inclinatio ad Æquatorem. Datur ergo per 27 quarti Regiomontani FE Declinatio Cometæ & per 25 eiuſdem GE

diſtantia ab interſectione in Æquatore: ideoque aſcenſ. recta & declinatio etiam ad ſingulos dies cognita.]

October [OCTOBER.]

Days [Dies]	Motion in its own course [Motus in ſuo ductu]	Inclin. to the Equat. [Inclin. ad Æquat.]	Asc. R. [Aſc. R.]	De-clin. B.	Inclinat. to the Ecliptic. [Inclinat. ad Ecliptic.]	Lon-git. ♈	Latit. Mer.
18	6°24′	45°28′	19°25′	4°33′	23°17′	19°38′	3°24½′
19	8 42	45 26	21 3	6 11	23 7	21 45½	2 30
20	10 53	45 23	22 36	7 43	22 57	23 46	1 39
21	12 58	45 21	24 7	9 11	22 54	25 41	0 50
22	14 56	45 18	25 32	10 33	22 52	27 29½	0 3
23	16 49	45 16	26 55	11 50	22 50	29 13 ♉	0 38½B.
24	18 33	45 14	28 13	13 2	22 47	0 49½	1 19¼
25	20 10	45 12	29 26	14 9	22 45	2 20	1 57
26	21 40	45 10	30 35	15 11	22 43	3 44	2 32
27	23 4	45 8	31 40	16 8	22 40	5 2	3 4½
28	24 24	45 6	32 40	17 1	22 38	6 14	3 34
29	25 40	45 4	33 38	17 51	22 36	7 24	4 2
30	26 52	45 2	34 35	18 38	22 34	8 31	4 29
31	28 0	45 0	35 30	19 23	22 31	9 34½	4 55¼
November [NOUEMBER.]							
1	29 5	44 58	36 23	20 5	22 29	10 35	5 18
2	30 6	44 55	37 14	20 44	22 27	11 34	5 40
3	31 4	44 53	38 2	21 21	22 25	12 28	6 1⅓
4	31 59	44 50	38 50	21 56	22 21	13 21	6 20½
5	32 52	44 46	39 35	22 29	22 16	14 11	6 38
6	33 42	44 41	40 17	22 59	22 8	14 58¼	6 55⅓
7	34 28	44 36	40 58	23 26	22 0	15 43	7 10
8	35 12	44 31	41 37	23 50	21 53	16 24	7 23
9	35 52	44 26	42 13	24 13	21 45	17 3	7 34
10	36 30	44 22	42 48	24 35	21 41	17 40	7 46
11	37 6	44 19	43 21	24 56	21 37	18 15	7 57
12	37 42	44 17	43 53	25 16	21 34	18 49	8 7¼
13	38 16	44 13	44 24	25 36	21 31	19 22	8 18
14	38 49	44 12	44 54	25 55	21 28	19 53	8 28

Days [Dies]	Motion in its own course [Motus in ſuo ductu]	Inclin. to the Equat. [Inclin. ad Æquat.]	Asc. R. [Aſc. R.]	De-clin. B.	Inclinat. to the Ecliptic. [Inclinat. ad Ecliptic.]	Lon-git. ♈	Latit. Mer.
15	39 21	44 10	45 23	26 13	21 25	20 24	8 38

For the place of the comet at three or two hours on the individual days on which it was observed. [Pro loco Cometæ ad trinas vel binas horas in ſingulis diebus, quibus obſeruabatur.]

October [OCTOBRIS]

Days [Dies]	H. M.	Ascension R. [Aſcenſio R.]	Declin. B.	Longit. ♈	Latit. M.
18	10 15	19°19′	4°25′	19 29½′	3°29¾′
	12 46	19 29	4 34	19 42	3 25
	13 30	19 32	4 36½	19 45⅔	3 24
20	12 13	22 35	7 43	23 44⅔	1 38¾
	13 15	22 40	7 48	23 51	1 36
22	10 5	25 24½	10 27⅓	27 20	0 6⅚
	13 15	25 32	10 36	27 30¼	0 1⅙
	16 10	25 42	10 44	27 42¼	0 3 B

November [NOUEMBRIS]

Days [Dies]	H. M.	Asc. R. [Aſc. R.]	Declin. B.	Longit. ♉	Latit. Bor.
4	7 5	38°42′	21°51′	13°12⅔′	6°18¼′
	10 33	38 45	21 53½	13 16⅓	6 19½
5	7 50	39 28	22 24	14 4	6 36⅙
	11 31	39 34	22 28	14 10½	6 38
	13 30	39 38⅔	22 29½	14 14⅔	6 38½
6	6 5	40 9	22 52	14 49	6 51
	11 42	40 17	22 58	14 58	6 54½
	14 55	40 21¼	23 4	15 3¼	6 59
7	7 20	40 51	23 19	15 34½	7 4⅔
	8 14	40 52½	23 21	15 36⅓	7 6½
9	8 10	42 7	24 9	16 56⅓	7 31½
	9 29	42 10½	24 10½	16 59¾	7 32¼
12	8 47	43 48¼	25 14½	18 44⅓	8 7
	9 20	43 50½	25 15	18 46½	8 7

In Germany Christoph Rothmann observed this comet [In Germania obſeruauit Chriſtophorus Rothmannus hunc Cometam]

D. 8. Oct. in 23 15 ♓ lat. 14° 0′ Mer. [D. 8. Octob. in 23 15 ♓ lat. 14° 0′ Mer.]

D. 9. Oct. in 25 50 ♓ lat. 13 6 Mer. [D. 9. Octob. in 25 50 ♓ lat. 13 6 Mer.]

For the angle of inclination of the path of the comet to the ecliptic from this observation. [Pro angulo inclinationis viæ Cometæ ad Eclipticam ex hac obſeruatione.]

[XVI] Let AC be a portion of the ecliptic. BA a portion of the path of the comet. [[XVI] Sit AC portio Eclipticæ. BA portio viæ Cometæ.]

A the place of intersection from our observation in 27 Gr. 38 M. ♈. [A locus interſectionis ex noſtra obſeruatione in 27 Gr. 38 M. ♈.]

DIE 8 OCTOBRIS. [8 October]

Side AC [Latus AC]	34°23′
	Dist. from the intersection [Diſt. ab interſectione]
Side BC [Latus BC]	14 0
	Latit. of the Comet. M. [Latit. Comet. M.]
Side BA [Latus BA]	36 47⅚
	Motion of the Com. in its own course [Motus Com. in ſuo ductu]
Angle BAC [Angulus BAC]	23 49⅓
	Inclination to the Eclipt. [Inclinatio ad Eclipt.]

DIE 9 OCTOBRIS. [9 October]

Side AC [Latus AC]	31 48
Side BC [Latus BC]	13 6
Side BA [Latus BA]	34 7¾
Angle BAC [Angulus BAC]	23 49½
	Inclin. sought [Inclin. quæſita]
On the same day 9, the latitud. taken [Eodem die 9 accepta latitud.]	13 5 M.
BA becomes [fit BA]	34 7⅓
and BAC [& BAC]	23 47⅚

Note. That the comet from this had no tail perceptible to the senses was caused by the fact that it had been removed from us at so great a distance beyond the solar sphere, and at the same time in the Sun's opposite; for the excessive distance also brought it about that the light of the most remote planet, to whose orb it was near, did not appear, since light passing through a body by refraction is rarer than the light of the body itself, which is everywhere observed to be more compact; but think about these things more broadly. [*Nota. Quod Cometa hinc nullam ſenſibus incurrentem caudam habuerit, in cauſa erat, quod in tanta diſtantia vltra ſphæram ſolarem a nobis remotus fuerit, vnaque in Solis oppoſito; nam & diſtantia nimia efficiebat, vt lumen planetæ remotiſſimi, cuius orbi erat vicinus, non appareret, ſiquidem lumen per refractionem corpus tranſiens rarius eſt lumine ipſius corporis, quod compactius vbique obſeruatum eſt, ſed de his latius cogita.*]

OBSERUATIONES COMETÆ ANNI 1590[1]. [Observations of the comet of the year 1590[1]]

DIE 23 FEBRUARIJ[2]. [23 February[2]]

At about hour 7⅓ in the evening[3] there appeared a certain star of about the second magnitude, raising straight up toward the zenith a dark and thin tail, about 4 or five degrees in length, which was in a straight line with the second of ♈ and the head of Andromeda, and which we observed in this manner. [H. circiter 7⅓ veſpertina[3] apparuit ſtella quædam ſecundæ quaſi magnitudinis ſurſum verſus Zenith directe attollens caudam obſcuram & raram in longitudine quaſi 4 vel quinque graduum, quæ erat in recta linea cum ſecunda ♈ & capite Andromedæ, quam in hunc modum obſeruauimus.]

N.B. The times assigned have been corrected by Aldebaran. [N.B. Tempora aßignata ſunt correcta ad Aldeboram.]

Time [Tempus]	Corrected time [Tempus correctum]	Dist. of the Com. from fixed stars [Diſt. Com. a fixis]	Declination of the Comet B. [Declinatio Cometæ B.]: with one pinn. [vno pinn.]	Declination of the Comet B. [Declinatio Cometæ B.]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	
		From the bright star of ♈ [A luc. ♈]				
7 40 15	7H38M20	15 49½	23 44			
7 58⅙	7 56		23 49½(49)			
8 7 40	8 5	15 43	among clouds [inter nubes]			
8 13⅓	8 10		23 53⅔ (53)			
8 35	*8 23*		*23 59* (58½)	*23 58¼*(58)		
	8 25	*15 36¼*			*With the smaller Quadr. [Per Quadr. min.]*	
8 42⅓	*8 29*	*15 35⅚*				Aldeb., west [Aldeb. occid.]
8 44⅓	8 30½	*From the head of Androm. [A cap. Androm.]*	24 0		12 0	50 42 for the clock [50 42 pro horologio]
9 7	*8 48½*	*14 45⅚*	*24 3½*		*9 30*	*Azimuth of the Comet [Azimuth Cometæ]*

Time [Tempus]	Corrected time [Tempus correctum]	Dist. of the Com. from fixed stars [Dist. Com. a fixis]	Declination of the Comet B. [Declinatio Cometæ B.]: with one pinn. [vno pinn.]	Declination of the Comet B. [Declinatio Cometæ B.]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	
					With the Vol. [Per Vol.]	
9 10	*8 51*				*9 29*	*60 13⁴*
		From the bright star of ♈ [*A luc.* ♈]				
9 13	*8 53⅓*	*15 31⅓*	*24 4¾*		*9 10*	*59 46⁴*
9 20	*8 59*	*15 24½* } *doubtful* [*dubia*] }	*24 6¾*		*8 40*	*59 22⁴*
9 25	*9 3 7*	*15 24*	*24 8*		*8 7½*	*58 42⁴*

H. 8 13⅓. These were observed hastily among clouds. At about its first appearance, moreover, it was about 20° high, and it threw certain thin rays, to a length of 5 or 6°, straight toward the zenith. The tail appeared like the most remote stars in Deltoton, about 7 degrees[5]. [H. 8 13⅓. Hæc raptim obſeruabantur inter nubes. Erat autem circa primam apparitionem altus quaſi 20 gradus, & radios quoſdam tenues ad longitudinem 5 vel 6 partium projecit directe verſus Zenith. Cauda apparebat inſtar remotiſſimarum ſtellarum in Deltoton, quaſi 7 graduum[5].]

H. 8 35. The altitude of the comet around these times was about the distance of the Pleiades and Aldebaran. The tail pointed precisely toward the bright foot of Andromeda, and had a length like the distance from this to the bright star of the Triangle. [H. 8 35. Altitudo Cometæ erat circa hæc tempora quaſi diſtantia Plejadum & Aldeboræ. Cauda vergebat præciſe in clarum pedem Andromedæ & habuit longitudinem inſtar diſtantiæ ab hoc in lucidam Trianguli.]

H. 8 44⅓. There was a certain small star of the fourth or a little greater magnitude, of the stars in the mouth of the northern fish, number 25, at the end of the comet's tail; but its end extended a little higher, about ⅔ of one degree, as far as it was possible to discern by sight. [H. 8 44⅓. Fuit ſtella quædam parua quartæ vel paulo majoris magnitudinis ex ſtellis in ore piſcis borei numero 25 in extremitate caudæ Cometæ, ſed ejus extremitas paulo altius extendebatur quaſi ⅔ unius gradus, quantum ad viſum diſcernere licuit.]

[1] From cod. Vindob. lat. 10689[2] and the codices O and N. Cf. vol. VI, p. 206 ff. The numbers enclosed in brackets are found in codex N alone. [[1] E cod. Vindob. lat. 10689[2] & codibus O & N. Cf. T. VI p. 206 ſqq. Numeri uncis incluſi in codice N ſolo inveniuntur.]

[2] From cod. Vindob. [[2] E cod. Vindob.]

[3] Added in cod. O by Tycho: *meanwhile, while we were intent on the star of Venus, to be observed about the greatest distance from the Sun.* [[3] Adſcriptum in

cod. O a Tychone: *interea dum Veneris ſtellæ circa maximam a Sole remotionem obſeruandæ intendimus.*]

[4] Added in cod. O: *NB. In these azimuths 12′ are lacking, because the indices of the azimuths did not show correctly; these are to be added, but I have now corrected this.* — (Cod. Vindob. has 60° 1′, 59° 34′, 59° 10′, 58° 30′). [[4] Adſcriptum in cod. O: *NB. In his Azimutis deſiderantur 12 minuta, eo quod indices Azimuthorum non rite monſtrabant, quæ addenda, ſed hoc jam emendaui.* — (Cod. Vindob. habet 60° 1′, 59° 34′, 59° 10′, 58° 30′).]

[5] Vol. VI, p. 208,2 has »about ten degrees at most«. [[5] T. VI p. 208,2 habet »quaſi decem ad ſummum graduum«.]

H. 9 M. 10. It was still about in a straight line with the head of Andromeda and the second of ♈, but a very little higher, by more than a whole diameter. Its magnitude like the stars of the first magnitude, but it was of a pale, dim and thin light. [*H. 9 M. 10. Erat adhuc quaſi in recta linea cum capite Andromedæ & ſecunda ♈, ſed paululum ſuperior, plus quam tota diametro. Magnitudo ejus inſtar ſtellarum primæ magnitudinis, ſed fuit pallido, ſubobſcuro et raro lumine.*]

H. 9 M. 25. It had about 3′ in diameter, almost like ♀, greater than Canis Major, but that near the horizon; nor was its light bright, but dim. [*H. 9 M. 25. Habuit quaſi in diametro 3 minuta fere ad inſtar ♀is major cane majore, ſed id juxta horizontem, neque lumen ejus clarum ſed ſubobſcurum erat.*]

DIE 24 FEBRUARIJ, VESPERI. [24 February, in the evening]

The clock was corrected at H. 6 24⅓ by Aldebaran. [Horologium corrigebatur H. 6 24⅓ per Aldeboram.]

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from fixed stars [Diſt. Com. a fixis]	Declination of the Comet [Declinatio Cometæ]	Altitude of the Comet [Altitudo Cometæ]
		From the bright star of ♈ [A lucid. ♈]		
6H52½M	6H52M	11 13⅓		30° 40′
6 54⅙	6 54		28° 1′ (0)	
6 56½	6 56	11 13⅓	27 58½ (58)	30 30
6 58$^{5}/_{12}$	6 59½	11 13½		30 22
6 59½	7 0		28 1 (0)	
		From the bright star of the girdle of Androm. [A luc. cing. Androm.]		
7 1⅙	7 3½	6 33		30 9
7 3⅓	7 5		28 1 (0)	
7 5⅓	7 7	6 33		29 30
7 6⅓	7 8⅓		28 1⅚ (0⅚)	
		From the bright star of the base of the triang. [A luc. baſ. triang.]		
7 10⅙	7 12	10 5½	28 3$^{1}/_{12}$(2¼)	29 0
7 12½	7 14½	10 5½	28 3½ (2½)	

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from fixed stars [Diſt. Com. a fixis]	Declination of the Comet [Declinatio Cometæ]	Altitude of the Comet [Altitudo Cometæ]
7 16$^{5}/_{12}$	7 19½	10 5	28 4 (3)	27 55

For correcting the clock. [Pro corrigendo horologio.]

7H31M 0S	Canis Minor, east 8° 47½′. From this the resulting time H. 7 M. 34 S. 44. [Canis minor orient. 8° 47½′. Hinc tempus proueniens H. 7 M. 34 S. 44.]
	Therefore the clock was moving slower by 3′ 44″. [Ergo horologium tardius mouebatur 3′ 44″.]
7 34 40	Canis Minor, east 7 53 0″ Corresponding time 7H38′ 22″, therefore slower by 3′ 42″. [Canis minor orient. 7 53 0″ Reſp. tempus 7H38′ 22″, ergo tardius 3′ 42″.]
8 15 0	Canis Minor, west 2 37 30 [Canis minor occid. 2 37 30]
8 18 0	Canis Minor, west 3 23 0 [Canis minor occ. 3 23 0]

This evening the comet was in a straight line with the bright star in the girdle of Andromeda and the second of ♈, nearly so that it was about half of its diameter lower than they. A line drawn from its place of yesterday, which it had on the globe, through today's place seemed to come as close as possible to the bright star of the base of the Triangle; and so it came to be observed above all from this bright star of the side of Perseus and the head of Medusa. [Fuit hoc veſperi Cometa in linea recta cum lucida in cingulo Andromedæ & ſecunda ♈, fere ita vt circiter dimidiam ſuæ diametri partem ijs inferior erat. Ducta linea a loco ejus heſterno, quem habuit in globo, per locum hodiernum videbatur quam proxime accedere ad lucidam baſis Trianguli, quare ab hac lucida lateris Perſei & capite Meduſæ imprimis obſeruandus venit.]

This evening at about hour 7⅓ the tail pointed toward the bright one in the body of Perseus, yet in such a way that it was not directed precisely at it, but inclined a little toward the other in the body of the same, toward the loins, of the third magnitude, and that by a quarter of the distance of both. The length of the tail, moreover, extended from the head, seemed about just as much as the bright and more northerly one in the base of the triangle, so that its extreme end, which was very thin, was horizontally equidistant with this one. Therefore, accordingly, its length was seen as about 10 deg., but very thinly and altogether dimly. [Cauda hoc veſperi circa horam 7⅓ vergebat verſus claram in corpore Perſei, ita tamen vt non præciſe in hanc dirigeretur, ſed verſus alteram in ejuſdem corpore verſus lumbos tertiæ magnitudinis aliquantulum declinaret, idque pro quarta parte diſtantiæ vtriuſque. Longitudo autem caudæ a capite protenſa videbatur tantundem quaſi, quantum lucida & borealior in baſi trianguli, ita vt extremus ejus finis, qui admodum tenuis erat, huic horizontaliter æquidiſtaret. Ergo igitur ejus longitudo quaſi 10 grad., ſed admodum tenuiter & obſcure prorſus videbatur.]

Its form was rather pale and rather dim, the magnitude like the stars of the first magnitude, but mists in the air hindered an accurate view. [*Forma ejus erat ſubpallida & ſubobſcura, magnitudo inſtar ſtellarum primæ magnitudinis ſed nebulæ in aëre impediebant accuratam intuitionem.*]

For the clock the heart of ♌, east, was observed. [Pro horologio obſeruabatur cor ♌ orient.]

9H16M 0S	18° 32′
9 19 50	17 31½
9 21 25	17 8

DIE 25 FEBRUARIJ, VESPERI[1]. [25 February, in the evening[1]]

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from fixed stars [Diſt. Com. a fixis]	Declination of the Comet B. [Declinatio Cometæ B.]	Altitude of the Comet [Altitudo Cometæ]
		from the bright star of Perseus [a luc. Perſei]		
6H54½M	6H54⅔M	23 31 meanwhile it was cloudy [23 31 interea fuit nubilosum]	31 28⅔ (28)	38 5
			doubtful [dub.]	
		From Aldeb. [Ab Aldeb.]		
8 37¾	8 38$^{1}/_{12}$	39 48	31 31 (30)	23 16
8 42	8 42⅓	39 51	31 31¾ (30¾)	22 44
8 45¼	8 45⅔	39 50¾	31 35⅔ (35)	22 0
8 49	8 49½	39 50¾	31 39 (38)	21 24
		From the bright star of Perseus [A luc. Perſei]		
8 57¼	8 57¾	22 55	31 40½ (39½)	20 55
8 59¼	8 59⅚	22 55¼	31 41 (40)	20 55
9 2½	9 3$^{1}/_{12}$	22 54	31 40½ (39½)	20 0
9 5½	9 6⅙	22 53	31 41½ (40½)	19 50
9 9	9 9¾	22 51	31 41 (40)	19 30
9 12⅔	9 13½	22 51¼	31 42 (41)	18 53
9 17½	9 18¼	22 49	31 43 (42)	18 23
9 24⅓	9 25⅙	22 46	31 44¼ (43¼)	17 30

This evening it was not entirely clear, but the comet was observed from time to time through recurring clouds; indeed, at times it was wholly hidden for some hours — just as on the two preceding evenings, too, the clear sky was not continuous enough, but only at intervals, nor were the observations made with the air everywhere pure enough. They are nevertheless fair, nor did it deviate perceptibly from the target aimed at, as far as it was possible to test with that convenience, especially if the more select ones are used and all are properly limited. [*Non erat hac veſpera totaliter ſerenum, ſed*

per recurrentes nubes ſubinde obſeruabatur Cometa, imo per aliquot horas interdum prorſus delituit, quemadmodum neque duobus antecedentibus veſpertinis temporibus ſatis continua fuit ſerenitas, ſed ſaltem per interualla, neque vbique ſatis puro exiſtente aëre fiebant obſeruationes; ſunt tamen mediocres, neque a ſcopo petito, quantum pro ea commoditate experiri licuit, ſenſibiliter declinauit, præſertim ſi ſelectiores adhibeantur omniaque iuſte limitentur.]

For correcting the clock. [Pro horologio corrigendo.]

N.B. The clock was corrected by Aldebaran at H. 6½. [N.B. Horologium corrigebatur ad Aldeboram H. 6½.]

H. M. S.	Canis Minor, west [Canis minor occidentalis]
8 34 20	7 19
8 36 15	7 40
9 54 0	27 15
9 54 50	27 25½
9 58 0	28 15

From these the clock can be verified, which nevertheless this evening was of itself in fairly good order. [*Ex his poteſt verificari horologium, quod tamen per ſe hoc veſperi ſatis bene ſe habuit.*]

The comet's place this evening can be investigated from Aldebaran, using the declination, and it can be seen where it is heading. [*Locus Cometæ hac veſpera poteſt inquiri ab Aldebora, adhibita declinatione, & videri, quo tendat.*]

[1] From cod. Vindob. [[1] E cod. Vindob.]

To investigate the parallax, moreover, the distance from the bright one of Perseus, toward which it was heading most nearly, can be compared with those that were obtained later at lower altitudes; for the difference of the altitudes will be about 20 deg., by which it changes the parallax perceptibly, if there were any. [*Pro parallaxi autem inquirenda poteſt conferri diſtantia a clara Perſei, verſus quam proxime tendebat, cum ijs, quæ poſtea habebantur in altitudinibus minoribus; erit enim differentia altitudinum quaſi 20 part., qua ſenſibiliter mutat parallaxin, ſi qua foret.*]

H. 8 54. It stood in a straight line with Aldebaran and the bright star of the girdle of Andromeda; *on the other side, crosswise, with the lowest one in the point of the triangle and the bright foot of Andromeda, as far as it was possible to discern with the straight-edge; yet to the eye it seemed a little lower than the line from the foot of Andromeda and the acute angle of the triangle, although this was not discerned with the ruler.* [H. 8 54. Stabat in linea recta cum Aldebora & lucida cinguli Andromedæ; *ab altera parte decußatim cum infima in cuſpide trianguli & lucido pede Andromedæ, quantum per lineale diſcernere licuit; videbatur tamen ad oculum paulo inferior linea a pede Andromedæ & angulo acuto trianguli, quamuis non per regulam id diſcernebatur.*]

It stretched the tail exactly, so far as was seen with the straight-edge, toward the other one of Perseus, which is next to the loins, from which yesterday evening it bent it back toward the bright star of Perseus by a separation of three quarters of the whole

interval, or of one quarter from the bright star of Perseus itself. [*Caudam porrigebat exacte, quoad per lineale videbatur, in alteram Perſei, quæ eſt iuxta lumbos, a qua heri veſperi eam retorquebat in lucidam Perſei pro intercapedine trium quartarum totius interſtitij, ſiue vnius quartæ ab ipſa lucida Perſei.*]

The head appeared at about H. 9½ very nearly like the bright Capella in magnitude, and so it had 3′ in diameter, or at least 2½. [*Caput apparuit circa H. 9½ inſtar lucidæ Capellæ quam proxime in magnitudine, habuit itaque in diametro 3 minuta vel ad minimum 2½.*]

On the following day, for the clock, by the Sun. [*Die ſequente pro horologio ad Solem.*]

H. M.	☉ *from the Merid. toward the east, G. M.* [☉ *a Merid. verſus ortum G. M.*]	*Corresponding time, H. M.* [*Reſp. temp. H. M.*]
9 17½	*40 30*	*9 18*
9 19¾	*40 0*	*9 20*
9 26 1/12	*38 13*	*9 27*
9 30⅓	*37 17*	*9 30⅚*

DIE 26 FEBRUARIJ, VESPERI. [26 February, in the evening]

Time of the clock [Tempus horologij]	Amended time [Tempus emenda-tum]	Dist. of the Com. from the head of Medusa [Diſt. Com. a cap. Meduſæ]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Alti-tude [Alti-tudo]
7H 6⅚M	7H 7M	10 59	34 4 (3)		40 20
7 8⅙	7 8⅓	10 57			40 10
7 9⅚[1]	7 10	10 53	34 6 } among clouds [inter nubes] }		39 20
7 13	7 13¼	10 52	34 6 (5)	34 5¾ (5⅓)	38 52
7 16⅙	7 16½	10 53 better [melior]	34 7 (6)		38 34
7 20⅔	7 21	10 50	34 6½ (5½)	34 5⅚ (5)	37 50
7 50⅔	7 51		34 6⅚ (6)		34 13
7 53⅚	7 54⅙	10 44	34 7 (6)	34 6⅓ (5⅔)	33 42
7 57	7 57⅓	10 43½	34 7¾ (7)	34 6½ (6⅙)	33 20
8 1½	8 2	10 41⅔	34 8¾ (8)	34 9⅙ (8⅙)	33 10
8 5	8 5½	10 40⅔	34 9¾ (9)	34 9	32 0
8 9⅔	8 10⅙	10 37½ } doubtful [dubia] }	34 9⅚ (9) with both pin. [vtroque pin.]		31 20
8 15⅙	8 15⅔		34 10 (9)	34 9⅚	30 44
8 17⅔	8 18⅙	10 40	34 10⅙ (9⅚)	34 10 (9⅓)	30 30

[1] This line in codex O alone. [[1] Hic verſus in ſolo codice O.]
For correcting the clock. [Pro corrigendo horologio.]

At hour 7 the clock was corrected. [Hora 7 corrigebatur horologium.]

7H32⅓M	Canis Minor, east, was [Erat canis minor orient.]	7°22½′
34⅓	Canis Minor, east [Canis minor or.]	6 51

The tail was directed exactly at the bright star of the head of Medusa, and it was in a straight line with this and the bright star of the Triangle. The length of the tail equalled the interval of the comet from the bright one in the Triangle. [Cauda exacte tendebat in lucidam capitis Meduſæ, eratque in recta linea cum hac & lucida Trianguli. Longitudo caudæ æquabat interſtitium Cometæ a clara in Triangulo.]

Near hour 8 the comet was in a straight line, by the straight-edge, with the bright foot of Andromeda and the very small one in the seat of Cassiopeia, which is the 11th in number; on the other side, with the bright star of the triangle Deltoton and the head of Medusa — except that the comet was a little, as it were by a diameter, more southerly than this very latter line. [*Iuxta horam 8 fuit Cometes in linea recta per lineale cum pede lucido Andromedæ & minutula in ſede Caßiopeæ, quæ eſt 11ª numero, ab altera parte cum lucida trianguli Deltotonis & capite Meduſæ, niſi quod parum quaſi ad diametrum fuerit meridionalior Cometes hac ipſa linea poſteriore.*]

About hour 8⅓ it formed a triangle of two equal sides with the two at the base of Deltoton, so that, as far as sight goes, it pointed directly from these toward the zenith, a line being drawn from the point midway between them. Nevertheless it stood off from them on either side a little more than the distance of the two is, and this as far as sight goes, by sighting: as much as the space of the comet from either one, if it were divided into 7 parts, so that that of the two fixed stars, namely at the base of the Triangle, is 6, of which parts the distance from either contains 7. Therefore, according to this drawing, let A be the comet, B the less bright one at the base of the Triangle, C the bright star of the Triangle. [*Circa horam 8⅓ effecit triangulum duorum æqualium laterum cum duabus in baſi Deltotonis, ita vt directe quoad viſum ab his verſus Zenith tenderet, ducta linea a puncto illis intermedio. Diſtabat nihilominus paulo plus ab illis vtrinque, quam eſt ambarum remotio, idque quoad viſum collimando, quantum eſt ſpatium Cometæ ab* vtraque ſi in 7 diuideretur partes, ita vt binarum fixarum, videlicet in baſi Trianguli ſit 6, qualium remotio ab vtraque 7 contineat. Sit ergo iuxta hanc delineationem A Cometes, B minus lucida in Trianguli baſe, C lucida Trianguli.]

Diagram. A small line drawing set within the paragraph above, between "ten-" and "deret". Three points, each drawn as a small star, joined by straight lines into a triangle with its apex at the top. From the apex point a long, narrow shaded band is drawn running straight upward. A number is written at the middle of each side.

- A (apex, right of the star): A
- B (lower left, left of the star): B
- C (lower right, right of the star): C

- 7 (on the left side, between A and B)
- 7 (on the right side, between A and C)
- 6 (on the base, between B and C)

From the globe [Ex globo]

February [Febru-arij]							
day 23 [die 23]	P.M.	7 38	Longit. of the Comet [Longit. Cometæ]	17 54 ♈	Latit.	18 14 B.	
		8 29		18 15		18 20	
		9 3		18 26		18 23	
24		6 59		25 57 ♈		19 30 B.	
25		6 55		2 36 ♉		20 29 B.	from the dist. from the bright star of Perseus [ex diſt. a luc. Perſei]
		8 49		3 10		20 29	from the dist. from Aldeb. with the decl. [ex diſt. ab Aldeb. cum decl.]
		9 6		3 24		20 28 }	from the dist. from the bright star of Perseus [ex diſt. a luc. Perſei] }
		9 25		3 32		20 28 }	with the declination [cum declinatione] }
26		7 8⅓		8 41 ♉		20 57 B.	
		7 57⅓		9 0		20 52	
		8 18⅙		9 6		20 54	

DIE 28 FEBRUARIJ, VESPERI. [28 February, in the evening]

It was exceptionally clear. [*Erat apprime ſerenum.*]

N.B. H. 4 M. 0 P.M. The clock was moving 4 M. faster than is right. [N.B. H. 4 M. 0 P.M. Horologium 4 M. celerius iuſto mouebatur.]

Time of the clock [Tem-pus horologij]	Amended time [Tem-pus emen-datum]	Dist. of the Com. from the right shoulder of Erichthonius [Diſt. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Alti-tudo Cometæ]	Azimuth of the Comet[1] [Az-imuth Cometæ[1]]
7H 9½M	7H 2⅓M	33 38			47 31	89 52½
7 14	7 6½	33 37				
7 18½	7 11	33 36¼	37 28 (27) }		46 30	92 5

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet[1] [Azimuth Cometæ[1]]
			doubtful [dubia] }			
7 24½	7 16⅔	33 35	37 36 (35)	37 35 (34)	45 39⅓	92 55
7 28	7 20	33 34½	37 35½ (34½)		45 5½	93 26
7 33⅙	7 25⅙	33 33¾	37 36¾ (36)	37 36⅝ (36)	44 25	94 19
7 38½	7 30½	33 43 } doubtful [dubia] }	37 36½ (35½)	37 37 (36)	43 42	95 20
7 45	7 36⅝ (37)	33 32½	37 37 (36)	37 36⅔ (36)	42 45	96 35
7 50	7 41¾ (42)	33 31½	37 37⅓ (37)	37 38 (36½)	42 6	97 30
7 54½	7 46⅙ (46)	33 31⅙	37 36⅝ (36)	37 37⅙ (36½)	41 31	98 20
8 2⅙	7 53⅔	33 29⅝	37 39½ (38½)	37 40 (39)	40 30¼	99 41
8 22⅓	8 13⅓	33 28	37 39 (38)	37 39¼ (38¼)	37 49	103 26
8 25$\frac{1}{12}$	8 16	33 27½	37 39⅔ (39)		37 19½	103 54
8 29	8 20	33 26¼	37 40 (39)		36 41⅔	104 43½
8 33$\frac{1}{12}$	8 24	33 25 doubtful [dubia]	37 40 (39¼)	37 41 (40⅓)	36 18⅓	105 23

After this time the sky was covered with clouds and prevented further observation. But on the following morning, near hour 5 in the morning, we watched again, and the comet was seen very faintly in the north, not going below the horizon, near the head of Medusa; but because of the dawn it could not be observed, clouds also soon coming over. [*Post hoc tempus cœlum nubibus obuoluebatur, atque vlteriorem obſeruationem prohibebat. Verum in mane ſequente iuxta horam 5 matutinam denuo attendebamus, videbaturque Cometa admodum tenuiter in ſeptentrione horizontem non ſubiens, iuxta caput Meduſæ, ſed propter auroram obſeruari non potuit, ſuperuenientibus mox etiam nubibus.*]

At hour 7½ it was as close as possible to a certain star in the hair of the head of Medusa, inclining from this toward the north, as it were in a parallel of the horizon. [*Hora 7½ fuit quam proximus ſtellæ cuidam in crinibus capitis Meduſæ, vergenti ab hac verſus boream quaſi in parallelo horizontis.*]

The tail could not yet be seen because of the Moon. [*Cauda propter Lunam adhuc videri non potuit.*]

[For correcting the clock. [[Pro horologio corrigendo.]

9H14M The heart of ♌ was from the meridian, east [Erat cor ♌ a meridie orient.]

19°24′ } H. 9⅓ the clock was moving 10 M. faster than is right][2]. [H. 9⅓ horolog. 10 M. celerius iuſto mouebatur][2].]

9 16	The heart of ♌ from the merid.	18 51
25	[Cor ♌ a merid.]	}
9 21	The heart of ♌ from the merid.	17 46
10	[Cor ♌ a merid.]	}

Die 28 Februarij pro loco dextri humeri Erichtonij. [28 February, for the place of the right shoulder of Erichthonius]

Distance between the bright star of the Chair and the right shoulder of Erichthonius [Diſtantia inter lucidam cathedræ & dextrum humerum Erichtonij]	51°35¾′
	II 51 36
Between the same shoulder of Erichthonius and the lower head of Gemini [Inter eundem humerum Erichtonij & inferius caput Geminorum]	26 59⅓ twice [26 59⅓ bis]
repeated dist. [repetita diſt.]	26 59¼
Declination observed by the armillae with one pinn. [Declinatio obſeruata per Armillas vno pinn.]	44 49 (48)
with the other pinn. [altero pinn.]	44 48⅝ (47⅝)

[N.B. The declination resulting from these distances on the globe is smaller by 3⅓′ than the observed declination; therefore the armillae give a declination greater than is right, which has to be corrected][2]. [[N.B. Declinatio ex his diſtantijs in globo proueniens minor eſt 3⅓ minutis declinatione obſeruata; ergo Armillæ maiorem iuſto præbent declinationem, quod corrigendum venit][2].]

[1] In codex N one reads: These azimuths are not to be trusted too much. [[1] In codice N legitur: His Azimuthis non nimium fidendum.]

[2] These in codex O alone. [[2] Hæc in ſolo codice O.]

DIE 1 MARTIJ, VESPERI. [1 March, in the evening]

Time of the clock [Tempus horologij.]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Diſt. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet by the revolving instrument [Altitudo Cometæ per Volub.]	Azimuth of the Comet, west [Azimuth Cometæ occ.]	For the clock [Pro Horologio]
7H 13M	7H 19M	30 19¼	38 39 (38)	38 39½ (38½)	47 34	91 47	The bright star of Hydra, east [Luc. Hydr. or.]
7 17⅙	7 23	30 18	38 39⅔ (39)	38 40 (39¼)	47 13		34 20

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet by the revolving instrument [Altitudo Cometæ per Volub.]	Azimuth of the Comet, west [Azimuth Cometæ occ.]	For the clock [Pro Horologio]
7 21⅔	7 27⅔ (28)	30 17	38 40 (39) } with both pinn. [vtroque pinn.] }		46 27½	93 40	
7 25⅚	7 32	30 15¾	38 39½ (38½)	38 39⅚ (39)	45 53½	94 45	
7 31	7 37	30 14	38 41 (40)	38 41½ (40½)	45 13	95 38	
7 34⅔	7 40⅔	30 12¾	38 41⅔ (41)	38 42 (41⅔)	44 31¾	96 8	The heart of ♌, east [Cor ♌ or.]
7 39⅔	7 45⅔	30 12¼	38 41⅓ (40⅓)	38 41⅚ (41)	43 58½	97 0	38 20
7 45	7 51½	30 11	38 41⅓ (40⅓)	38 41⅚ (41)	43 16½	98 7	
8 7	8 13⅚	30 11½	38 41½ (40½)	38 41⅓ (40⅓)	40 7	102 20	31 18
8 13⅙	8 20	30 11⅙	38 41½ (40½)	38 42 (41)	39 20	103 7½	29 46
8 23⅙	8 30	30 10⅓	38 41⅔ (41)	38 42 (41)	37 57⅙	105 3	
8 26⅚	8 33½	30 9½	38 41½ (40½)	38 41⅚ (41)	37 25	105 50	26 22
8 36⅙	8 43	30 8	38 41⅔ (40⅔)	38 42 (41)	36 15	107 34	24 2
8 41½	8 47½	30 6	38 42 (41)	38 42⅓ (41⅓)	35 31	108 21	22 53½
8 49⅔	8 56½ (56¾)	30 4⅓	38 42 (41)	38 42⅓ (41⅓)	34 31⅙	110 2	20 36
8 59	9 5⅔	30 2½	38 42⅙ (41⅙)	38 42½ (41½)	33 10		18 30

It was exceptionally clear this evening; nevertheless the tail barely appeared because of the Moon's brightness, except for a certain small trace, which seemed to point toward the star of the third magnitude that is in the inner left hip of Perseus, yet away from this toward the north by about three digits or a sixth part of ☾, that is, by ⅙ part of a degree or at most ¼, if it were understood to be extended there. [*Fuit apprime hac veſpera ſerenum, nihilominus cauda ob Lunæ ſplendorem vix apparuit, niſi paruo quodam veſtigio, quod tendere videbatur in ſtellam tertiæ magnitudinis, quæ eſt in coxa ſiniſtra interiore Perſei, ab hac tamen verſus ſeptentrionem quaſi ad tres digitos vel ſextam partem ☾ vtpote per gradus partem ⅙ vel ad ſummum ¼, ſi illic protenſa intelligeretur.*]

This said star, toward which the tail was directed, is as it were in a straight line with the head of Medusa and the bright star of Erichthonius; from this gather its position on the globe. (It is the one in the buttocks of Perseus). [*Stella hæc dicta, verſus quam cauda dirigebat, eſt quaſi in linea recta cum capite Meduſæ & lucida Erichtonij, hinc collige eius ſitum in globo. (Eſt ea quæ in natibus Perſei).*]

[Declination of the brighter one at the base of the Triangle [[Declinatio lucidioris in baſi Trianguli]	33° 1½′ with one [33° 1½′ vno]
	33 1¾ with the other pinn. [33 1¾ altero pinn.]
Declination of the head of Medusa [Declinatio capitis Meduſæ]	39 20¼ with one [39 20¼ vno]
	39 20⅙ with the other pinn. [39 20⅙ altero pinn.]
Afterwards, the instrument having been corrected, the declination [*Poſtea correcto inſtrumento declinatio*]	*33 2½ with one* [*33 2½ vno*]
head of Medusa [*cap. Meduſæ*]	*39 21*
	20¾ with the other [*20¾ altero*]
Declin. of the head of Med. by the armillae [Declin. capitis Med. per Armillas]	39 20
Declin. of the same from the merid. alt. [Declin. eiusdem ex alt. merid.]	39 19
Therefore subtract [Ergo ſubtrahe]	1][1]

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[1] Thus in codex O. Cod. N has: »N.B. H. 9$\frac{1}{12}$, for examining the instrument of the armillae, the declination of the head of Medusa was observed, P. 39 20⅙; from which it is gathered, through its true declination given from the merid. altitude, P. 39 19 very nearly, that this year the armillae toward the west gave a declination one minute greater than is right, which error was corrected in all the preceding declinations up to H. 9⅙. Meanwhile the instrument was corrected by the brighter stars in Ursa Minor«. Cf. T. XII p. 85. [[1] Sic in codice O. Cod. N habet: »N. B. H. 9$\frac{1}{12}$ pro examinando Armillarum inſtrumento obſeruata eſt declinatio capitis Meduſæ P. 39 20⅙; vnde colligitur per declinationem eius veram ex altitudine merid. datam P. 39 19 proxime, hoc anno Armillas ad occaſum præbuiße declinationem vno minuto maiorem iuſto, qui error in omnibus præcedentibus declinationibus hucusque ad H. 9⅙ corrigebatur. Interea ad ſtellas lucidiores in Vrſa minore corrigebatur inſtrumentum«. Cf. T. XII p. 85.]

Eodem 1 Martij veſperi obſeruabatur Cometa vlterius. [On the same 1 March, in the evening, the comet was observed further]

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	The heart of ♌, west [Cor ♌ occ.]
10H 24M	10H 32⅓M	29 53			22 51	126 8	3 30
							doubtful [dubia]
10 28½	10 36⅔	29 52½			22 18¼	126 56	4 24
10 32½	10 40½	29 51½ (52)			21 53½		
10 38	10 46	29 52 (51½)			21 20⅓	129 27	6 46
10 40⅓	10 48		38 41½ (40) good [bona]				
10 47⅓	10 56	29 48 (50)			20 15	130 18	9 12
10 49½	10 58		38 42 (40)				
10 54⅔	11 3⅙	29 48	38 42½ (40)	38 43 (40½)	19 24½ doubtful [dubia]	131 30	
11 13⅚	11 22⅓	29 46	38 43½ (42)	38 43 (41½)	17 45	133 52	
11 19½	11 28	At least for correcting the clock [Saltem pro horologio corrigendo]					17 13½
11 20⅔	11 29						17 32
11 21⅔	11 30						17 47
11 32⅓	11 41	29 40			15 52¼	138 6	
11 35½	11 44		38 48 (46)				
11 38	11 46⅔		38 49 (46⅔)				
11 49½	11 58	29 41			14 30¾	141 16	
11 58⅓	12 7	29 39¾					
12 1½	12 10⅓		38 55 (52½)	38 53 (51)			
12 13⅔	12 22⅔	29 37¼			12 22	145 43	
12 18⅓	12 27⅓		38 51 (48½)	38 50 (48)			
12 24	12 33	29 35½			11 23½	148 5	
12 31	12 40¼	29 36	38 53 (52)	38 54 (52½)	10 54	148 35	
12 47⅚	12 57¼	29 31¾	38 53 (51)	38 52¾ (50½)	9 38	151 56	
1I 4⅚	1 14⅓	29 33 }	38 55	38 54	8 40	154 0	

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	The heart of ♌, west [Cor ♌ occ.]
		uncertain [incerta] }					
1 18⅚	1 28½	29 25 (26½)	38 54⅔ (52)		7 48	156 40	
1 22⅚	1 32½	29 26			7 39⅓	158 22½	
1 24⅓	1 34		38 55½ (53)				
1 27	1 37	29 25½	38 53⅓		7 29	159 24	
[1] 1 27⅔	1 37⅔		38 55⅔				

[1] This line in codex O alone. [[1] Hic verſus in ſolo codice O.]

[Declination of the head of Medusa 39° 22½′ with one, 39° 22′ with the other pinn. Its altitude by the revolving instrument was then 17° 53′ and the azimuth 135° 28′, *and this on account of the refraction of the comet, for they had nearly the same altitude*][1]. [[Declinatio capitis Meduſæ 39° 22½′ vno, 39° 22′ alt. pinn. Fuit tunc altitudo eius per Volubilem 17° 53′ & Azimuth 135° 28′ *idque propter refractionem Cometæ, nam habuere ferme eandem altitudinem*][1].]

Time of the clock [Temp. horol.]	Amended time [Temp. emend.]			Spica, west [Spica occ.]
3H 2⅔M	3H 13½M	Least merid. alt. of the head of Medusa by the revolving instrument [Alt. minima merid. cap. Meduſæ per Volub.]	5° 21⅔′	24° 25′
3 14⅙	3 25	Merid. alt. of the comet below the pole by the revolving instrument [Alt. merid. Cometæ infra polum per Volub.]	4 59 twice, or 5 0 [4 59 bis, vel 5 0]	27 16½

On 1 March the comet appeared very faint, so that the tail could not be discerned. [*Die 1 Martij apparuit Cometa tenuis admodum, vt cauda diſcerni non potuerit.*]

About hour 7¾ the comet was seen in a straight line with the head of Medusa and the one which is in the hip of the foot stretching toward the Pleiades. On the other side, a straight line drawn from Aldebaran to the knee of Cassiopeia left the comet a little lower, by about the size of its own body, that is, by nearly 3′. [*Circa horam 7¾ videbatur Cometes in linea recta cum capite Meduſæ & ea, quæ in coxa pedis ad Pleiades tendentis. Ab altera parte linea recta ducta ab Aldeboram in genu Caßiopeæ relinquebat Cometam paulo inferius quaſi ad ſui corporis magnitudinem, id eſt 3 fere minutis.*]

DIE 2 MARTIJ, VESPERI. [2 March, in the evening]

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	Canis Major, west [Canis major occ.]
7H 7⅔M	7H 6¼M	27 31 (31¾)	39 23 (20⅔)	39 23½ (21)			2 33
7 10½	7 9⅓	27 31¾ (31)			51 3½	89 0	
7 18	7 16½		39 23½ (21⅓)		49 57⅓	90 0	5 7½
7 23¼	7 22	27 28			49 17¾	91 0	6 30
7 27⅓	7 26	27 27½			48 42½	92 0	7 30
7 30¾	7 29¼		39 24 (21⅔)	39 25 (22⅓)	49 19	93 0	
7 35½	7 34	27 26½	39 24 (21⅔)	39 24⅚ (22¼)	47 38½	94 0	9 26½
7 38⅔	7 37⅓	27 26½					10 20
7 41⅔	7 40		39 26 (23½)	39 25¾ (24)	46 42⅔	95 0	11 5
7 46⅙	7 45½	27 26			46 5	96 0	12 23½
7 50	7 49⅙		39 26½ (24⅓)	39 27 (24⅓)	45½ or ⅔ [45½vel⅔]		
8 26⅓	8 25½						22 17
8 33⅚	8 33¼	27 24					24 13
8 37⅔	8 37	27 21	39 28 (25⅔)	39 27¾ (25⅓)	39 9½	105 0	25 9
8 43$^{5}/_{12}$	8 42⅔				38 12¾	106 0	26 36
8 45⅔	8 45	27 19	39 28⅚ (26½)	39 28¼ (26)			27 13

N.B. At about H. 7 M. 17 S. 57 the comet passed through 90 deg. west, and at the same moment, as I myself observed, Canis Major was west in degrees of the equator, by the largest armillae, P. 5 M. 7½. But at H. 7 M. 23¼, when Canis Major was removed P. 6 M. 30, the comet was in azimuth 91° 0′ and had altitude 49° 17¾′; these two are to be drawn into use separately. See also the third, in Alt. 48° 42½′ and Azimuth 92° 0′, when Canis Major was distant, west, P. 7½. [*N.B. Iuxta H. 7 M. 17 S. 57 tranſiuit Cometa per 90 grad. occid. fuitque eodem momento, vt ipſemet obſeruaui, Canis maior occidentalis in gradibus æquatoris per Armillas maximas P. 5 M. 7½. Sed H. 7 M. 23¼, quando remouebatur Canis maior P. 6 M. 30, erat Cometa in Azimutho 91° 0′ & habuit altitudinem 49° 17¾′, quæ duo ſeorſim ſunt in vſum trahenda; vide etiam tertiam in Alt. 48° 42½′ & Azimuth 92° 0′, quando Canis maior aberat occ. P. 7½.*]

	Alt. of the head of Medusa [Alt. cap. Meduſæ]		Decl. of the head of Med. [Decl. cap. Med.]	Decl. of the head of Med. [Decl. cap. Med.]
8H 26⅓M	38° 10′	by the lesser azimuthal quadrant [per Quadr. min. Azim.]	39° 22	39° 21⅚′
8 33⅚	37 32		39 21½	39 21⅔

	Alt. of the head of Medusa [Alt. cap. Meduſæ]		Decl. of the head of Med. [Decl. cap. Med.]	Decl. of the head of Med. [Decl. cap. Med.]
		It should be at least [*Debet ſaltem eße*]	*39 18½*	

[1] These in codex O alone. [[1] Hæc in ſolo codice O.]

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Diſt. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	For the clock [Pro horologio]
							Canis Major, west [Canis maj. occ.]
8H 47⅙M	8H 46½M				37 41½	107 0	
8 50½	8 50	27 17¾ good [bona]					28 25
8 52⅙	8 51½				37 3	108 0	28 50
8 54	8 53⅓	27 17¾ good [bona]	39 29 (26½)	39 28½ (26)			29 14
8 58⅙	8 57¼				36 20	109 0	30 18
8 59	8 58	27 16 (16½)					30 29
9 0⅝	9 0	27 16½ (16)					31 0
							The bright star of Hydra, west [Luc. Hydr.occ.]
10 27½	10 28				25 11½	124 0	12 55½
10 29⅔	10 30⅓	27 7½					13 28½
10 33⅓	10 33⅔	27 7			24 30¾	125 0	14 17½
10 45⅓	10 45¾	27 5					17 19
10 47⅙	10 47½	27 5	39 31 (28⅔)		22 57	127 0	17 46
10 45⅝[1]	10 46[1]				22 31⅓	128 0	18 44⅓

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	For the clock [Pro horologio]
3 22⅓	3 23⅔				5 38	178 0	The heart of ♌, west [Cor ♌ occid.]
3 27½	3 29				5 38⅙	179 0	78 28⅓
3 30⅔	3 32				5 38	179 30	79 14⅓
3 34⅙	3 35⅓	The comet in the meridian below the pole [Cometa in meridiano infra polum]			5 38	180 0	80 6⅔
3 37	3 38⅓				5 38½	179 30	80 50
3 41	3 42				5 39	178 30	81 51 Spica, west [Spica occid.]
3 46½	3 47⅓				5 39½	177 0	33 50

2H 45⅙ At that time Spica ♍ was west 18° 23½′, among clouds. [2H 45⅙ Tunc erat Spica ♍ occ. 18° 23½′ inter nubes.]

3 8⅔ Least alt. of the head of Medusa by the revolving instrument 5° 22′, by the steel instrument 5° 21¼′, doubtful. [3 8⅔ Alt. min. cap. Meduſæ per Vol. 5° 22′, per Chalyb. 5° 21¼′, dubia.]

A star for the rectification of the clock could not be had because of the clouds. [Stella pro horologij rectificatione propter nubes haberi non potuit.]

From these, however, added at Spica before and after, the time of the transit is verified. [*Ex his tamen additis in Spica ante & poſt verificatur tempus tranſitus.*]

H. 3 22⅓ Spica ♍ was west 27° 47½′, uncertain because of the clouds. [H. 3 22⅓ Erat Spica ♍ occ. 27° 47½′, incerta propter nubes.]

It was clearer this morning around the transit through the meridian than yesterday, and the comet was seen a little better. The tail of the comet did not appear, nor the Moon above nor below the horizon. [*Fuit hoc mane circa tranſitum per Meridianum ſerenius quam heri, & paulo melius videbatur Cometes. Cauda Cometæ non apparuit, neque Luna ſupra neque infra horizontem.*]

[1] Thus in the codex, but it is to be read 10 55⅚ and 10 56. [[1] Sic in codice, ſed legendum eſt 10 55⅚ & 10 56.]

At the following noon the clock was running slower than is right by 8 minutes, which error comes to be charged to it from the preceding noon, except that yesterday after noon it was showing ½ minute slower than is right; and then a small lead ball was added to it, but this changes little. You may use the times of the stars, and at

the same time begin the limitation from yesterday's hour 3; for since the equatorial distance of the Sun from the Merid. was then P. 45 0, the clock showed H. 2 M. 59½; it therefore falls short, as I said, by half a minute; from this work out the rest up to the following noon. [*Horologium in meridie ſequente iuſto tardius mouebatur 8 minutis, qui error a meridie antecedente illi imputandus venit, niſi quod heri poſt meridiem ½ minuto iuſto tardius monſtrabat; tumque globulus plumbeus illi additus eſt, ſed hoc parum mutat. Potes adhibere ſtellarum tempora, & vna ab hora 3 heſterna limitationem inchoare; nam cum tunc eßet Solis a Merid. æquatoria diſtantia P. 45 0, monſtrabat horolog. H. 2 M. 59½; deficit itaque, vt dixi, dimidium minutum; hinc cætera vsque in meridiem ſequentem ratiocinare.*]

N.B. In demonstrating the parallax of this comet you may use the 3^{tio} problem of Regiomontanus, employing the transit through the meridian below the pole, by comparing the transit and the altitude in degree 90, or seek from it another, new method. [*N.B. In demonſtranda huius Cometæ parallaxi potes vti problemate 3^{tio} Regiomontani adhibito tranſitu per Meridianum infra polum, conferendo tranſitum & altitudinem in 90 gradu, vel aliam inde inquirere rationem nouam.*]

DIE 3 MARTIJ, VESPERI. [3 March, in the evening]

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Diſt. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	For the clock [Pro horologio]
							Canis Minor, east, by the equat. [Canis min. or. per Aequat.]
7H 26½M	7H 27⅓M				50 12	91 0	4 1
7 29½	7 30½				49 47½	92 0	3 13
7 34⅓	7 35⅓		40 2½ (0)	40 2¼ (0)	49 7	93 0	2 7
7 39⅙	7 40	25 1 (0)			48 30⅓	94 0	Canis Minor, west [Canis min. occ.]
7 42$^{7}/_{12}$	7 43½	25 0 (1)			47 48½		
7 45⅚	7 46¾		40 3½ (1)	40 3 (0⅔)			0 51
8 35¾	8 36½	24 58			40 40		13 17½
8 40⅙	8 41		40 5 (3½)	40 6¼ (4)			
8 41⅙	8 41¾				40 3	105 30	14 36
8 45⅔	8 46						15 42

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	For the clock [Pro horologio]
							The bright star of Hydra, east [Luc. Hydr. or.]
8 50	8 50				38 51	106 30	10 40
8 54½	8 54½	24 56					0 27½
8 55⅚	8 56		40 6 (3⅔)	40 7 (4½)			
8 57⅚	8 58				37 55	108 0	8 37
9 3⅙	9 3⅙(3)	24 55					7 22½
9 4⅓	9 4⅓				36 55	109 0	
9 15⅓	9 15½	24 53			35 30	111 0	4 18½

This evening there were frequent chasmata, flying suddenly here and there over the whole sky, as much in the south as in the north, and in the east and the west. [*Fuerunt hac veſpera crebra chasmata totum cœlum ſubito hinc inde peruolitantia tam in meridie quam ſeptentrione atque ortu & occaſu.*]

These observations are therefore fair, and are to be reconciled and limited because of the less pure air. [*Sunt igitur hæ obſeruationes mediocres & conciliandæ atque limitandæ ob minus purum aërem.*]

DIE 4 MARTIJ. [4 March]

N.B. This day at noon the clock was running 0′ 40″ faster than is right, and this from the preceding noon. [N.B. Horologium hoc die in meridie mouebatur 0′ 40″ iuſto celerius, idque a meridie antecedente.]

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno. pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	For the clock [Pro horologio]
							Canis Major, west [Can. maj. occ.]
7H 26⅙M	7H 27M				51 32⅙	90 0	9 30
7 29¾	7 29¾		40 29½ (27)	40 30½ (28)			
7 36⅖	7 37⅓	22 59			50 5	92 23	12 11

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno. pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	For the clock [Pro horologio]
7 40⅕	7 41	22 59½	40 31 (28½)	40 30½ (28)			13 0
7 44⅚	7 45⅔				48 51	94 0	14 10
7 48⅓	7 49	22 58					Canis Minor, west [Can. min. occ.]
7 49⅗	7 50⅓		40 31 (28½)	40 30 (28)	48 13	95 0	
8 11⅙	8 11½ (11)	22 55			45 12⅔	98 52 fair [mediocris]	8 4
8 14⅙	8 14½		40 32 (29)	40 33¾ (29⅓)			
8 20⅙	8 20½	22 54			44 5	100 44 doubtful [dubia]	10 18
8 22	8 22½		40 31½ (30)	40 30 (30⅓)			
8 26⅚	8 27½	22 55½	40 31 (30)	40 29½ (30½)	43 13⅚[1]		12 8½
8 32¾	8 33⅓	22 54 (54⅔)	40 33 (30½)	40 31¾ (30)	42 12		The bright star of Hydra, east [Luc. Hydr. or.]
8 39⅓	8 40	22 55½ (54½)	40 32 (30)	40 33 (30½)	41 27		12 11 doubtful [dubia]
8 47¼	8 48	22 51¾ (52⅔)			40 22		
8 48¼	8 49		40 32¾ (30⅓)	40 34 (31⅙)			
about 9 [9circa.]		22 52⅔	40 32 (30)	40 32½ (30⅓)	38 43		
9 7$^{11}/_{12}$	9 8½	22 52½	40 33 (30½)	40 32⅓ (30)	37 44	108 57 fair [mediocris]	5 6
9 16$^{1}/_{12}$	9 16½ (16)	22 50	40 33 (30⅔)	40 35 (31¼)	36 27	110 0 good [bona]	3 5
9 24$^{11}/_{12}$	9 25⅓				35 26½	112 0	0 54½
9 29$^{1}/_{12}$	9 29⅓	22 48	40 34½ (32)	40 32¼ (31)			0 8½ west [occ.]

Time of the clock [Tempus horologij]	Amended time [Tempus emendatum]	Dist. of the Com. from the right shoulder of Erichthonius [Dist. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]: with one pinn. [vno. pinn.]	Declination of the Comet [Declinatio Cometæ]: with the other pinn. [altero pinn.]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	For the clock [Pro horologio]
9 41⅔	9 42¼	22 48	40 33½ (31)	40 32½ (32)	33 18⅔		3 19
10 18$^{11}/_{12}$	10 18½	22 46	40 36 (33⅔)	40 34 (33⅓)	28 39		Spica ♍, east [Spica ♍ or.]
11 22½	11 22⅓	22 40	40 35 (33)		21 27		30 29½
11 30⅓	11 30	22 38½	40 35 (33)		20 42	132 55 fair [mediocris]	28 35
11 36$^{1}/_{12}$	11 35⅔	22 41	40 35 (33)	40 36½ (33¼)	20 16½		27 11

For the clock, around the transit of the comet through the ninetieth degree. [Pro horologio circa tranſitum Cometæ per nonageſimum gradum.]

	Canis Major, west [Canis maior occid.]
7H 31M 10S	10° 42½′
7 32 10	10 59
7 36 25	*12 11⅓*

[1] Added here: The following by the lesser azimuthal quadrant. [[1] Additur hic: Sequentia per Quadr. min. Azimuthalem.]

From this you will be able to verify the time of the transit through 90°, if perhaps anything is lacking. [*Hinc poteris verificare tempus tranſitus per 90°, ſi forte aliquid deſideratur.*]

Afterwards Canis Minor was observed. [*Poſtea canis minor obſeru.*]

	Canis Minor, west [Canis minor occid.]
7H 48M 20S	2° 23′
7 49 35	2 41

This evening, around the eighth hour, the comet stood midway between the one which is in the buttocks of Perseus and in the left hip, yet a little higher toward the north, by about ⅔ of the Moon's body or about 25′, and being a little nearer to the star in the buttocks, by about five or ten minutes at most, and this as far as the eyes could discern. [Stabat hac veſpera Cometa circa horam octauam intermedius inter eam, quæ in natibus Perſei & in coxa ſiniſtra, paululo tamen eleuatior verſus boream quaſi ad ⅔ corporis Lunaris vel 25 circiter minut.

& paululum propior exiſtens ſtellæ in natibus, quaſi ad quina vel dena minuta ad ſummum, idque quantum oculis diſcernere licuit.]

The tail was not discerned. It was like some nebulous star. [*Cauda non diſcernebatur. Erat inſtar ſtellæ cuiusdam nebuloſæ.*]

To investigate the refraction of the comet, the bright star of Lyra and the tail of Cygnus were observed, which may be seen in their own place; *but these pertain to the comet's declination.* [Pro refractione Cometæ indaganda obſeruata eſt lucida Lyræ & cauda Cygni, quæ videantur ſuo loco; *ſed hæc pertinent ad Cometæ declinationem.*]

Here very bright chasmata were running about, and the Moon was shining. The chasmata and the frost coming on hindered an exact observation, just as yesterday also, because of these three hindrances, around midnight and further nothing could be observed. [Hic discurrebant lucidißima chasmata & ſplendebat Luna. Chasmata exquiſitam obſeruationem impediebant & ſuperueniens pruina, quemadmodum & heri propter hæc tria impedimenta circa mediam noctem & amplius nihil obſeruari potuit.]

N.B. This evening it was exceptionally clear and calm, and no chasmata were seen until hour 10; afterwards they broke in one after another, clouds also coming on as midnight approached; yet even the last observations are good enough. [*N.B. Erat hac veſpera apprime ſerenum & tranquillum, nullaque chasmata vsque in horam 10 viſebantur, poſtea ſucceßiue ingruebant, ſuperuenientibus etiam inſtante media nocte nebulis; ſunt tamen obſeruationes etiam poſtremæ ſatis bonæ.*]

This evening the comet in itself appeared very faintly, so that it was scarcely observable except with great care applied; this produced some diversity while observing both the distances and the declinations, which, however, can easily be limited, as we shall now carry out in some of them. [*Cometes per ſe hac veſpera admodum tenuiter apparuit, ita vt vix fuerit obſeruabilis, niſi magna adhibita accuratione, quod diuerſitatem nonnullam peperit inter obſeruandum tam diſtantias quam declinationes, quæ tamen facile limitari poßunt, prout nunc in quibusdam præſtabimus.*]

Limitation of certain selected preceding observations. [*Limitatio quarundam ſelectarum obſeruationum præcedentium.*]

H. M.	Dist. of the Com. from the right shoulder of Erichthonius [Diſt. Com. a dext. humero Erichtonij]	Declination [Declinatio]	Altitude [Altitudo]	Azimuth
7 27			51 32⅙	90 0
7 30		40 30 (27⅔)		
7 37⅓	22 59½			
8 27½	22 54	40 31½ (29)	43 14	
9 7 (8)	22 52	40 33 (30⅔)	37 44	108 57
9 16 (16½)	22 50½	40 33½ (31⅓)	36 27	110 0
9 42	22 48	40 33½ (31⅓)	33 19	
10 19 (18½)	22 46	40 34½ (32)	28 39	

H. M.	Dist. of the Com. from the right shoulder of Erichthonius [Diſt. Com. a dext. humero Erichtonij]	Declination [Declinatio]	Altitude [Altitudo]	Azimuth
11 30⅓ (30)	22 40	40 35 (32⅔)	20 42	132 55
11 36	22 40	40 35½ (33)	20 16	

N.B. From these very observations the parallaxes can safely be examined; for from an altitude of 50° to 20° yields a parallax of a third part of a degree. [*N.B. Poßunt ex his ipſis obſeruationibus parallaxes tuto ſcrutari; nam ab altitudine 50 partium in 20 parallaxin facit tertiæ partis gradus.*]

N.B. From H. 7 M. 37 to H. 11 M. 30, in an interval of 4 hours, the declination changed by 5′ very nearly, which agrees with the diurnal motion of the declination, which is as nearly as possible 30′. Therefore no parallax is measured; indeed the declination is also half a minute further forward than it should be, which I attribute to refraction. [*N.B. Ab H. 7 M. 37 in H. 11 M. 30, interuallo 4 horarum, mutauit declinationem per 5 minuta proxime, quod conſentit motui diurno declinationis, qui eſt minutorum quam proxime 30. Ergo nulla parallaxis metitur, imo & declinatio dimidio ſcrupulo anterior eſt, quam debet, quod refractioni attribuo.*]

On the following day, for correcting and examining the clock, ⊙ *was observed among clouds, as follows.* [*Die ſequente pro corrigendo & examinando horologio, obſeru.* ⊙ *inter nebulas, vt ſequitur.*]

	⊙, east [⊙ orient.]		⊙, east [⊙ orient.]
11H 16M	11 56	11H 37⅙M	6 40
11 21	10 40	11 42½	5 17
11 23	10 10	11 57⅔	1 35
11 25½	9 35	12 0	0 58½
11 27⅚	8 58½	0 2	0 30½

At the following noon the clock was running exactly 4 minutes faster than is right. [*Horologium in meridie ſequente præciſe 4 minutis iuſto celerius mouebatur.*]

[After the armillae had been corrected on the brighter stars of Ursa Minor on 1 March at evening hour 9, it was found that toward the west they showed a declination about 2½′ greater than is right, which error was not corrected until 6 March; therefore in all the declinations observed the declination was at least 2′ greater than is right, which was here corrected in all of them. Also, the azimuths assigned here are not to be trusted too much, except especially those which were observed near degree 90 of the west][1]. [[Poſtquam die 1 Martij H. 9 veſpertina Armillæ ad ſtellas lucidiores Vrſæ minoris correctæ fuißent, deprehenſum eſt eas verſus occaſum declinationem exhibere 2½ minutorum circiter iuſto maiorem, qui error in diem 6 Martij non corrigebatur; quare in omnibus declinationibus obſeruatis declinatio ad minimum 2 minutorum iuſto maior erat, quod hic in omnibus corrigebatur. Azimuthis etiam, quæ hic

aßignantur, non nimium fidendum eſt, niſi ijs præſertim, quæ iuxta 90 gradum occidentis ſunt obſeruata][1].]

DIE 6 MARTIJ, VESPERI. [6 March, in the evening]

The comet could scarcely be seen, so slight did it appear, and because of the Moon. [*Vix videri potuit Cometes, tam exilis apparebat, & propter Lunam.*]

About hour 7¾ the comet stood as it were in one vertical with the one which is in the lower hip of Perseus, raised above it, and made with this one and the smaller one, which is next to the rump, a right-angled triangle, so that the side from the comet to the one in the hip was equal to the distance of the fixed stars as far as sight goes, and the angle meeting at the star at the hip became a right angle. D. Tycho took with the Radius the distance of both fixed stars which made the right angle with the comet; it was part. 3½, as nearly as possible, or perhaps a little more. [Circa horam 7¾ ſtabat Cometa quaſi in vno verticali cum ea, quæ in coxa inferiori Perſei, ſupra hanc eleuatus, & fecit cum hac atque minori, quæ iuxta podicem eſt, triangulum rectangulum, ita vt latus a Cometa in eam, quæ in coxa, æquale eßet diſtantiæ fixarum quoad viſum, & angulus in ſtella ad coxam concurrens fieret rectus. Diſtantiam D. Tycho per Radium accepit ambarum fixarum, quæ cum Cometa effecerunt rectangulum; quæ fuit part. 3½, quam proxime vel forte paululo plus.]

Diagram. A small drawn figure of three points joined by broken lines, standing between a three-line legend at its left and a three-line italic paragraph at its right. The point C is drawn as a shaded, rayed blob; A and B are drawn as asterisk-like stars. A stands below C; B stands to the right of A, on about the same level. C and A are joined by a dashed line, A and B by a dashed line, and C and B by a dotted line. The legend, in italic: *A the bright one of the hip, B next to the buttocks, C the comet.* [*A clara coxæ, B iuxta nates, C Cometa.*]

- A (lower left, beside the star): A
- B (lower right, beside the star): B
- C (top, beside the blob): C

About hour 8½, CA was, as far as sight goes, a little longer than AB, but by scarcely 10′. [*Circa horam 8½ erat CA quoad viſum paulo longior quam AB, ſed vix 10 minutis.*]

H. M.	Dist. of the Com. from the right shoulder of Erichthonius [Diſt. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]	Declination of the Comet [Declinatio Cometæ]	Alt. of the Com. by the revolving instrument [Alt. Com. per Volub.]	Alt. of the Com. by the revolving instrument [Alt. Com. per Volub.]	
7 51⅙ (51)		41 7½ (5)	41 11 (8½)			Canis Minor, west 5 12 [Canis min. occ. 5 12]

H. M.	Dist. of the Com. from the right shoulder of Erichthonius [Diſt. Com. a dext. humero Erichtonij]	Declination of the Comet [Declinatio Cometæ]	Declination of the Comet [Declinatio Cometæ]	Alt. of the Com. by the revolving instrument [Alt. Com. per Volub.]	Alt. of the Com. by the revolving instrument [Alt. Com. per Volub.]	
7 53½[2]						Alt. of the bright star in the thigh of Perseus 45 5 [Alt. luc. in femore Perſei 45 5]
8 1⅓ (1)		41 9½ (4)	41 5¼ (7)	48 41⅓		
8 9⁷⁄₁₂ (9½)	19 38½			47 30	47 25	
8 13⅚ (14)		41 6½ (3½)	41 8 (6)	47 0		
8 18⅓[3]	19 33			46 30	46 25	
8 12⅙[3] (12)		41 12½ (10)	41 14 (11½)			

This evening it could not be observed more correctly, so faint was the comet seen to be, nor could it be discerned after the time assigned last, so as to be observed; for it was not seen with one eye, but at least with two, by those intently look- [*Non poterat hac veſpera rectius obſeruari, adeo attenuatus cernebatur Cometa, neque poſt aßignatum vltimo tempus poterat diſcerni, vt obſeruaretur; nam vno oculo non videbatur, ſed ſaltem duobus intente aſpicienti-*]

[1] This only in codex N. [[1] Hæc in ſolo codice N.]

[2] This only in codex O. [[2] Hæc in ſolo codice O.]

[3] Thus in the codex. [[3] Sic in codice.]

ing, and even then as little as possible. This evening the comet was, both of itself and also because of the Moon tending toward the full, so faint and thin that it could scarcely be discerned even without an instrument; therefore it is no wonder that the observations disagreed in declination and distance. [*bus, & tum quam minimum etiam. Erat Cometes hac veſpera per ſe, tum etiam ob Lunam ad plenitudinem tendentem, adeo tenuis & rarus vt vix etiam absque inſtrumento diſcerni potuerit, quare mirum non eſt, in declinatione & diſtantia diſcrepaße obſeruationes.*]

N.B. In limiting all the declinations, if we take, near hour 8, at an altitude of the comet of about 48 p., the declination 41 10, you will scarcely err by one or two minutes; take the distance then as P. 19 M. 36. [*N.B. Limitando omnes declinationes, ſi acceperimus iuxta horam 8 in altitudine Cometæ 48 p. circiter, declinationem 41 10, vix aberrabis vno vel altero ſcrupulo; pone diſtantiam tunc P. 19 M. 36.*]

The more select observ. of this comet from the observations of the preceding days. [Selectiores Cometæ huius ex obſeruationibus præcedentium dierum obſeruat.]

	Corrected time [Tempus correctum]	Dist. of the Comet from the fixed stars [Diſt. Cometæ a fixis]	Northern declination [Declinatio B.]	Altitude [Alti-tudo]	Az-imuth
February 23 [Februarij 23]	8H 3M	From the bright star of ♈ 15 36 [A lucida ♈ 15 36]	23 58	12 0	
24	6 52	From the same 11 13½ [Ab eadem 11 13½]	27 58½	30 40	
	7 3	From the bright star of the girdle of Androm. 6 33 [A luc. cing. Androm. 6 33]	27 59½	30 0	
	7 12	From the bright one in the Triang. 10 5½ [A clara in Triang. 10 5½]	28 2	29 0	
25	6 55	From the bright one of Perseus 23 31 [A clara Perſei 23 31]	31 28	38 5	
	8 49	From Aldebaran 39 51 [Ab Aldebora 39 51]	31 38	21 25	
	8 58	From the bright one of Perseus 22 55 [A clara Perſei 22 55]	31 39		
	9 25	From the same 22 46 [Ab eadem 22 46]	31 43	17 30	
26	7 7	From the head of Medusa 10 59 [A cap. Meduſæ 10 59]	34 3	40 20	
	7 16	From the same 10 53 [Ab eadem 10 53]	34 6	38 34	
	7 55	From the same 10 44 [Ab eadem 10 44]	34 6½	33 15	
	8 18	From the same 10 39½ [Ab eadem 10 39½]	34 9½	30 30	
28	7 16⅔	From the right shoulder of Erichthonius 33 35 [A dext. hum. Ericht. 33 35]	37 34½	45 40	92 55
	7 46	From the same 33 30½ [Ab eadem 33 30½]	37 36	41 31	98 20
	8 20	From the same 33 26 [Ab eadem 33 26]	37 39	36 41⅔	104 43½
March 1 [Martij 1]	7 19	From the same 30 19 [Ab eadem 30 19]	38 38	47 30	
	7 46	From the same 30 12 [Ab eadem 30 12]	38 40½	43 58½	97 0
	9 6	From the same 30 2½ [Ab eadem 30 2½]	38 40	33 10	
	10 46	From the same 29 51½ [Ab eadem 29 51½]	38 41	21 20	129 27
	11 40	From the same 29 41 [Ab eadem 29 41]	38 45	15 52	138 6
	12 40	From the same 29 36 [Ab eadem 29 36]	38 52	10 54	148 35

	Corrected time [Tempus correctum]	Dist. of the Comet from the fixed stars [Dist. Cometæ a fixis]	Northern declination [Declinatio B.]	Altitude [Alti-tudo]	Az-imuth
	13 37	From the same 29 25½ [Ab eadem 29 25½]	38 53	7 29	159 24
	15 25	Alt. of the Com., meridian, below the pole [Alt. Com. Merid. infra polum]		4 59½	
2	7 9	From the same 27 31 [Ab eadem 27 31]	39 21	51 3½	89 0
	7 49	From the same 27 24½ [Ab eadem 27 24½]	39 24½		
	9 0	From the same 27 16 [Ab eadem 27 16]	39 27		
	10 47	From the same 27 5 [Ab eadem 27 5]	39 28½	22 57	127 0
	15 35⅓	The comet in the merid. [Cometa in Merid.]		5 38	
3	7 40	From the same 25 0 [Ab eadem 25 0]	40 0	48 30⅓	94 0
	9 15	From the same 24 53 [Ab eadem 24 53]	40 5½	35 30	111 0
4	7 37	From the same 22 59 [Ab eadem 22 59]	40 28	50 5	92 23
	8 27	From the same 22 54½ [Ab eadem 22 54½]	40 30	43 14	
	9 16	From the same 22 50 [Ab eadem 22 50]	40 31	36 27	110 0
	10 18	From the same 22 46 [Ab eadem 22 46]	40 33	38 39	
	11 30	From the same 22 40 [Ab eadem 22 40]	40 33½	20 16	
6	8 0	From the same 19 36 [Ab eadem 19 36]	41 10		

The following table was put together from these observations, marked out on the great globe. [Sequens tabula ex hisce obseruationibus, in globo magno designatis, concinnata est.]

The daily motion of the comet, derived from the observations through the twelve days on which it was seen, and everywhere adapted to nine complete hours after noon[1]. [Diarius motus Cometæ ex obseruationibus deductus per duodenos, quibus conspiciebatur, dies & vbique horis a meridie nouem completis adaptatus[1].]

Months & Days [Menſes & Dies]	Com. in its path from the inters. with the eq. [Com. in ſuo ductu ab interſ. cum æq.]	Proper diurnal motion [Motus diurnus proprius]	Northern declination [Declinatio borea]	Right ascension [Aſcenſio recta]	Longitude [Longitudo]	Northern latitude [Latitudo B.]
February 23 [Februarij 23]	37 32		24 1	9 29	18 27 ♈	18 14
		7 34				
24	45 6		28 16	16 26	26 21	19 33
		6 34				
25	51 40		31 40	22 58	3 17 ♉	20 24
		5 36				
26	57 16		34 15	28 52	9 11	20 55
		4 43				
27	61 59		36 12	34 9	14 16	21 12
		3 52				
28	65 51		37 38	38 39	18 25	21 15
		3 17				
March 1 [Martij 1]	69 8		38 41	42 36	21 57	21 15
		2 48				
2	71 56		39 27	46 2	24 56	21 12
		2 25				
3	74 21		40 6	49 1	27 29	21 7
		2 3				
4	76 24		40 32	51 43	29 44	20 58
		1 44				
5	78 8		40 53	53 58	1 34 ♊	20 52
		1 34				
6	79 42		41 10	56 0	3 15	20 46

Intersection of the comet's path in [Interſectio viæ Cometæ in]	the Zodiac [Zodiaco]	20⅓ ♒
	the Equator [Æquatore]	339¾

Angle of intersection of its path to [Angulus interſectionis ductus ſui ad]	the Zodiac [Zodiacum]	21 15 B.
	the Equator [Æquatorem]	42 0 B.

[1] Cf. Vol. VI p. 211. [[1] Cf. T. VI p. 211.]

OBSERUATIO COMETÆ ANNI 1593 MENSE JULIO, DIE 22 PRIMUM CONSPECTI[1]. [Observation of the comet of the year 1593, first seen in the month of July, on day 22[1]]

Made at Zerbst of the Anhaltines, under latitude 52⅙ Gr. First observed on 25 July. [Habita Serueſtæ Anhaldinorum, ſub Latitud. 52⅙ Gr. Die 25 Julij primum obſeruabatur.]

10^{H}39¾^{M}	The comet was distant from the bright star of the side of Perseus [diſtabat Cometa a lucida lateris Perſei]	with the Radius [per Radium]	41⅔°
11 6⅔	The comet from the first of the tail of Ursa Major [Cometa a prima caudæ Vrſæ maioris]	with the Radius [per Radium]	43 0′

At hour 10 M. 53 longit. 14⅔ ♋, latit. 29$\frac{1}{12}$ B. [Ad Horam 10 M. 53 Longit. 14⅔ ♋, Latit. 29$\frac{1}{12}$ B.]

N.B. The comet's colour was somewhat livid, mixed with ruddy; it was of the nature of ♄ and ♂; with a rather thin light, in size it equalled stars of the 3 magnitude. [N. B. Cometæ color ſubliuidus, rubicundo admixtus, naturæ ♄ & ♂ erat, lumine rariore, magnitudine ſtellas 3 magnitudinis adæquabat.]

N.B. The comet, being at an altitude of 14 Grad., directed its tail exactly toward the constellation of Cassiopeia, so that its point cut the middle of the Bend and Schedar. The tail, however, was very [recte: admodum; the page prints "a modum" with a gap] dim, and at times was seen better, and it had a length of 4½ gr. [N. B. Cometa in Altitudine 14 Grad. exiſtens caudam dirigebat exacte verſus ſidus Caßiopeæ, ita vt cuſpis eius medium flexuræ & Schedir ſecaret. Erat autem cauda obſcura a modum & interdum melius conſpiciebatur, habuitque longitudinem 4½ gr.]

The sky was not clear, but sown with rather thick clouds, especially in the northern quarter of the sky, where the comet stood. [Cœlum ſerenum non erat, ſed craßiuſculis conſitum nubibus, præſertim in borea cœli plaga, vbi conſtitit Cometa.]

DIE 30 JULIJ. [30 July]

At H. 14 the comet was in a straight line with the pole star and the upper head of ♊. Again, in a straight line with the upper of the preceding ones in the square of Ursa Major, which is called Dubhe, and with the preceding, or left, foot of Erichthonius. [H. 14 erat Cometa in linea recta cum ſtella polari & ſuperiore ♊ capite. Rurſum in recta cum ſuperiore præcedentium in □to Vrſæ maioris, quæ dicitur Dubhe, & præcedente ſeu ſiniſtro Erichtonij pede.]

DIE 6 AUGUSTI, MANE. [6 August, morning]

About hour 2 the comet made, most exactly, a straight line with Schedar and the one in the snout of Ursa Major which is of the 4 magnitude; on the other side it formed a straight line with the bright star of Capella and the preceding, brighter one of the two following ones of the square of Ursa Minor, namely the one that is nearest the pole and the more northerly of the following side. [Circiter Horam 2 Cometa exactißime rectam cum Schedir & ea, quæ in roſtro Vrſæ maioris eſt 4 magnitudinis, effecit; ab altera parte rectam conſtituit cum Capellæ lucida & præcedente lucidiore duarum ſequentium □ti Vrſæ minoris, quæ ſcilicet eſt polo proxima & lateris ſequentis borealior.]

Corresponding to the 2nd morning hour: longit. 26° 25⅔′ ♊, latit. 47° 42′ B. [Reſp. ad horam 2 matutinam Longit. 26° 25⅔′ ♊, Latit. 47° 42′ B.]

N.B. The comet surpassed in light a star of the 4th magnitude; with a larger circumference, however, and a less compact light, it surpassed stars of the third magnitude. Of the tail, almost no trace, or an altogether slight one, could be seen. [N. B. Cometa lumine ſtellam 4tæ magnitudinis ſuperabat, circumferentia tamen maiore, lumine minus compacto ſtellas tertiæ magnitudinis ſuperabat. Caudæ veſtigium fere nullum aut prorſus exiguum cernere erat.]

Eodem die ad veſperam. [The same day, toward evening]

$10^{H}28^{M}$	Distance of the comet from the bright star of the lat. of Perseus [Cometæ a lucida lat. Perſei diſtantia]	with the Radius [per Radium]	29½°
	Its altitude at that time [Altitudo eius tum temporis]		38
10 51½	Conversely, the comet stood distant from the first in the lead-out of the tail of Ursa Major [vice verſa diſtitit Cometa a prima in eductione caudæ Vrſæ maioris]	with the Radius [per Radium]	40⅔

DIE 9 AUGUSTI. [9 August]

$9^{H}35^{M}$	The comet from Schedar [Cometa a Schedir]	29°20′
10 11⅔	The comet from the uppermost preceding one of the square of Ursa Major [Cometa a ſuprema præcedente □ti Vrſæ maioris]	31 50

H. 11 M. 2⅓: the comet was in a straight line with the pole star and with the one which is in the lead-out of the tail of the same, so that the comet declined toward the south by the diameter of its body. At the same instant it formed a straight line with the upper of the preceding ones of the square of Ursa Major and the lowest of the foot of Cassiopeia. [H. 11 M. 2⅓ Cometa in recta erat cum ſtella polari & cum ea, quæ eſt in eductione caudæ eiuſdem, ita vt Cometa ad diametrum ſui corporis auſtrum verſus declinaret. Eodem inſtanti rectam conſtituit cum ſuperiore præcedentium □ti Vrſæ maioris & infima pedis Caßiopeæ.]

N.B. The trace of the tail was altogether slight, a trace which was directed more toward the zenith, to the tiara of Cepheus. [N. B. Caudæ veſtigium prorſus exiguum erat, quod magis verſus Zenith ad Cephei tiaram dirigebatur.]

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

DIE 13 AUGUSTI. [13 August]

H. 9 16½: the comet formed a straight line with the pole star and the little star in the left elbow of Cassiopeia; that is, a line drawn from the pole star through the body of the comet cut the middle of the distance of the Bend and the knee of Cassiopeia. Again, with a line drawn from the northern or following one (namely the one that is nearest to Cassiopeia) of the two in the base of the

triangle in the tiara of Cepheus, and from the left elbow of the same (which, namely, is in a straight line with the head of Cassiopeia and the bright star of the Chair), the comet ended exactly in that line. [H. 9 16½ rectam conſtituit Cometa cum ſtella polari & ſtellula in cubito ſiniſtro Caßiopeæ, id eſt: ducta linea a polari per corpus Cometæ medium ſecabat diſtantiæ flexuræ & genu Caßiopeæ. Rurſum linea ducta a boreali ſeu ſequenti (quæ ſcilicet Caßiopeæ proxima eſt) duarum in baſe trianguli in tiara Cephei & ab eiusdem cubito ſiniſtro (quæ ſcilicet eſt in recta cum capite Caßiopeæ & lucida cathedræ), exacte Cometa in eam finijt lineam.]

N.B. At that time the comet formed an oblong triangle with the pole star and the left leg of Cepheus (which it also resembled in light, size and colour, except that it had shone more dimly and more palely), so that the angle at the comet appeared right as far as sight goes. The distance of the two in the base was to the apex as 2 to 5. [N.B. Conſtituit tum temporis Cometa triangulum cum ſtella polari & crure ſiniſtro Cephei (cui etiam lumine, magnitudine & colore, niſi quod obſcurius & pallidius fulſerat, ſimilis erat) oblongum, ita vt angulus ad Cometam quoad viſum rectus appareret. Diſtantia duarum in baſe erat ad cuſpidem ſicut 2 ad 5.]

Diagram. A figure in a hand-drawn style in the left part of the text block, beside the entry "DIE 13 AUGUSTI."; the printed lines from "quenti (quæ ſcilicet …" to "2 ad 5." are set on a narrower measure to its right. From top to bottom it shows: a star mark with a handwritten label to its right; a short oblique stroke, and below it a vertical stroke, with a two-line handwritten label to their right; a mark drawn as a small dotted oval with a handwritten label to its right; a star mark with a handwritten label to its right. The labels, in a hand, not set in type:

- star mark, top: "Polaris." — the pole star
- beside the oblique and vertical strokes, two lines: "dist. [?]" / "11 ½" — dist. [?] 11½
- dotted oval: "Cometa" — the comet
- star mark, bottom: "Crus." — the leg

DIE 21 AUGUSTI. [21 August]

H. 9 M. 34: the comet exactly occupied the place of the star in the tiara of Cepheus which is number 9, so that it merged into one with it. [H. 9 M. 34 Cometa exacte occupabat locum ſtellæ in tiara Cephei, quæ numero 9 eſt, ita vt cum eadem in vnum coaluerit.]

Diagram. A figure in a hand-drawn style in the right part of the text block, beside the entry "DIE 21 AUGUSTI."; the printed entry is set on a narrower measure to its left. At the left a curved stroke, open to the right, spans three lines; to the left of its middle stands a two-line handwritten label, with a further handwritten mark below it. To the right of the curved stroke stand three lines, each a handwritten label followed by a mark: the top line ends in a small dotted circle, the middle and bottom lines in star marks. At the upper right, above and

right of the dotted circle, stands a three-line handwritten note. The labels, in a hand, not set in type:

- left of the curved stroke, two lines: "Tiara / Cephei" — the tiara of Cepheus; the mark below "Cephei" [?]
- top line, before the dotted circle: "Austr. 9" — southern, 9
- middle line, before a star mark: "Media 10" — middle, 10
- bottom line, before a star mark: "Borea 11" — northern, 11
- upper right, three lines: "Cometa & / austr. Ti- / ara." — the comet and the southern one of the tiara

DIE 22 AUGUSTI. [22 August]

$14^{H}43^{M}$	The comet was distant from Algenib of Perseus, with the Radius [Cometa ab Algenib Perſei diſtabat per Radium]	48⅙°
15 2	The comet from the tail of Cygnus [Cometa a cauda Cygni]	48¾

N.B. The comet had already departed from the southern one in the tiara of Cepheus, so that, declining toward Cygnus, it held the middle place between 9 and 10 in the head of Cepheus; yet, as far as sight goes, it was nearer to the middle one than to this one. [N.B. Iam deceßerat Cometa ab auſtrali in tiara Cephei, ita vt verſus Cygnum declinans medium inter 9 & 10 in capite Cephei teneret locum; mediæ tamen quoad viſum propior erat hac.]

N.B. The size of the comet was equal to the 10th of Cepheus; it had a thin and dim light similar to 9 or 10 of the same. It had no tail. [N. B. Magnitudo Cometæ par 10æ Cephei erat, lumen rarum & obſcurum 9 aut 10 eiusdem ſimile obtinuit. Caudam nullam habuit.]

Diagram. A figure in a hand-drawn style in the left part of the text block, beside the entry "DIE 22 AUGUSTI."; the printed entry is set on a narrower measure to its right. At the top a handwritten "9." precedes a star mark, and to its right a small dotted circle carries a handwritten label. Below, "10" precedes a larger star mark, with a smaller star mark further right; at the far left a star mark stands at the top of a long vertical stroke. Below, "11" precedes a star mark. At the foot of the vertical stroke stands a two-line handwritten note. The labels, in a hand, not set in type:

- top: "9." before a star mark — 9
- dotted circle: "Cometa." — the comet
- middle: "10" before a star mark — 10
- lower: "11" before a star mark — 11
- at the foot of the vertical stroke, two lines: "informis Cassio- / p[?]am versus." — unformed; toward Cassio[?]

DIE 23 AUGUSTI. [23 August]

H. 9. The comet was in a straight line with the tail of Cygnus and the bright star of the Chair, except that it declined by ⅔ of a degree toward the pole of the Zodiac. At the same moment it formed a straight line with the

left knee of Pegasus (which, namely, is in a straight line with Scheat and the head of Andromeda) and with the one which is in the loins of Cepheus. The comet equalled in light and size stars of the 6 magnitude. [H. 9. Erat Cometa in linea recta cum cauda Cygni & lucida cathedræ, niſi quod is ad ⅔ gradus verſus Zodiaci polum declinaret. Eodem momento rectam conſtituit cum genu Pegaſi ſiniſtro (quæ ſcilicet in recta eſt cum Scheat & capite Andromedæ) & cum ea, quæ in lumbis Cephei eſt. Cometa lumine & magnitudine ſtellas 6 magnitudinis adæquabat.]

DIE 24 AUGUSTI. [24 August]

I was watching whether the comet could be observed, and I found it very dim, holding as it were the middle place between the stars of the tiara of Cepheus and the tail of Cygnus, in the Milky Way itself, where, both because of the thinness of its body and because of the brightness of the place beneath, it could not be observed. It therefore burned out wholly about the 25th day of August, after it had been seen on the 22nd day of July. This comet therefore lasted 34 whole days. [Attendebam, vtrum obſeruari potuit Cometa, & deprehendi eum obſcurum admodum, medium quaſi locum inter ſtellas tiaræ Cephei & caudam Cygni obtinere in ipſa via lactea, vbi tum propter ſui corporis raritatem, tum propter ſubjecti loci luciditatem, obſeruari nequibat. Totus igitur circa 25 diem Auguſti efflagrauit, poſtquam 22 die Julij conſpectus fuißet. Durauit igitur Cometa hic 34 dies integros.]

Christiernus Johannis Ripensis, who was at one time my student here, had the preceding observations of this comet at Zerbst. But this comet was not seen by us here at Uraniborg, much less observed. [*Præcedentes Cometæ huius obſeruationes habuit Serueſtæ Chriſtiernus Johannis Ripenſis, qui aliquando fuit hic meus ſtudioſus. Verum a nobis hic Vraniburgi iſte Cometa non eſt viſus, nedum obſeruatus.*]

OBSERUATIONES COMETÆ ANNO 1596 MENSE JULIO APPARENTIS[1]. [Observations of the comet appearing in the year 1596, in the month of July[1]]

In the year 1596, on 14 July, between the 10th and 11th evening hour, a faint comet was seen by me at Copenhagen, between the west and the north; it was said to have been sighted by others three days before. [*Anno 1596 die 14 Julij inter 10 & 11 veſpertinam Hafniæ viſus mihi Cometes inter occaſum & ſeptentrionem tenuis, qui dicebatur ante triduum ab alijs conſpectus.*]

Diagram. A figure across the upper middle of the page, below the italic paragraph, with the printed italic label "Vrſa maior" above it. In its upper part stand nine star marks. Two long straight lines run from the lower left toward the upper right; the right-hand line ends at the uppermost right star mark. Lower down, a double-stroked band rises from the lower left toward the right; three comets are drawn standing on it, each a round head with a long hatched tail pointing upward, the right-hand head lying on the right-hand line. Below the band stand two further star marks, the right one on the right-hand line. Handwritten lower-case letters, not set in type, stand beside the marks; the

printed caption "AB 2 0, BC 3¾." is set in roman type below the figure. The labels:

- above the figure, printed italic: "Vrſa maior" — Ursa Major
- left of the middle comet head, handwritten: "d"
- right of the right-hand comet head, handwritten: "c" [?]
- right of the right-hand lower star mark, handwritten: "b"
- right of the lowest star mark, handwritten: "a"
- below the left-hand comet head, on the band, a small handwritten mark [?]

AB 2 0, BC 3¾.

Its head appeared like stars of the second magnitude, such as, roughly, the stars in Ursa Major appear, especially the lower of the two preceding ones in the back; yet it was not of so compact and bright a colour, but presented itself to the eyes with a somewhat livid whiteness. Its tail seemed thin and faint, about three or four spans in length; it extended, moreover, from the head toward the one that is the lower of the two in Ursa Major, yet inclining somewhat toward the other lower one between the two hinder ones, by about a fourth part of the distance of both fixed stars of the said two lower ones. The head, moreover, was situated next to the two in the following foot of Ursa Major, so that it was distant from the more northerly by a sesquialteral portion, or a little more, of as much as the distance of both of the same takes up; and this in the straight line that is drawn from the upper and nearest of those same two in the foot to the uppermost and more northerly of the two forward ones above the forward feet of the Bear. [Caput eius apparuit inſtar ſtellarum ſecundæ magnitudinis, quales ferme apparent ſtellæ in Vrſa maiore, præſertim inferior duarum antecedentium in dorſo, non tamen erat adeo compacti & lucidi coloris, ſed albedine ſubliuida oculis ſeſe ingerens. Cauda eius rara & tenuis videbatur, longitudine quaſi trium vel quatuor ſpithamarum; tendebat autem a capite verſus eam, quæ eſt inferior duarum in Vrſa maiore, nonnihil tamen ſe inclinans verſus alteram inferiorem inter duas poſteriores quaſi pro quarta parte diſtantiæ vtriusque fixæ ex dictis duabus inferioribus. Verſabatur autem caput iuxta duas in pede ſequente Vrſæ maioris, ita vt diſtaret a borealiore pro ſeſquialtera portione, vel paulo plus, quantum capit diſtantia ambarum earundem, idque in linea recta, quæ ducitur a ſuperiore & proxima earundem duarum in pede vſque in ſupremam & borealiorem duarum anteriorum ſupra anteriores pedes Vrſæ.]

Die 15 circa horam 10 [On the 15th, about hour 10]

the comet was seen in position D, making a triangle, of unequal sides however, with the two in the said foot of Ursa Major, as can be seen in the figure drawn above. [videbatur Cometa in ſitu D, faciens triangulum inæqualium tamen laterum cum duabus in pede dicto Vrſæ maioris, vti in ſupraſcripta figuratione videre eſt.]

Diagram. A figure in the lower right part of the text block, beside the paragraphs from "Die 15 circa horam 10" to "vt ſequitur"; those lines are set on a narrower measure to its left. It shows twelve star marks. Two straight lines

meet at a point low in the figure, marked by a small cross, and open upward in a V: the left line runs from a star mark at the upper left down through the meeting point to a star mark below it; the right line runs from the meeting point up to a star mark at the upper right, passing through one star mark on the way. A hatched stroke descends from near a star mark in the upper middle to the meeting point. A small handwritten mark stands on the right line just below its upper star mark. No letters or words are legible in the figure.

Obſeruat. 16 Julij. [Observation, 16 July]

About that time the bright star of the Vulture was in the meridian toward the south. At that time it also appeared equal to stars of the third magnitude, of a white colour, but because of its thinness a little darker than the others. [Erat circa id tempus lucida Vulturis in Meridiano verſus auſtrum. Apparuit tunc temporis quoque æqualis tertiæ magnitudinis ſtellis, colore albo, ſed ob raritatem cæteris paulo obſcuriore.]

DIE 18 JULIJ MANE[2] [18 July, morning[2]]

of the year 96, a little after the middle of the preceding night, the comet was observed standing in the asterism of Ursa Major, at Uraniborg, as follows [anni 96 paulo poſt medium noctis antecedentis obſeruabatur Cometa in aſterismo Vrſæ maioris exiſtens, Vraniburgi, vt ſequitur]

[1] From codices O and N. [[1] E codicibus O & N.]

[2] Added: *or, counting after the middle of the preceding 17th day.* [[2] Adſcriptum: *vel numerando poſt medium diei 17 antecedentis.*]

H. M.	Dist. of the Com. from the lower between the tail of Ursa Maj. and the tail of ♌ [Diſt. Com. ab infer. inter caud. Vrſæ maj. et caud. ♌]	Declination of the Comet [Declinatio Cometæ]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	Stars for the clock [Stellæ pro horolog.]
					The bright star of the Vulture, west [Vult. luc. occ.]
12 18⅓		43 4	12 14⅓	157 48	11 44
		good [bona]			The upper in the right hand of Ophiuchus [Super. in dext. manu Ophiuchi]
12 29		43 3 good [bona]	[1]11 37		47 35 The bright star of the Vulture, west [Luc. Vult. occ.]

H. M.	Dist. of the Com. from the lower between the tail of Ursa Maj. and the tail of ♌ [Dist. Com. ab infer. inter caud. Vrſæ maj. et caud. ♌]	Declination of the Comet [Declinatio Cometæ]	Altitude of the Comet [Altitudo Cometæ]	Azimuth of the Comet [Azimuth Cometæ]	Stars for the clock [Stellæ pro horolog.]
12 37⅔	24 38½		The alt. could not be taken because of the top of the house [Alt. ob cacumen ædium capi non potuit]		18 2
	good [bona]				
12 44	24 37				19 51
	good [bona]				
12 47½	24 36⅚				20 48
	good [bona]				
13 8	24 37½	43 0	9 56½		26 26
	doubtful [dubia]	42 59½			

About this time the comet had passed a little beyond the straight line of the two below the belly, in the thigh and foot of Ursa Major, that were nearest to it. The tail, moreover, inclined directly toward the lowest of these. It was, moreover, in a straight line with the first of the tail and of the two lowest in the Bear. The tail was very thin and scarcely perceptible. [Circa hoc tempus præterierat Cometa paululum lineam rectam duarum infra ventrem in femore ac pede Vrſæ maioris ſibi proximarum. Vergebat autem cauda directe ad infimam harum. Fuit autem in linea recta cum prima caudæ & infimarum duarum in Vrſa. Cauda fuit rara admodum ac vix ſenſibilis.]

H. 14 M. 5, when the bright star of the Vulture was in the west at 41¾°, the comet appeared scarcely, or not even scarcely, because of the twilight in which it was immersed, about the lowest meridian line below the pole; and its altitude, as far as could be observed, was 8° 48′. But this observation is not to be trusted, because the comet could scarcely be seen, let alone observed. [H. 14 M. 5 cum lucida Vulturis eßet occidentalis 41¾°, Cometa vix ac ne vix quidem ob crepuſcula, quibus immerſus fuit, apparuit, circa infimam ſub polo meridiei lineam, fuitque, quantum obſeruari potuit, altitudo eius 8° 48′. Sed huic obſeruationi non eſt fidendum, quod vix videri, nedum obſeruari Cometa poßet.]

DIE 21 JULIJ VESPERI [21 July, evening]

the comet was observed as follows. [obſeruabatur Cometes, vt ſequitur.]

H. M.	Dist. of the Com. from Arcturus [Diſt. Com. ab Arcturo]	Declination of the Comet [Declinatio Cometæ]	Altitude of the Comet [Altitudo Cometæ]: by the revolving instrument [per Volub.]	Altitude of the Comet [Altitudo Cometæ]: by the steel instrument [per Chalyb.]	Azimuth of the Comet [Azimuth Cometæ]	Stars for the clock [Stellæ pro horol.]
						Arcturus
10 51¼			16 32⅓	16 27⅚	134 28	74 59
				doubtful [dubia]		
10 55½			16 10⅔	16 8	[2]156 17	76 6½
			good [bona]			The Vulture, east [Vultur or.]
11 1⅔		38 14	15 36			5 47
		with both pinn. [vtroque pinn.]				
11 9⅚	42 57⅓					
11 13	42 55					
11 15		38 13½ with both pinn. [vtroque pinn.]	14 34			2 30

The revolving instrument is rather to be trusted. [Fidendum eſt potius Volubili.]

[1] The codices have 10° 37′. [[1] Codd. habent 10° 37′.]

[2] Thus in both codices; but it should be 136° 17′, as in Pingré (Cométographie T. I p. 564). [[2] Sic in vtroque codice; ſed debet eße 136° 17′, vt apud Pingré (Cométographie T. I p. 564).]

The comet was seen to have passed the straight line that is drawn from it through the star in the knee of Ursa Major to the lower of the two hinder ones in the square of Ursa Major, by the diameter of a star of the second magnitude, as far as we could make out by sight. The tail, moreover, extended a little outside the straight line that is drawn from the comet to the last of the tail of Ursa Major. [Viſus eſt Cometa præterijße lineam rectam, quæ ab eo ducitur per ſtellam in genu Vrſæ maioris in inferiorem duarum poſteriorum in quadrato Vrſæ maioris, ad diametrum ſtellæ ſecundæ magnitudinis, quantum cernere per viſum potuimus. Cauda autem paululum extra rectam lineam, quæ ducitur a Cometa ad vltimam caudæ Vrſæ maioris, protendebatur.]

Diagram. A figure at the upper right of the text block, beside the opening paragraph, whose lines are set on a narrower measure to its left; it reaches down

to just above the line "Vice verſa ab inferiore …". It shows nine star marks. Two lines meet at the lowest star mark and open upward in a V. The left line is broken: it runs from just below the upper-left star mark down to the lowest star mark, at first as a single stroke, then as dashes, and in its lower part as several close parallel strokes. The right line, dashed, runs from the lowest star mark up to a star mark at the right, passing through one star mark on the way. A short separate stroke rises from the lowest star mark between the two lines. The remaining star marks stand above, between the arms of the V. No letters or words are printed or drawn in the figure.

Conversely, from the lower one between the tail of ♌ and the tail of Ursa Major. [Vice verſa ab inferiore inter caudam ♌ & caudam Vrſæ maioris.]

H. M.	Dist. of the Com. from the one mentioned above [Diſt. Com. a ſupradicta]	Altitude of the Comet [Altitudo Cometæ]	For the clock [Pro horol.]
			The Vulture, east [Vultur or.]
11 23⅓	20 11⅔		0 25⅙
11 26	20 10½	13 23½	0 11
			The Vulture, west [Vultur occid.]
11 31⅙		12 51¼	1 31½
		by the steel instrument [per Chalyb.]	

By the steel instrument the altitude 50° 40′ was observed of the upper of the two joined ones in Draco, which is in a straight line with the middle one of the tail of Ursa Major and the uppermost of the forward ones in the square of Ursa Minor; with it the comet was almost in the same vertical. (Hence let the declination in the armillae be corrected). [Obſeruabatur per Chalybeum 50° 40′ altitudo ſuperioris duarum coniunctarum in Dracone, quæ eſt in recta linea cum media caudæ Vrſæ maioris & ſuprema anteriorum in quadrato Vrſæ minoris, cum qua Cometa fuit fere in eodem verticali. (Hinc corrigatur declinatio in Armillis).]

It was moderately clear during the observing, but the comet was slight and difficult to observe; the tail of almost the same length that appeared at first sight, but thinner. [Erat mediocriter ſerenum inter obſeruandum, ſed Cometa fuit exilis & obſeruatu difficilis; cauda eiusdem fere longitudinis, quæ primo aſpectu apparebat, ſed rarior.]

Clouds, which were rising, prevented further observations. [Vlteriores obſeruationes nubes, quæ exoriebantur, impediebant.]

DIE 24 JULIJ VESPERI [24 July, evening]

the comet was observed as follows, from Arcturus. [obſeruabatur Cometes, vt ſequitur, ab Arcturo.]

H. M.	Dist. of the Com. from Arcturus [Diſt. Com. ab Arcturo]	Declination of the Comet [Declinatio Cometæ]		Altitude of the Comet [Altitudo Cometæ]	For the clock [Pro horol.]
10 16⅓		35 9	35 9¾		The Vulture, east [Vultur or.]
10 20⅚				14 7	4 25
10 36⅙	39 46				0 25
					The Vulture, west [Vultur occ.]
10 40⅓	39 51¾				0 41
10 43⅚	39 46⅔				1 35
10 48	39 44½	35 8½	35 10	10 35	2 45
10 59¼				9 47¼	5 41
				by the steel instrument [per Chalyb.]	

H.10 59¼: the altitude of the first star in the tail of Ursa Major, in the same vertical circle, 37° 18′, by the revolving instrument. [H.10 59¼ Altitudo primæ ſtellæ in cauda Vrſæ maioris in eodem circulo verticali 37° 18′ per Volub.]

Conversely, the comet from the lower one between the tail of ♌ and the tail of Ursa Major. [Vice verſa Cometa ab inferiore inter caudam ♌ & caudam Vrſæ maioris.]

H. M.	Dist. of the Com. from the one mentioned above [Diſt. Com. a ſupradicta]	Declination of the Comet [Declinatio Cometæ]		Altitude of the Comet [Altitudo Cometæ]	The Vulture, west [Vultur occ.]
11 10 (16⅓)	18 48½				8 31½
11 13½	18 47½				9 26½
11 17		35 15	35 14½	8 31	10 29

This evening it was clear enough, but the air was a little more unsettled from the storm of the preceding days, with the west wind blowing. The comet was slight this evening and difficult to see, scarcely equalling in size one of those in the hind foot of Ursa Major, with which it made an oblong acute-angled triangle. [Erat hac veſpera ſatis bene ſerenum, ſed aër ex præcedentium dierum tempeſtate paulo intranquillior ſpirante Zephyro. Fuit Cometes hac veſpera exilis & viſu difficilis, magnitudine vnam earum in pede poſteriori Vrſæ maioris, cum quibus triangulum acutangulum oblongum faciebat, vix adæquans.]

Diagram. A figure at the left of the text block, below the first four lines of the paragraph "Erat hac veſpera …"; the lines from "Cauda etiam admodum rara fuit" to "plenilunium validiores, averſam cœli pla-" are set on a narrower measure to its right. It is drawn in a hand-drawn style, not as the type-set star marks of the facing page. It shows six star marks: two at the upper left, one above the handwritten word described below, one at the left end of a long line, and two low at the right, one above the other, with a small dot above them. A long line runs from the left-hand star mark down to the right to a dark stippled blob, its lower part drawn double and hatched; from the blob a shorter line rises to the right to the lower end of a large dark stippled elongated mass, which stands upright, leaning to the right, beside the indented lines of text. Handwritten words stand in the figure:

- upper middle, below a star mark: "cauda", followed by a handwritten sign [?]
- left of the stippled mass, near its top: a short handwritten mark [?]
- right of the lower end of the stippled mass, two short handwritten lines: the upper ends "…tella", its initial lost in the stipple [?]; the lower "parva." [small]

The tail too was very thin, but of the same length at which it is usually seen. Its extremity, moreover, reached directly toward the unformed star that is between the tail of Ursa Major and the tail of ♌, from which the comet was last observed. [Cauda etiam admodum rara fuit, ſed eadem, qua ſolet conſpici, longitudine. Porrigebatur autem eius extremitas directe ad ſtellam informem, quæ eſt inter caudam Vrſæ maioris & caudam ♌, a qua vltimo obſeruatus eſt Cometa.]

Die 27 Julij veſperi [27 July, evening]

clear night weather having been restored for the first time within these three days, we attended carefully to the comet, which then appeared with great difficulty, both because of the diminution of its size and light, and because of the twilight, to which it clung, and the rays of the Moon, stronger around the full moon, lighting up the opposite region of the sky where the comet was; and so it was possible to note these few things in it by eye, because it could not be observed with instruments for the reasons stated. When the bright star of the Vulture was near the meridian, at H. 10⅔, we saw the comet, as far as it was possible to make out with the eyes, in a straight line with the two upper ones in each hind foot of Ursa Major; and moreover, as far as we could reach by conjecture, it was removed from the upper one in the hind foot of Ursa Major, which on the preceding days it had come nearest to in its course, by a distance about three times greater than the two contiguous fixed stars in the said foot are removed from each other. From this it will be possible to reason about its daily motion, much slower now than at the beginning. [veſperi ſerenitate primum intra hoc triduum nocturna reſtituta, attendimus diligenter ad Cometam, qui difficulter admodum tunc apparuit, tum ob magnitudinis ac luminis eius deminutionem, tum crepuſculum, cui inhæſit, & Lunæ radios

circa plenilunium validiores, averſam cœli plagam, vbi Cometa erat, illuſtrantes; itaque hæc pauca in eo ad oculos notare licuit, quod inſtrumentis obſeruari propter dictas cauſas non poterat. Cum Vulturis lucida iuxta Meridianum eßet H. 10⅔, vidimus Cometam, quantum oculis cernere licuit, in recta linea cum duabus ſuperioribus in vtroque pede poſteriori Vrſæ maioris & inſuper, quantum coniectura aßequi potuimus, fuit remotus a ſuperiori in poſteriori pede Vrſæ maioris, quam ſuperioribus diebus proxime in ſuo ductu attigerat, diſtantia quaſi triplo maiori, atque illæ binæ fixæ in dicto pede contiguæ ab inuicem remouentur. Vnde de eius motu diurno, multo nunc quam ab initio remißiori, ratiocinari licebit.]

At these observations M. Andr. Foss E. B.[1] and M. Christoph. Ceruinus[2] were present [Hiſce obſeruationibus interfuit M. Andr. Foss E. B.[1] & M. Chriſtoph. Ceruinus[2]]

[1] »Bishop of Bergen«. [[1] »Epiſcopus Bergenſis«.]

[2] Ceruinus, in Danish Hjort. Cf. T. IX under the day 17 July. [[2] Ceruinus, danice Hjort. Cf. T. IX ſub die 17 Julij.]

Notes on the Observations of the Comet of the Year 1580 [ANNOTATIONES AD OBSERUATIONES COMETÆ ANNI 1580.]

On p. 316. 21 October. Here Wittich used the prosthaphaeretic method, which, as it seems, he had discovered a little before. Let δ be the declination of the comet, φ the altitude of the pole (55° 52′), μ the observed altitude. We have therefore, with the azimuth put = 90°: [Ad p.316. Die 21 Octobris. Hic Wittichius methodo proſthaphæretica, quam paulo antea, vt videtur, inuenerat, vſus eſt. Sint δ declinatio cometæ, φ altitudo poli (55° 52′), μ altitudo obſeruata. Habemus igitur, poſito azimuth = 90°:]

$\sin \delta = \sin \varphi \sin \mu = \frac{1}{2} [\cos (\varphi — \mu) — \cos (\varphi + \mu)]$

$= \frac{1}{2} [\sin (90° — \varphi + \mu) — \sin (90° — \varphi — \mu]$.

On p. 322. On 31 October Wittich again used this method to find the declination of the comet. But here he employed a sexagesimal table of sines, in which the whole sine (or radius) is 60000. [Ad p.322. Die 31 Octobris iterum hac methodo vſus eſt Wittichius ad inueniendam declinationem cometæ. Sed hic tabulam ſinuum ſexagenariam adhibuit, in qua ſinus totus (vel radius) 60000 eſt.]

On p. 332. Here Tycho himself used the method, employing a decimal table. [Ad p.332. Hic ipſe Tycho methodo vſus eſt, tabulam denariam adhibens.]

Corrections [CORRIGENDA.]

Tom. X pp. 274 & 277—282. The observations given here ought not to have been placed in this position. They are found in codex V under the year 1587; therefore we have given again tom. XI pp. 230—237. [Tom. X pp. 274 & 277—282. Obſeruationes hic præbitæ hoc loco ponendæ non fuerunt.

Reperiuntur in codice V ad annum 1587; quare iterum dedimus tom. XI pp. 230—237.]

Tom. XI p. 163 col. 2 v. 18 for *iimb.* read *limb.* [Tom. XI p. 163 col. 2 v. 18 pro *iimb.* leg. *limb.*]

Tom. XII p. 455 col. 2 v. 14 for *15 58½* read *15 38½.* [Tom. XII p. 455 col. 2 v. 14 pro *15 58½* leg. *15 38½.*]

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