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The Zīj as-Sanjarī of Gregory Chioniades: Text, Translation and Greek to Arabic Glossary

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CONTENTS

I Introduction **1**

II Translation **18**

Summary **19**

1 The Known Epochs **21**

1.1 The *Nychthemeron*, the Month and the Year 21

Nature of the *Nychthemeron* 21

Nature of the Month 21

Nature of the Year 22

1.2 Epoch, Month and Year –Nature and Knowledge 23

Nature of the Epoch 23

Arab Epoch 24

Epoch of Mu^{c}taḍit 24

Roman Epoch 25

Persian Epoch 25

Epoch of Malikshāh 29

Epoch of Nebuchadnezzar 29

Epoch of Philip 29

1.3 Beginnings and Conversions of Epochs 29

1.3.1 The Weekday on Which Years and Months Begin 30

1.3.2 Days and Months of Each Epoch 31
1.3.3 Conversion of Epochs 33
1.3.4 Elevation of Years and Months 33
1.4 Weekdays and Epoch Conversion by Tables 34
1.4.1 Weekday on Which Years and Months Begin 35
Roman 35
Persian 36
Sultanic 36
1.4.2 Extraction of Epochs from The Arabic Epoch 37
1.5 Easter and Other Feasts 38
1.5.1 Lunar Mansions 39
1.5.2 The Great Christian Fast 39
1.5.3 Other Christian Holidays 40
1.5.4 Muslim Feast and Fast Days 41
1.5.5 Persian Feast and Great Days 45
1.5.6 Names of Persian Days and Months 48
1.5.7 Christian Feasts, Great Days and Month Names 49

2 Trigonometry 52
2.1 On Interpolation 52
2.1.1 Interpolation Continued 54
2.2 Arcs of Sines and the *Sagitta* 54
2.2.1 Interconversion of Arc and Sine 55
2.2.2 Interconversion of Arcs and Sines with a Table 56
2.3 The Tangent 56

3 Declinations, Latitudes, Rising Times 57
3.1 First and Second Declination 58
3.2 Latitude of Cities 58

3.2.1 Latitude by Stars 59
3.3 Mid-Day Altitude of Sun and Stars 59
3.4 Rising Times 60

4 Ascensional Difference **62**
4.1 Rising Azimuth 62
4.2 the Ascensional Difference and its *Sagitta* 63
4.2.1 On the Arrow of the Day 64
4.3 Length of the *Nychthemeron* 64
4.3.1 On the Equinoctial Hour 65
4.3.2 Seasonal Hour 65
4.4 Rising Times 65

5 Motion of the Fixed Stars **67**
5.1 True Longitude of the Stars 68
5.2 Latitude 68
5.2.1 On Learning the Distance of the Stars from the Circle of the Equalization of Daylight 69
5.2.2 On the Knowledge of the Ascent of the Equation of Daylight . 69
5.3 Simultaneously Culminating Degree 69
5.4 Simultaneously Rising Degree 70
5.4.1 Simultaneously Setting Degree 71
5.5 Time of Rising 71

6 Hours of the Day **72**
6.1 Solar Arc from Altitude 73
6.1.1 Altitude Given the Solar Arc 73
6.1.2 At Night 74
6.1.3 Seasonal Hours Since Rising 74

6.2 Hour from Rising Time 75
6.2.1 Rising Time and the 10th House 75
6.3 Arc from Rising Time 76
6.4 Apprehension of the 12 Houses 76
6.5 Direction of Altitude 78
6.5.1 Direction of Rising Continued 78
6.5.2 Direction of Rising Continued 79
6.6 Terrestrial Meridian 79
6.7 the Qibla 80

7 Mean Motion of the Planets 82
7.1 Mean Motions for 90 Degrees 83
7.1.1 Correction of the Apogee 85
7.2 Correction of Mean Planetary Motion 85
7.2.1 Nativity Casting 86
7.3 Sultanic Years 86
7.3.1 Sultanic Year 87
7.3.2 Ordinary or Intercalary Year 87
7.4 Radix of the Solar Longitude 88

8 True Position of the Planets 90
8.1 True Longitude of the Sun and Planets 92
8.1.1 True Solar Longitude 92
8.1.2 Lunar Longitude 93
8.1.3 Longitude of the Node 95
8.1.4 Planetary Longitudes 95
8.2 Direct and Retrograde Motion 97
8.2.1 Direct and Retrograde Motion 97
8.2.2 98

8.3 Planetary Latitudes 98
8.3.1 Lunar Latitude 98
8.3.2 Latitude of the Outer Planets 99
8.3.3 Latitude of Venus 100
8.3.4 Latitude of Mercury 101
8.4 Solar and Lunar Velocity and Diameter 104
8.4.1 Solar Diameter from Velocity 104
8.4.2 Lunar Diameter from Velocity 104
8.4.3 The Diameters and Velocities from Tables 105

9 Parallax 106

9.1 Various Methods of Calculation 106
9.1.1 Angle between Ecliptic and Circle of Altitude at the Ascendant 106
9.1.2 At General Position 107
9.1.3 On the Three Cases of Angles 107
9.1.4 Parallax from the Tables 108
9.1.5 Components of Parallax in Longitude and Latitude 109
9.2 Parallax from Theon's Tables 109
9.2.1 Tables Continued 110
9.2.2 Useful Things for Parallax 111
9.2.3 Correction for the Degrees of the Zodiacal Signs 111
9.2.4 Interpolation for Geographical Latitude 112
9.2.5 Correction for Lunar Anomaly 112
9.3 Longitudinal and Latitudinal Lunar Parallax 113
9.3.1 Direction of Longitudinal Parallax 113

10 Luni-solar Conjunctions and Oppositions 115

10.1 Conjucntions and Diameters 115
10.1.1 (Determination of the Hour) 115

10.1.2 Variant 117
10.1.3 Determination of Longitude 117
10.2 Lunar Eclipses 118
10.2.1 Whether an Eclipse Will Occur or Not by Computation 118
10.2.1.1 Conditions for Latitude 118
10.2.1.2 Condition for Eclipses 119
10.2.1.3 Partial Eclipses 119
10.2.1.4 Duration of the Phases of Eclipses 120
10.2.1.5 Duration of Totality 120
10.2.2 On the Eclipse of the Moon by Means of Tables 121
10.2.2.1 (Magnitude) 121
10.2.2.2 Time of a Lunar Eclipse 122
10.2.2.3 Time of a Lunar Eclipse Continued 122
10.3 Third Calculation 122
10.3.1 Solar Eclipse Tables 123
10.3.1.1 Interpolation of Parallax for Geographical Latitude . 123
10.3.1.2 Interpolation of Parallax for Longitudes within a Zodiacal Sign 123
10.3.1.3 Correction for Lunar Anomaly 124
10.3.2 Methods of Computation, Correction for Parallax 124
10.3.2.1 On the Correction of the Hour of the Mid-Eclipse . . 126
10.3.2.2 Whether an Eclipse Will Occur or Not 128
10.3.2.3 On How Much of the Sun will be Eclipsed and the Knowing of the Time by Means of a Table 129

11 Visibility of Moon and Planets **131**
11.1 On the Necessary Computations 132
11.1.1 132

11.1.2 Parallax 133
11.1.3 Equation of Time 134
11.1.4 Correction for Latitude 134
11.1.5 Ripeness of the Crescent 135
11.1.6 Delay of Moonset after Sunset 135
11.1.7 Arc of Sun Below Horizon at Moonset 135
11.1.8 Altitude of the First Crescent 136
11.2 Angles 137
11.2.1 The Arc from 10 until 12 Degrees 137
11.3 First Visibility of the Moon 138
11.3.1 First Visibility of the Moon 139
11.3.2 Second Visibility 139
11.4 First Visibility in Digits 140
11.4.1 Sighting with Astrolabe 140
11.5 First and Last Visibility of the Planets 141
11.5.1 Appearance and Disappearance 142
11.5.2 Date of Planetary Rising and Setting 142
11.6 First Visibility of the Moon 143
11.6.1 Arc of Time 143
11.6.2 (Variant) 144

12 Year Beginnings and Nativity Casting 145

12.1 Beginnings of Complete Years 146
12.1.1 Entrance of the Years 146
12.1.2 Entrance of Place of “Fortune” 147
12.1.3 Rising Time for the Middle of the Earth 148
12.2 Configuration of Celestial Bodies 149
12.2.1 Distance of the Stars from a Center 149

12.2.2 Circle of Motion 150
12.2.3 Aspects 150
12.2.4 Aspects from Rising Times 152
12.3 Motion of the Haylāj 154
12.3.1 Degree of the Haylāj 155
12.3.2 Degree of the Haylāj Continued 156
12.4 Motion of the Degree of the Fortune 158
12.4.1 Motion of the Fortune in a Year 158
12.4.2 159
12.4.3 Motion of the Fortune of the Entrance 160
12.4.4 Motion of the "Fortune" Continued 160

A First Scholium **162**

III Glossary **163**

IV Greek Text **366**

PART I

Introduction

Introduction

The Characters

Gregory Chioniades

The main sources for the biography of Gregory Chioniades — bishop, physician, and translator of Persian and Arabic texts — are the prologue of Chrysococces's *Persian Syntaxis*, 15 or so letters written by Chioniades himself, a short text entitled the *Profession of Faith*[1] and the Greek texts of *az-Zīj as-Sanjarī*, *az-Zīj al-^{c}Alā'ī* and the *Zīj-i ĪlKhānī* . [2]

In his prologue to his *Persian Syntaxis*, written circa 1347[3], Chrysococces begins by reminding his bother, John, that he had wanted to learn this *Persian Syntaxis* for a long time. He then states that he acquired a teacher named Manuel in the city of Trebizond. Manuel explained to Chrysococces 'how this Syntaxis came from Persia and who translated it into Greek'. There was, he explained, a certain Chioniades who, after growing up in Constantinople, fell in love with the sciences. Since he heard that unless he travelled to Persia he would never satify his desire, he set out

[1]See Westerink [13] for a complete discussion of the sources, as well as for the text of the *Profession of Faith*.

[2] *az-Zīj al-^{c}Alā'ī* has been edited and translator by Pingree [7]. *Zīj-i ĪlKhānī* is lost, but was th basis for Chrysococces' *Persian Syntaxis*.

[3]Pingree [6] p. 141, Westerink [13] p. 234

to go there. After this Chioniades passed through Trebizond,

> ...in a short while he was taught by the Persians, having both consorted with the King, and met with consideration from him. Then he desired to study astronomical matters, but found that they were not taught. For it was the rule with the Persians, that all subjects were available to those who wished to study, except astronomy, which was for Persians only. He searched for the cause, which was that a certain ancient opinion prevailed among them, concerning the mathematical sciences, namely, that their king will be overthrown by the Romans, after consulting the practice of astronomy, whose foundation would first be taken from the Persians. He was at a loss as to how he might come to share this wonderful thing. In spite of being wearied, and having much served the Persian king, he had scarcely achieved his objective; when, by Royal command, the teachers were gathered. Soon Chioniades shone in Persia, and was thought worthy of the King's honor. Having gathered many treasures, and organized many subordinates, he again reached Trebizond, with his many books on the subject of astronomy. He translated these by his own lights, making a noteworthy effort. There are in fact other books of the Persian Syntaxis which he translated, those having certain examples with the years systematically at the beginning. However, he handed on the Syntaxis alone, the best and most accurate of all, as our teacher said, who appeared to be telling the truth. He translated seperately the commentary, which was taken from the Persians by word of mouth alone. In this way, the Syntaxis, called the Handy, was produced.[4].

From this we learn among other things that Chioniades' work forms the basis for the *Persian Syntaxis* of Chrysococces and that Chioniades went through Trebizond on his way to study astronomy in an unnamed Persian city. It is clear from the letters of Chioniades, however, that the city to which he travelled was the Mongol capital, Tabrīz.

The letters[5] of Chioniades which are important for a reconstruction of his life are

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[4]The translation of this paragraph is from Mercier [4] pp. 35-36

[5] These are collected in I. V. Papdopoulos, Γρηγορίου Χιονιάδου τοῦ ἀστρονόμου Ἐπιστολαί, Ἐπιστημονικὴ Ἐπετηρὶς τῆς Φιλοσοφικῆς Σχολῆς τοῦ Πανεπιστημίου Θεσσαλονικῆς, I (1927), pp. 151-205.

summarized in Westerink as follows:[6]

- Letter 4. This was written in Constantinople to Constantine Lucites. It states that thanks to the warm reccommendations of Chioniades, many students from Constantinople were able to go to Trebizond to follow the courses of Lucites.
- Letter 5. This was written in Constantinople to the emperor Alexis II (1297 — 1339) of Trebizond. In this letter Chioniades states that the emperor of Constantinople (Andronicus II Palaeologus 1282 — 1328) and the Synod had made him archbishop of Tabrīz, and so he was asking for permission to cross the territory of Trebizond on the way to his diocese. He promises to pay back the emperor in services.
- Letter 6. This was also sent to to the emperor Alexis II (1297 — 1339) of Trebizond. Chioniades received the requested permission.
- Letter 7. This was written to Lucites of Constantinople. In this letter Chioniades denies having calumnied or insulted his correspondant.
- Letter 8. This was sent to Lucites from Trebizond. Lucites has gone into campaign with the emperor. The date of the expedition is September 1301.
- Letter 9. This was written in Tabriz to the partriarch. A patriarchal letter has been read to the Christian people. The precarious position of Chioniades in the midst of the barbarians is described. He apologizes for not being able to do a canonic visit to the patriarch, citing his old age and the dangers of travel.
- Letter 10. The στρατηγικώτατος to whom Lucites will give the letter is undoubtedly the emperor himself. Alexis is on campaign, and he should come back quickly for the feast of the Martyrs (Eugene and his companions, 21 January).
- Letter 11. This is written to an archbishop. Chioniades excuses himself for not being able to travel because of his health and becasue of Lent.
- Letter 12. This is written to Lucites. Chioniades must make a demand that he finds embarassing. Westerink suggests that it might be a request for money.
- Letter 15. This was written to a certain John — ὁ γλυκὺς Ἰωάννης. This is perhaps the emperor John Glykus (before his patriarchate of 1315 -1319).

Another important biographical document is the *Profession of Faith*, Ὁμολογία τοῦ ἰατροσοφιστοῦ Χιονιάδου, dated to about 1305. After spending so many years among the Persians, the Chaldaeans and the Arabs, Chioniades had apparently been

[6] Westerink [13] pp. 235 - 236.

accused of heterodoxy and of astrological superstition, and wrote the *Profession* in defense of himself.[7] It is also possible that it was written as a result of Chioniades' nomination for the episcopate of Tabrīz, since it was in 1304 that the Mongolian Ilkhans, whose capital was Tabrīz, opted definitively for Islam.[8] The *Profession*, Westerink notes,[9] could have been a way for Chioniades to distance himself from that conversion.

The following is a summary of the *Profession*:[10]

> Submitting with filial piety to the direction of the patriarch, Chioniades wants to repeat publicly the profession of faith that he has already committed during a private interview with his patriarch. Some suspect, he says, that because of his long stay among the Arabs he has been polluted by their beliefs. If such a thought ever came to him, he should share the punishment of Judas, his body should be devoured by the animals and the birds of prey and the worm that never dies. He declares as anathema 1) those who believe that Moses and the prophets relied upon astrology for their predictions and miracles, 2) the fatalists and 3) those who regard Chaldaean theology as superior to that of Moses. If he has ever expressed any Jewish, or Ismaelite doctrine other than to expose its fallacies, his name should be erased from the book of life. He declares a curse against those who do not accept the seven Ecumenical councils.

Based on the evidence presented above, as well as on some other documents, Westerink provides the following tentative sketch of the life of Chioniades:

- 1240 or 1250 - Chioniades is born. (Letter 9, in which he speaks of himself as an old man, can probably be dated between 1310 and 1314. This would place his birth 65 to 75 years earlier according to Westerink.)
- 1294 - He begins the study of astronomy and of the Arabic and Persian languages, perhaps in Trebizond[11].

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[7] Westerink [13] p. 236. The *Profession of Faith* is reproduced in Greek *ibid*,. pp. 243 — 245

[8] Westerink [13] p. 240.

[9] *ibid.*

[10] Westerink [13] p. 242.

[11] See the discussion of some of Chioniades' early notes on the subjects on ff. 113-115 of Smith Western Add. in Pingree [7] pp. 18 ff.

- 1295 – 1297 - He studies in Tabrīz with Shams al-Bukhārī and does preliminary work on the *zījes*.[12]
- 1297 or 1299/1300 - He returns to Trebizond (He is already a priest at this time).
- 1301 -1302 - He is in Constantinople[13]
- 1305 - He is ordained a bishop (letter 5) and writes the *Profession of Faith.*
- 1310 - 1314 - He is again in Tabrīz (letter 9).
- After 1315 - He stepped down and lived as a monk. (Letter 11, in which Chioniades is referred to as a monk, might belong to this period)

al-Khāzinī

Abū Manṣur ᶜAbd al-Raḥman al-Khāzinī was the Greek slave of Shaykh al-ᶜAmīd al-Qāḍī Abū al-Ḥasan ᶜAlī ibn Muḥammad, al-Khāzin, who resided in Merv, the modern Mary in Turkmenistan[14]. al-Khāzinī's *floruit* is given as *ca.* 1115. After he was given an education in mathematics, the philosophical disciplines and geometry, he was employed by the Seljuk court as a mathematician, most likely at Merv. It was here that Sanjar ibn Malikshāh ruled and that al-Khāzinī composed *az-Zīj as-Sanjarī* in his honor.

al-Khāzinī's two other known works are the *Risāla fi' l-ālāt* (*Treatise on Instruments*) and *Kitāb mīzān al-ḥikma.*[15] The *Risāla* is found in codices 682 f.1 and 681, pp 1-32 of the library of the Sipahsālār Mosque in Teheran and has not yet been published.[16] It is a short work concerning several astronomical instruments,

[12]Here Westerink assumes Chioniades is the author of the Greek *az-Zīj as-Sanjarī*, *az-Zīj al-ᶜAlā'ī* and the *Zīj-i ĪlKhānī* , an assumption which will be discussed shortly. See Pingree [7] p. 21 for the dating of these texts.

[13] Pingree [7] p. 22 notes that the tables of the various *zījes* were put in their final form by Chioniades in Constantinople.

[14]The following description of al-Khāzinī is adapted from Hall[3].

[15] See Hall [3]p. 338 ff. for a complete bibliography of these two works.

[16]See Sayili [10].

including the astrolabe. The *Kitāb* has been published as the *Kitāb mīzān al-ḥikma* (Hyderabad, Deccan, A.H.1359 [A.D. 1940-1941]) and as the *Mīzān al-ḥikma*, Fu'ād Jamī^{c}ān, ed. (Cairo, [1947]). This text deals with weights and the construction of balances.

Shams al-Bukhārī

Shams is described in full in Pingree [7], pp. 16 - 17. He was born 11 June 1245 in Bukhārā. His references to Naṣīr al-Dīn aṭ-Ṭūsī indicate that he may have had contact with the famous observatory at Marāgha[17]. Shams was also the author of several astronomical treatises, Greek translations of some of which have come down to us in the same manuscripts as Chioniades' work. These include *On the Genethlialogical Computation*, which concerns the horoscope of a certain Fakhr al-Dīn born in Tabrīz on 25 August 1268[18] and a treatise on the astrolabe dedicated to Andronicus Palaeologus (Andronicus II, Byzantine Emperor 1282 – 1328).[19] Shams al-Bukhārī was in Tabrīz in the 1290's, as is clear from example computations in *az-Zīj al-^{c}Alā'ī* .[20] It is also clear that he was Chioniades' teacher, since Chioniades himself mentions the "oral teaching" of Shams in the *Revised Canons* of *az-Zīj al-^{c}Alā'ī* — ἀπὸ φωνῆς τοῦ Σὰμψ Μπουχαρῆ,[21] as well as in the second appendix of *az-Zīj as-Sanjarī* — ἀπὸ φωνῆς τοῦ Σάμψ .

[17]Pingree [6] p. 143.

[18]Pingree [7] p. 16.

[19]Pingree [7] p. 17 notes that this is found in *v* ff. 237 – 245v, Vaticanus graecus 210, ff. 3-7v, and Marcianus graecus 309, ff. 154-160v. A large fragment is also found in Parisinus Coislin 338, ff. 259-261v, he states.

[20]Pingree [7] p. 17.

[21]Pingree[7] p. 306-307.

History of *az-Zīj as-Sanjarī*

The text of *az-Zīj as-Sanjarī* (*the Astronomical Handbook of Sanjar*) has had a complex history[22]. The *Zīj* was originally composed in Arabic in Iran by Abū Manṣur ᶜAbd al-Raḥman al-Khāzinī and dedicated to the Sulṭān, Sanjar ibn Malikshāh, who ruled from 1118 to 1157. This version exists, at least partially, in two incomplete manuscripts: Oriental 6669 of the British Library, dated by the scribe to 26 July 1223 A.D. and Arabo 761 of the Vatican Library. Each of these manuscripts of the *Zīj* has 13 chapters, or *maqālāt*, ten of which are devoted to the central astronomical material of the *Zīj* (though the London manuscript omits all of *maqāla* 10). There are also about 145 astronomical tables that belong to this version of the *Zīj* but neither of the two manuscripts contains all of them.

In 1131 AD an Arabic epitome of this first version of the *Zīj* was made by Khāzinī himself, and was named the *Wajīz*. This summary exist in two essentially complete manuscripts: number 859 in the Hamadiye Collection in the Suleymaniye Library in Istanbul, and number 682 in the Library of the Sipahsālār Mosque in Teheran. The date of copying of the former is given in the manuscript as between 8 December 1268 and 5 January 1269. The date of the copying of the latter is given as between 31 May and 29 June 1234. The *Wajīz* covers the same material as the 10 central *maqālāt* of the first version of the *Zīj* but in 12 *maqālāt*. As for the astronomical tables, the *Wajīz* contains only 45, of which 30 are related to material in the *Zīj*.

Gregory Chioniades translated this *Wajīz* into Greek in Tabrīz in the 1290's, with the help of his teacher, Shams al-Bukhārī[23]. There are three manuscripts of this version: Vaticanus Graecus 211, copied before 1308; Laurentianus 28, 17 Florence, copied in 1323; and Vaticanus Graecus 1058[24], copied in the middle 1400's.

[22]The following textual history of the *Zīj* is adapted from Pingree [9].

[23]Pingree[6]

[24]Vaticanus Graecus 1058 is clearly a direct copy of Vaticanus Graecus 211.

With the exception of a few passages, some clearly attributed to Shams al-Bukhārī, Chioniades' translation is a fairly faithful rendering of the Arabic of the *Wajīz*. There are forty-one astronomical tables in Chioniades' version, but they are preserved only in the two Vatican manuscripts. Thirty three of these tables are similar to tables in the *Wajīz*.

Nature of the Text

Authorship

Pingree [6, 7, 8] suggested that Chioniades was the author of the Greek of *az-Zīj al-ᶜAlā'ī* and *az-Zīj as-Sanjarī*. In short, he has argued, [25] we have the testimony of Chrysococces, who states that he is basing some of his work on a set of astronomical tables which were translated into Greek by Chioniades.[26] Some of these tables to which Chrysococces refers are found in the Greek version of *az-Zīj as-Sanjarī*. This Greek version was made in Tabrīz, which we know from his letters [27] that Chioniades visited. Pingree then concluded that it was likely that Chioniades was the author of these texts.

Mercier, however, has argued somewhat unconvincingly, that since some of the material in Chrysococces's work is taken from the *Zīj-i Īlkhānī* of Naṣīr al-Dīn aṭ-Ṭūsī, Chioniades cannot be the author of those two Greek *zijes*. Pingree[28] has pointed out that while some of Chrysococces's material is taken from Naṣīr al-Dīn aṭ-Ṭūsī's *Zij*, most of the material is in fact taken from *az-Zīj al-ᶜAlā'ī* and *az-Zīj as-Sanjarī*. In addition, Mercier's suggestion seems to ignore completely Chrysococces's own words as to the authorship of the source of his work.

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[25] The following argument summarizes Pingree [8] p. 436

[26] See page 3 of this introduction and following.

[27] See page 4 of this introduction and following.

[28] Pingree [8].

What is perhaps another indication that Chioniades was the author of *az-Zīj as-Sanjarī* is the way Muslims and the Islamic faith are described in that work. Time after time[29] they are referred to as the impious (οἱ ἀσεβεῖς.). Their daily prayers are referred to as 'an accursed cry'. The author calls down God's wrath on the city of Mecca. It could be the case that this was the way Muslims were usually refered to in Constantinople at that time. It could also be the case that the author was trying to distance himself from Islam. We must recall that in 1305 – about the time these *zījes* were put in their final form [30]– Chioniades was called upon to write the *Profession of Faith*, a work in which he refers to unbelievers as τῶν ἀπ' αἰῶνος ἀσεβῶν[31]. These disparaging remarks made in *az-Zīj as-Sanjarī* are perfectly consistent with an author who had been trying to defend himself against a possible charge of heterodoxy – the very position in which Chioniades found himself in in the early 1300's.

It also seems fairly clear that *az-Zīj al-ᶜAlā'ī* and *az-Zīj as-Sanjarī* are works of the same author. They have come down to us as a group in the manusrcripts. The authors of both mention Shams al-Bukhārī as a teacher.[32] Neugebauer has noted[33] that "this [mention of Shams al-Bukhārī in both *zījes*] shows that it is not accidental that the text and table of the *az-Zīj al-ᶜAlā'ī* are combined in the same manuscript with text and tables of the *az-Zīj as-Sanjarī*." Both *zījes* not only use the same technical terminology,[34] but also the same incorrect technical terminology. For example, in chapter forty-one of *az-Zīj al-ᶜAlā'ī* , the author writes περὶ τῆς

[29]See 1.5 of the text of *az-Zīj as-Sanjarī* for a few examples

[30]Pingree [7] p. 22.

[31]Mercier [4] p. 244 l.39

[32]See page 7 of this introduction.

[33]Neugebauer [5] p. 31 .

[34]See Neugebauer [5].

ἐκβολῆς τῆς τύχης[35] "on the extraction of the fortune", when he clearly means not *fortune* (τύχη), but *ascendant*.[36] This type of repeated egregious error would suggest that rather than being the work of a "school" of Greek scholars working in Tabrīz, these texts are the work of a single individual.

The Method of Translation

Unlike *az-Zīj al-ᶜAlā'ī* , which seems to have been composed by Chioniades in Greek via a Persian intermediary (i.e., Shams would orally translate Arabic into Persian, which would then be translated into Greek by Chioniades[37]), *az-Zīj as-Sanjarī* seems to have been composed directly from Arabic with the help of a small Arabic-Greek dictionary. That this was the method of translation seems clear from the fact that there are far fewer transliterations of Arabic technical terms in the text than in Chioniades' version of *az-Zīj al-ᶜAlā'ī* [38], and there are seemingly no Persian terms.[39] The size or rather complexity of the dictionary Chioniades used is perhaps best indicated by the fact that ἀρχή is used to translate such varied terms as اوّل, نقطة, مدخل,مفتتح, رأس and بدأ. This lack of transliterations of Arabic technical terms – transliterations which abound in *az-Zīj al-ᶜAlā'ī* — would also seem to indicate that *az-Zīj as-Sanjarī* was composed later than *az-Zīj al-ᶜAlā'ī* , during which time

[35]Pingree [7] p. 184.

[36]See page 11 of this introduction for a discussion of the (mis)use of τύχη for the term 'ascendant' in *az-Zīj as-Sanjarī*.

[37]See Pingree [7] p. 17.

[38]See Pingree [7] pp. 395 - 401. See also the glossary of the *az-Zīj as-Sanjarī*.

[39]The one notable exception is perhaps Chioniades' use of τόπος τῆς τύχης –*place of fortune*– for the Arabic term مطالع,*rising time*. طالع in Persian means *luck*, which may explain Chioniades' use of terminology involving the word τύχη. This, however, is a mere guess.

Chioniades had improved his Arabic![40]

Technical Commentary

Neugebauer [5] provides an extensive discussion of the technical terms and techniques used in Chioniades' *az-Zīj as-Sanjarī*. A full technical commentary, however, will be provided with the edition of the Arabic *Wajīz*.

Notes on the Present Text

The Edition of Chioniades' *az-Zīj as-Sanjarī*

The sigla for the edition of Chioniades' text of *az-Zīj as-Sanjarī* are as follows:

- V – Vaticanus Graecus 211, ff. 38-106, copied before 1308.
- v – Vaticanus Graecus 1058, ff. 273v-316, copied in the middle 1400's and a direct copy of V.
- L – Laurentianus 28, 17, Florence, ff. 81-167, copied in 1323.

A complete list of the other contents of these manuscripts is given in Pingree [7] pp 23 – 28. What follows is a partial list of the contents of the manuscripts:

—L—

- Ff. 1r - 74r. *The Persian Composition of Astronomy.*
- Ff. 74r - 79v. *On the Genethlialogical Computation.*
- Ff. 169r-178r. ᶜIlm al-hay'a text.
- Ff. 179r- 201r. *Revised Canons.*
- Ff. 201r- 223v Short astronomical texts based on Shams al-Bukhārī, *az-Zīj as-Sanjarī.*

[40] This is consistent with the dating for the two texts proposed by Pingree [7] p. 21 ff. on internal evidence.

—*V*—

- *Revised Canons.*
- Ff. 37r. Arabic-Greek glossary preceeding chpater 23 of *The Persian Composition.*
- Ff. 38r-106r. *az-Zīj as-Sanjarī.*
- Ff. 106v-115r. ^{c}Ilm al-hay'a text.
- Ff. 122r-159v. Tables of *az-Zīj as-Sanjarī.*
- Ff. 161v-234r. Tables of the *Persian Composition* (*az-Zīj al-^{c}Alā'ī*).

—*v*—

- Ff. 92r-118v. George Chrysococces's *Introduction to the Persian Composition.*
- Ff. 237r-245v. Shams al-Bukhārī's *On the Use of the Astrolabe.*
- Ff. 261-272v. *Revised Canons.*
- Ff. 273v-316r. *az-Zīj as-Sanjarī.*
- Ff. 316r-321r. ^{c}Ilm al-hay'a text.
- Ff. 332r-369v. Tables of *az-Zīj as-Sanjarī.*
- Ff. 370r-440v. Tables of *az-Zīj al-^{c}Alā'ī* .

The English Translation of Chioniades' *az-Zīj as-Sanjarī*

The works referred to in the translation are as follows:

- *A1* – 859 in the Hamadiye Collection in the Suleymaniye Library in Istanbul
- *A2*– 682 in the Library of the Sipahsālār Mosque in Teheran.
- *A* – a reading in the *Wajīz* where both A1 and A2 agree.
- *Biruni – Chronology of Ancient Nations.* See Albīrūnī [1]

- *Ginzel – Handbuch der mathematischen und technischen Chronologie.* See Ginzel [2]
- *Neugebauer* – "Studies in Byzantine Astronomical Terminology". See Neugebauer [5].

Greek - Arabic Glossary to Chioniades' *az-Zīj as-Sanjarī*

The glossary was made by comparison of the Greek of the edition of *az-Zīj as-Sanjarī* to the Arabic of the two manuscripts of the *Wajīz*.

Software

This text was typeset with various flavors of Donald Knuth's TEX, including emTEX teTEX and MiKTEX. ArabTEX and IbyGreek were employed for the critical edition, as well as a version of EDMAC modified to produce an *apparatus criticus* consistent with that of the first volume of this series. Perl and Java were used extensively, as was the macro package LaTEX. The text editor used was Emacs.

Chrysococces's Prologue to the *Persian Syntaxis*

Τοῦ σωφωτάτου ἰατροῦ κυρίου Γεωργίου τοῦ Χρυσοκόκκη ἐξήγησις εἰς τὴν σύνταξιν τῶν Περσῶν ἐκτεθεῖσα πρὸς τὸν αὐτοῦ ἀδελφὸν κυρὸν Ἰωάννην τὸν Χαρσανίτην

Πάλαι μου καὶ αὐτοῦ, ὡς οἶσθα ὦ φίλτατε Ἰωάννη, τὴν τοῦ Περσικοῦ τοῦδε προχείρου σπουδάζοντος μάθησιν, διδασκάλῳ χρωμένου τινὶ ἱερεῖ , ὦ ὄνομα Μανουήλ, πόλεως ὄντι τῆς Τραπεζοῦντος· καὶ αὐτὸς δέ μοι πολλάκις συνὼν καὶ τοῖς λεγομένοις ἡδόμενος καὶ πόρρω τῆς τούτων καταλήψεως εἶναι μὴ ἀνεχόμενος ἥψω μὲν τοῦ μαθήματος, ἐμοὶ δ' ἐπέτρεψας μεθοδικώτερον ὑποδειγματίσασθαι τὰ λεγόμενα· ἐμοῦ τὰς τούτων ἐφόδους ψιλὰς παρατιθέντος καὶ τῶν διδασκαλικῶν ἐκείνων φωνῶν ὡς οἷόν τε ὑπομιμνήσκοντος ἄκουε. Πρῶτον τοίνυν ἄξιον ἐπιμνησθῆναι τῶν ἐκείνου τινός, ὅπως ἐκ Περσίδος ἐκομίσθη αὕτη ἡ σύνταξις καὶ παρὰ τίνος εἰς τὴν ἑλλάδα μετηνέχθη γλῶτταν. ἔλεγε τοίνυν ἐκεῖνος ὅτι Χιονιάδης τις ἐν Κωνσταντινουπόλει τραφεὶς καὶ πάντων ἐν καταλήψει τῶν μαθημάτων γενόμενος εἰς ἔρωτα πεσὼν καὶ ἑτέρας μαθήσεως διαλέκτου, δι' ἧς σοφίαν πορίσαιτο καὶ ἰατρικὴν ἀκριβῶς ἐξασκήσειεν, ἐπειδὴ παρά τινων ἤκουσεν, ὡς εἰ μὴ εἰς Περσίδα ἀφίκοιτο, τοῦ ποθουμένου οὐ τεύξεται, παντῶν καταφρονήσας ᾗ τάχους εἶχε τῆς ὁδοῦ εἴχετο· εἰς Τραπεζοῦντα δ' ὡς ἐν παρόδῳ ἐλθὼν καὶ τῷ μεγάλῳ Κομνηνῷ ὁμιλήσας χρόνον σύχνον, εἶτα και τὰ τοῦ πράγματος κοινωσάμενος μεγίστης ἠξιώθη κηδεμονίας· πολλὰ γὰρ παρ' ἐκείνου λαβὼν ἀναλώματα εἰς Περσίδα ἀφίκετο. ἐν ολίγῳ δὲ τὰ Περσῶν παιδευθεὶς καὶ τῷ τούτων βασιλεῖ ὁμιλήσας προμηθείας τε παρ' ἐκείνου τετυχηκώς, ἐπειδὴ τὸ τῆς ἀστρονομίας μανθάνειν ἐβούλετο μέν, οὐκ εἶχε δὲ τὸν διδάξοντα. (νόμος γάρ ἐν Περσίδι, πάντα μὲν τὰ μαθήματα τοῖς βουλομένοις ἐξεῖναι μανθάνειν, ἀστρονομίαν δὲ μόνοις τοῖς Πέρσαις, ὁ δὲ τὴν αἰτίαν ἐξετάσας καὶ μαθὼν δόξαν εἶναί τινα παλαιὰν ἐπικρατήσησαν παρ' αὐτοῖς, ὡς [φδαρήσεσθαι] τὴν ἐκείνων βασιλείαν ὑπὸ Ῥωμαίων τῇ τέχνῃ τῆς ἀστρονομίας χρωμένων, παρ' ἐκείνων πρότερον ταύτης λαβόντες ἀφορμάς, διηπορεῖτο πῶς ἂν τοῦ τοιούτου μετάσχοι καλοῦ). ὅμως πολλὰ μοχθήσας καὶ πολλὰ δουλεύσας τῷ βασιλεῖ Περσῶν μόλις τοῦ ποθουμένου τετύχηκε· προστάγματι γὰρ βασιλικῷ τοὺς διδασκάλους συναγαγὼν ἐν ὀλίγῳ μέγας ἐν Περσίδι Χιονιάδης ἐφαίνετο καὶ τιμῆς ἠξιοῦτο βασιλικῆς. χρῆματα δὲ πολλὰ συλλεξάμενος καὶ πολλοὺς ὑπηκόους κτησάμενος εἰς τὴν Τραπεζοῦντα πάλιν ἀφίκετο, πολλὰ βιβλία τοῦ τῆς ἀστρονομίας μαθήματος μεθ' ἑαυτοῦ· οἰκείᾳ δὲ γνώμῃ ταῦτα ἐξελληνίσας μνήμης ἄξιον ἔργον ἐποίησεν. εἰσὶ μὲν οὖν καὶ ἕτερα βιβλία τῆς συντάξεως τῶν Περσῶν, ἅπερ αὐτὸς ἐξελλήνισεν ὑποδείγματά τινα μεθόδικα ἐν ἀρχῇ ἔχοντα ἐποχῶν· ταύτην δὲ μόνην τὴν σύνταξιν, ἣν καὶ ὡς κρείττονα πασῶν καὶ ἀκριβέστεραν παρέδωκεν, ὡς ὁ ἡμῶν διδάσκαλος ἔλεγε καὶ ἀληθεύων ἐφαίνετο, χωρὶς ἑρμηνείας ἐξελλήνισεν, οὕτω ταύτην δεξάμεονς ἐκ Περσῶν διὰ ζώσης μόνης ἑρμηνευομένην φωνῆς· οὕτως ἐκομίσθη αὕτη ἡ σύνταξις, ἣ καὶ πρόχειρος λέγεται.[41]

[41] Usener [12] pp. 356-357

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PART II

Translation

The Beginning of the Book of Sanjarī

Book One:

On the known epochs.

Book Two:

On the principles of the calculations which are very useful for the operation of the astronomical composition, namely interpolation[42], the Sine of the arc, the *sagitta* and the tangent[43].

Book Three:

On the first and second declinations to the North and to the South, the latitude of cities, the culmination of stars[44], and rising times in right ascension.[45]

Book Four:

On the equation of daylight with the arc of day and night and the equinoctial hours along with sections of the seasonal hours and the places of the zodiacal signs for all the *klimata* along with the width of rising.

Book Five:

On the motion of the fixed stars from their true longitudes, their latitude, that is, their distance from the celestial equator[46], the culmination of fixed stars[47], the degree of a zodiacal sign which is together with the star on the meridian, the degree which rises with the star, the degree setting with the star, and the apprehension of that hour of their rising and setting in the day and the night.

Book Six:

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[42]lit. excess

[43]lit. shadow

[44]lit. the ascent of stars to the circle of the middle of the day

[45]lit. place of fortune with a straight line

[46]lit. circle which moves in a *nychthemeron*

[47]lit. the ascent of the fixed (stars) to the middle of the day

On the apprehension of the number of hours of the day that have passed, the number of degrees in a seasonal hour, (the distance) to the hours of the ascendant, the equalization of the 12 houses, and the apprehension of the point of each ascension and the point of each praying.

Book Seven:

On the extraction of the mean motions of the 7 planets and their proper motions, the apogees and equations of each, the apprehension of the weekday on which the Sultanic year begins from the months and the years of the epochs, the end of this (year), and the equation together with the base longitude (of the planets), because from the astronomical position of this base longitude the true longitude is calculated for one year of the Sun by means of the true longitude.

Book Eight:

On the extraction of the true longitude of the 7 planets and the ascending node, the direct and retrograde motion of the planets and their latitude, and the change in position of each and their diameter.

Book Nine:

On the increase and diminution of the visibility of the sighting of the Moon, and the rectification of its location in longitude and latitude.

Book Ten:

On the apprehension of conjunctions and oppositions of the sun and the Moon together with their longitude and change in position, and of eclipses of the sun and the Moon. This tenth book is divided into three chapters.

Book Eleven:

On the Moon appearing new, and the 5 planets.

Book Twelve:

On the ascendant of the years and of the four seasons, the entrance of the ascendant of that year, nativity-casting, and the stars' casting of the rays.

BOOK 1

On the Known Epochs

This is divided into 5 chapters:

Chapter 1: On the nature of the *nychthemeron*, the month and the year.

Chapter 2: On the nature of the epoch, and how many epochs are manifest with respect to our year.

Chapter 3: On comprehending by epoch the weekday on which the year and month begin, and (on) the extraction of one epoch from another by calculation.

Chapter 4: On the weekday on which the years and months begin, and (on) the extraction of one epoch from another by tables.

Chapter 5: On the festivals, the great days and the manifest (days) observed in (each) nation both through calculations and through tables.

1.1 On the Nature of the *Nychthemeron* and the Month and the Year

The day and the night, namely, the *nychthemeron*, is the return of the (celestial) sphere in its motion from one point back to the same (point), which is completed in 24 hours. Each nation sets its own beginning to this. The Arabs reckon the beginning of the *nychthemeron* from the setting of the sun. Since they reckon their months

from the appearance of the new Moon, these (months) are reckoned through its (the Moon's) motion. The Moon appears new after the setting of the sun. The Muslims reckon the beginning of the day from the rising of the sun [until its setting], since this is the manner in which they conduct their fasts. The astronomers reckon the beginning of the *nychthemeron* from mid-day[1] because the data for the planets are set down (in tables) for mid-day. For if they were set down for the beginning (of the day), since the length of day increases and decreases, the data would not be consistent.

The day is reckoned from the rising of the sun until (its) setting, and the night (is) that (time which is) after the setting of the Sun until its rising again.

On the Nature of the Year

A year is the motion of the Sun through the zodiacal circle from a zodiacal sign and degree (and its) return to the same zodiacal sign and degree, the completion of the 4 seasons, and the revolution of approximately 365 and 1/4 days. This is the year of the Sun.

This is the (calculation of the number of days in a) (year) of the Moon: the mean (daily) motion of the Sun is subtracted from the mean (daily) motion of the Moon. If anything (i.e., whatever) remains, 360 degrees are divided by that. If anything comes out, it is the (number of) days of one month of the Moon.

This calculation was made in the composition, and there were discovered (to be) 29; 31, 50[2] days and first (sexagesimals) and second sexagesimals. This was multiplied by 12, and the days of one year of the Moon appeared to be 354; 22, 2 days and first (sexagesimals) and second sexagesimals. From this it was clear that the Moon passes through the 12 zodiacal signs in this (number of) days.

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[1] lit. the middle of the day

[2] The semicolon here and elsewhere indicates the position of sexagesimal point. Thus the number in question is equivalent to $29 + \frac{31}{60} + \frac{50}{60^2}$.

Others combine these two (types of) years. They reckon the year through the motion of the Sun, and the month through the motion of the Moon. They also reckon their great days and their Easter through lunar calculations. Every three years, many times also (every) two, there is a shortfall and an excess between the two (types of years), (the year) of the Sun and (the year) of the Moon. At any rate, one month is added so that they are again equal. There are 354 days in the case of that year in which no excess occurs, (and) there are 384 days in the case of the year in which there is an excess of a month.

The Hebrews and the Indians employ this (luni-solar) year. The Hebrews reckon the beginning of the year when the Sun is in conjunction with the Moon in Libra from the 24th of Ābh until the 27th of Elûl, the Indians when the Sun is in conjunction with the Moon in Aries.

1.2 On the Nature of the Epoch, the Month and the Year, How They Are Known, and How They Come About

The ancient astronomers came to know the calculation of the months from seeing that the Moon waxes and wanes and the (calculation of the) years from the fact that those 4 seasons – which comprehend a year – always circle back upon themselves in their changes in quality–from hot to cold and back again– in one and the same time period, that is, in a year. So they wished to see in (precisely) what time period this occurred. Since the greatest festival days and all (human) endeavors are seasonal, the year was set down by them and reckoned.

It is also necessary to say what an epoch is. An epoch is that (time) from which the years are counted. (This starting point is chosen) because at that time a great heavenly or earthly occurrence took place, such as the appearance of a prophet, or

someone's good fortune, or the destruction of the world, or an earthquake and flood, or the total eclipse of the Sun and (or) Moon, or other things similar to these which happen during the passage of many years.

Whichever the nation, its epoch as well as its year is peculiar (to it). These (national) years were bound up with these (national) epochs for the comprehension of past time, as will be said.

And so these things were set down separately (in tables).

On Comprehending the Epochs Which are Manifest in our Own (Calendar) Time

They are 7 (epochs).

One of them (is) that of the Arabs. The beginning of this epoch was reckoned from the beginning of that year in which Mohammed fled from Mecca to Medina. Years of the Moon were bound up with this epoch. Its months are counted from the appearance of the new Moon. All Muslims employ this calculation. The beginning of this epoch was a Friday. The (number of) days (in the) months of this epoch are not equal. For the sake of easiness, we reckon (the number of days in) this (Arab) month with a mean calculation, namely, of 30 and of 29 (days each) until the completion of the year. Why? Because when the fraction of a day is more than half a day, one (full) day is reckoned. Why is this done ? Because the motion of the planets was set down in this book according to this epoch. For if the (number of) days of the month were not manifest, how could the calculation of (the longitudes of) the planets be made? And how would these (other) epochs be extracted from this (Arab) one? In this composition, the names of the months in this epoch were set down in tables so that the days of their months are both combined and separated there.

The second of these epochs, that of Mu^{c}taḍit.

The years of this epoch are Roman, and the months are (given) with Persian

names and computation. The beginning of this epoch is the 11th (day) of Hazīrān. 5 epagomenal days are placed at the end of the month Ābh. Why? Because the ancients who worshipped fire established it so.

Third, the epoch of the Romans.

The years of this (epoch) are solar. Its months are (given) in the Syrian dialect. The beginning of this epoch is a Monday. Each of these years is 365 $\frac{1}{4}$ days. Therefore, when that $\frac{1}{4}$ becomes more than half of a day, it is reckoned one day. That additional day is added to the end of Shubāt. That year is 366 days. So from the years of the Sun reckoned as a foundation in every 110 years one month[3] is additional. The names and the days of the months were set down in two places near those months both combined and separately. When the need arises,the months and the days are sought there (in tables).

Fourth, the year of the Persians.

This was set down at the time of Yazdijird (the son of) Shahryār. The beginning of this epoch is a Tuesday. This year was established in 2 ways: the first is in accordance with their religion, which is a *basīṭa* year. They always reckon 365 days for each year (of this type), and 30 days for each (of its) months. 5 epagomenal days are placed at the end of Ābān. The names of the months and of the days of this epoch were set down in a table.

The other (Persian) year, which is called *kabīsa*, was established in accordance with the labors of the 4 seasons and (in accordance with) the beginning of their (associated) labors. This year is established with several (characteristics). One is that each month has thirty days and each day has its own name, and that the 5 epagomenal days are placed at the end of the year. The second is that the day of the entrance of the Sun into Aries, namely, the "new (day) of the days", is always at the beginning of the month of Farwardīn in this (type of) year. The third is that

[3]the mss. read one *day*

whenever the year is intercalary, one day is ≪not≫ added at its end. Every 120 years, however, when these (additional) days have been brought together, there is one additional month. Why? because the excess of the year of the Sun with respect to the year of the Moon at this time is about 30 days.

And so the months of this calendar were divided into two (varieties) for the sake of (agricultural) labor. This is one type (of year): the months of this are coextensive with the 4 seasons, and the beginning of this year is Farwardīn, and Isfandārmadh is at its end. The 5 epagomenal days are placed at the end of Isfandārmadh. The great days of the festival and the famous (days) are (arranged) the same way in the months of a *kabīsa* year.

The second (variety)[4] is that (in which) the months are not fixed in one spot with respect to the 4 seasons. Every 120 years, one month is put in the place of the first month. The arrangement of this is such that a month of this sort (i.e., of 30 days) is added again at the beginning of Spring after Winter. Every 1494 years the first month – Farwardīn – is again found in its proper location. The beginning of the first day of Farwardīn is the entrance of the Sun into Aries.

(This arrangement) came about in the following way: the man who established this epoch maintained that from the beginning (of the time) of those first men (who lived) when the flood took place, there were two months of Farwardīn— the first fixed in its own place, and the second moving from place to place instead. The Sun was (then) in the beginning of Aries on the first day of the latter month. 4336 years have passed from that time until the beginning of the Persian epoch. The Sun entered Aries in the month of Ādhar during the year of (the founding of) the Persian kingdom, and so Ādhar was (then) opposite the fixed Farwardīn. 5 epagomenal days were established at the end of the month Ābān opposite to the fixed Isfandārmadh. At the beginning of the epoch of Yazdijird the month Dai was opposite the beginning of

[4]Pingree: Intercalation destroys the system.

the fixed Farwardīn. This month (opposite the fixed Farwardīn) is called *paramonē*.

It is necessary to know this month (i.e., *paramonē*) by means of calculation. The full years of the epoch of Yazdijird are reckoned, and 123;0,2 (years and first sexagesimals and second sexagesimals) are added to these. The result is doubled. And again the result is divided by 249. The result is the months of a *kabīsa* (year). That (number of months) is subtracted from the month Ādhar. Wherever the calculation leaves off, the 5 epagomenal days are added to the end of that month. Then one examines the month before this one. If the latter is equal to the former, this is called a month of the *paramonē*.

This (above) mentioned calculation was (in use) towards the end of Persian influence. When the Arabs conquered them, the following arrangement was adopted and the 5 epagomenal days were comprehended at the end of Ābān until the Persian year 375 from the epoch of Yazdijird. The cycle (of months) was completed at that time and the Sun was then entering Aries at the beginning of Farwardīn opposite the fixed month. Some Persians established the 5 epagomenal days at the end of Isfandārmadh. Others comprehended them at the end of Ābān. Why? Because those who worship fire believe that if it were done differently and the days were established otherwise, their religion would be disturbed, which is not the case.

When the Sun was in the vernal equinox in the 500th (year) of the Persian calendar, it was in the entrance of Aries at 90 degrees longitude at the beginning of the moveable month of Ardībihisht. Those 5 epagomenal days were (then) established at the end of the moveable Farwardīn because the first of the moveable month Ardībihisht coincided with the first of the fixed month Farwardīn. Every year which is set down in this table has a 13th intercalary month, and the month of Farwardīn occurs a second time in that year – one (time) at the start of the year, and the other at its end. The manifest and great days of the feasts are not established in that later Farwardīn. That year is 365 days. When the beginning of the moveable Ardībihisht

and the beginning of the fixed Farwardīn coincided, it was the 12th of the month of Rabī^{c} II – a Sunday– in the Arab year 525. On that day the Sun was at the entrance to Aries. From the epoch of the flood until that time 4836 years passed, and until the epoch of Yazdijird there were 500 years, and until the epoch of Alexander (there were) 1446 years.

And so, since mistakes have arisen concerning (the computation) of these months due to the fact that the influence (of this kingdom) has been overthrown, this computation has (often) been comprehended in a meaningless fashion. So we have set up a table into which the months of that base value have been placed. Those comprehended months have been placed there. Two epochs have been set up in this table – one the Roman epoch, and the other the Persian epoch. The years are incomplete. (*Table 6.7*)

Persian Table of *Nachizak*								
Months of the *Paramonē*				Roman Epoch				
Weekday	Start of the Year	Number	Months of the Base-point of the Ancients	Incomplete Year of Yazdijird		Roman Months	Incomplete Roman Years	Incomplete Months of the Intercalary Year from the First Year of the Epoch of Yazdijird
6	1	Khurdādh	Farwardīn	376	14	Adhar	1318	4
7	1	Tīr	Ardībihisht	500	13	Ādhar	1442	5
7	1	Murdādh	Khurdādh	624	12	Ādhar	1562	6
1	1	Shahrīwar	Tīr	749	11	Ādhar	1791	7
1	1	Mihr	Murdādh	873	10	Ādhar	1815	8
2	1	Ābān	Shahrīwar	998	9	Ādhar	1940	9
2	1	Ādhar	Mihr	1122	8	Ādhar	2064	10
3	1	Dai	Ābān	1247	7	Ādhar	2189	11
3	1	Bahman	Ādhar	1371	6	Ādhar	2313	12
4	1	Isfandārmadh	Dai	1497	5	Ādhar	2438	13
4	1	Farwardīn	Bahman	1620	4	Ādhar	2562	14
5	1	Ardībihisht	Isfandārmadh	1745	3	Ādhar	2287	15
5	1	Khurdādh	Farwardīn	1869	2	Ādhar	2811	16
6	1	Tīr	Ardībihisht	1994	1	Ādhar	2936	17

Table 1.1:

The 5th of these famous epochs is the epoch of Malikshāh. The Sultan ordered that the true longitudes for this epoch be established at the beginning of that epochal year, when the Sun entered the beginning of Aries. (He also ordered that) the beginning of each month (be) when the Sun changes from one zodiacal sign to another. The mean motions of the planets are extracted from other calendars. And so true longitude is established for this epoch for the sake of easiness. The beginning of this epoch was the first day of the month Sha^{c}bān, in the year 468 of the Arabs. Every 220 years there are 53 intercalary days– 45 of these are intercalary because every 4 years there is one intercalary day. 8 of these are intercalary because every ≪2≫5 years there is one intercalary day, so that the total is 53.

The 6th of these famous epochs is the first epoch – that of Nebuchadnezzar. Its years are Egyptian as well as its months. The beginning of this epoch was a Thursday. There is a difference of 499,802 days between this epoch and that of the Arabs. 503,425 days have passed by from this epoch until the epoch of Yazdijird.

The 7th of these famous epochs is the epoch of Philip, the brother of Alexander II. There is a difference of 348,665 days between this epoch and that of the Persians. One year has 365 days and is Egyptian.

1.3 On Comprehending the Weekday on Which the Year and Month of the Epochs Begin, and (on) the Extraction of one Epoch from another by Calculation.

This is divided into 4 sections.

1.3.1 On the Weekday on Which Years and Months Begin by Calculation

If you wish to know the weekday (of the) beginning of the year and (of the) beginnings of the months, always multiply the full years of whatever epoch you wish, that is, "beat" them: (*Table 1.2*)

Arab Epoch	Roman Epoch	Persian Epoch		Sultanic Epoch
		Ordinary	Intercalary	
By 131. If anything is found, 14 is always added to it. Then the result is divided by 30. The fractional parts are cast away. The result is multiplied by this.	By 5. If anything is found, 2 is added to it. The two are then divided by 4. The fractional parts are cast away. If nothing is comprehended, the year is intercalary. If anything is found, it is multiplied by this.		Nothing is added. (It is done) with the number of each month of the intercalary year by two's.	By 203. If anything is found, 102 is added to it. And in turn if anything is found, it is divided by 120. The result is left in the middle (of the workspace), and what is found is kept in mind.

Table 1.2:

Then the result is then added to the following and examined:

	Ordinary	Intercalary	Ordinary	Intercalary	
6	1	2	3	3	1

The remainder upon division by 7 of that which is apprehended (after the addition) is then taken. The result is the weekday of the beginning of the year.

If you wish to know on which weekday the months of that year begin, add the (number of) days of the previous months of that year. (*Table 1.3*)

If anything is found in excess (of 7), it is divided by 7, that is, it is reduced modulo 7 so that the weekday on which that month begins may become clear.

Arab Epoch	Roman Epoch	Persian Epoch		Sultanic Epoch
		Ordinary	Intercalary	
For every one month, two (days) and for the next month, one (day). (Do this) until the end of the year.	For every month completed of 30 days, two (days) are added. For every month exceeding 30 days, three (days) are added. In the case of an intercalary year, one (day) is added for Shubāt. In the case of an ordinary year, nothing is added for Shubāt.	Two (days) are added for each month, but none are added for Ābān.	For each month by two's until the end of the month Ābān.	For each month completed in 29 days one (day) is added. For each month completed in 30 days, two (days) are added. For each month completed in 31 days three (days) are added. For each month completed in 32 days four (days) are added.

Table 1.3:

1.3.2 On Making the Days of the Years and the Days of the Months for Each Epoch

When it becomes necessary to employ this method, one must first come to know the weekday on which that year and month begin. That day should be evident from the calculation of the weekdays. This is necessary for the epoch of the Arabs because the calculation (of the number of days) in their months is reckoned in two ways: one is (by) the appearance of the new Moon after conjunction, and the other is that the number of days (in a month) is 29 or 30. This is called the *mean number*. The number of the weekday is reckoned by the mean number. The day sought is correctly determined by this calculation.

When you wish to make the days and years for an arbitrary epoch, multiply the full years, that is, "beat" them. (*Table 1.4*)

The days of the current incomplete month are added to the days of the full month. It is necessary (to) mention how the days of the full month are comprehended. (*Table 1.5*)

The result is the days of the year and the months of that epoch. That is the day for which the calculation was made. The check of this method is by this test. Whatever days are found below (in the table) are added to the (number of) days of

Arab Epoch	Roman Epoch	Persian Epoch		Sultanic Epoch
		Ordinary	Intercalary	
By 10,321. If anything is found, 14 is added to it. If anything results, 30 is added to it. If anything is found, the fractional parts are cast away, and the result is examined.	By 461. Two is always added to this. The result is divided by 4. If anything is found (of a) high (sexagesimal degree), it is reckoned and the fractional part is cast away. If nothing is comprehended, the year is intercalary.	By 364	By 365. Multiply the excess by that. If anything is found for this reason, that every month has 30 days because the year is intercalary, the result is examined.	By 80,353. 102 is added to the result. This result is divided by 220. The fractional part is cast away and the result is examined.

Table 1.4:

Arab Epoch	Roman Epoch	Persian Epoch		Sultanic Epoch
		Ordinary	Intercalary	
One month is reckoned with 30 days and the other with 29 until the end (of the year).	The days of this year are reckoned for the month just as they are set down in the table. The month of Shubāt is reckoned with 28 days, 29 days in an intercalary year.	They are reckoned with 30 days for each month and 35 days for Ābān.	Whatever has passed from the first of the fixed Farwardīn is added to this (with the number of each of the months past being 30 days). And the days of the current month that have passed are (also) added to this.	The days of the month are added as is set down in the table.

Table 1.5:

each epoch. (*Table 1.6*)

Arab Epoch	Roman Epoch	Persian Epoch		Il-Khānī Epoch
		Ordinary	Intercalary	
5	1	2	2	0

Table 1.6:

The result is divided by 7, that is, it is reduced modulo 7. If the result is equal to the day of the week for which this computation was made, the computation is correct. If it is not equal, the computation is not correct.

1.3.3 On Knowing the Calendar Dates of Unknown Epochs from the Calendar Dates of Known Epochs

It is possible to know this if the difference in the number of days between the two epochs is known.[5] Therefore know that the difference in the number of days between the epoch of the Romans and the epoch of the Arabs is 340,701. The difference in the number of days between the epoch of the Romans and that of the Persian *basīṭa* is $344,324$. The difference in the number of days between the Roman epoch and the Sultanic is $506,401$. Likewise, the difference in the number of days between the Arab and the Sultanic is $165,700$. The difference in the number of days between the epoch of the Persians and the Sultanic is 162,077.

And so if the known epoch is prior, this (number of) days is subtracted from the day (number) of the known epoch, and so the day number of the unknown epoch is discovered. If the days of the known epoch are later, the difference in (the number of) days between the two epochs is added to them and so the day number of the unknown epoch is discovered.

1.3.4 The (sexagesimal) Elevation of the Years and the Months

When it becomes necessary to employ this (method), those days are multiplied (as follows): (*Table 1.7*)

The result of the divisions of those days is the (number of) full years of each epoch. If anything remains, it is divided by the following amount:

Arab	Roman	Persian	Īl-Khānī
by 30	by 4	by nothing	by 120

The result of these divisions is the days. Dispose of them in the following order: (*Table 1.8*)

[5]lit. It is possible to know this if the difference in (the number of) their days is known.

Arab Epoch	Roman Epoch	Persian Epoch		Īl-Khānī Epoch
		Ordinary	Intercalary	
By 30. The result is added to 14. The result is divided by 10,631	By 4. The result is added to 2. This result is divided by 1461.	(By) nothing. It is (instead) divided by 365.	By nothing. It is doubled and divided by 90, 885. The result is (in the) arrangement of the months of the intercalary year. Each month is reckoned as 30 days. The result is subtracted from that number. This result is divided by 365.	(By) 80,353. 102 of the excess is added. If anything is found, (it is divided) by 220– <and subtract> the result...

Table 1.7:

Arab Epoch	Roman Epoch	Persian Epoch		Il-Khānī Epoch
		Ordinary	Intercalary	
For one month there are 30 days, and for the next there are alternately 29. This sequence starts with the month of Muḥarram. Count the (days) as indicated until the end of the year.	In each month whatever is clear of its days. The beginning (of this sequence) is from Tishrīn I. If nothing is comprehended from the division by 4, the month of Shubāt is reckoned with 29 days.	30 (days) for each month. The beginning (of this sequence) is from Farwardīn, and for the 8th month there are 35 days.	30 days for each month.	For each month the number of days that is written (for it) in the table. (Continue) with this sequence until the end of the year. If what is comprehended – i.e., the fractional part of the year in our computation — is greater than 165, the year is intercalary, and the last month has 31 days. If it is less, it has 29 days.

Table 1.8:

If any days remain, if they are less than one month, those days — together with the day for which the calculation was made — are called an incomplete month.

1.4 On Comprehending the Weekday on which the Years and the Months of the Year Begin, and on Extracting One Epoch from Another by Means of Tables

This method (chapter) is divided into 2.

1.4.1 On Comprehending the Weekday on which the Years and the Months of the Year Begin by Means of a Table

When there is need for this, the (number of) the incomplete years is placed in the workspace. The cycles are subtracted from this (number), that is, (the years of) the Arabic epoch are reduced modulo 210. If anything is comprehended, it is sought in the two tables of the years, joint and separate. The result is reckoned opposite those two years in days of the week. And so that (result) is the weekday upon which the year begins. This calculation is correct whenever the comprehended years are found in the two tables. Whenever they are not found in the two tables, 30 is subtracted from those apprehended years. If anything is apprehended, entrance is made opposite it into the tables of the joint years. Entrance is also made into the table of single years opposite those 30 subtracted years. (The result) follows in the way that was mentioned. Likewise in the case of months, entrance is made opposite the months in their tables, and the days of the week are reckoned. The result is added to the weekday of the year's beginning. And so the weekday upon which that month begins is found.

The Epoch of the Romans

Their cycles are subtracted (from that number), that is, it (that number) is reduced modulo 28. If anything is apprehended, it is sought in the table of single years. If it is found in black (ink), the year is ordinary, if it is found in red ink, the year is intercalary. Then the day of the week is reckoned opposite whatever is found. This weekday (is the day upon which) that year begins. If someone wishes to know the days upon which each month begins, if the year is ordinary, entrance is made into the table opposite the months of the ordinary (year). If the year is intercalary, entrance is made into the table opposite the intercalary year. The weekdays are reckoned opposite that (result). It (i.e., this result) is added to the weekday upon which the year begins, and so the day upon which the month begins is found.

The Persian Epoch

In the case of the Persian *basīṭa* year, the cycles are reduced modulo 8. If anything is apprehended, it is sought in the table. Wherever it is found is the day upon which the year of that epoch begins. The day upon which the month begins is apprehended in the same way as was mentioned in the other (sections) on the Arabic and Roman (years). The Persian *kabīsa* year was discussed earlier at the end of the second chapter (*page 25*). Comprehension of this method was discussed there.

Sultanic Epoch

Its cycles are reduced modulo 220. If anything is apprehended, one is subtracted from it. Then entrance is made into the tables opposite that which has been apprehended (and) the weekdays are reckoned opposite the (columns of) single years, 10 years and 100 years. If anything is found, one day (and) 102 parts (of a day) are added to it. If that fractional part is greater than 220, it is reduced modulo 220. And for each 220 (cast away), 1 is added to (the number of) those days. Then the quantity of that result is examined. If it is greater than 167, it is clear that the coming year is intercalary, if it is less than that (amount), it is ordinary. If that fractional part is less than 55, the beginning of the year is one of those weekdays. If it is greater than 55, the beginning of the year is on another weekday. If it is less than 55, the beginning of the year is the day previous. If the fractional part is greater than 55, the beginning of the year is on the coming day. If (the number) of days is greater than 7, it is reduced modulo 7.

Whenever there is need for the comprehension of the beginning of each month, the weekday on which the year began is examined. This is sought along the top of the table. Entrance is made into the table opposite that month. If anything is found opposite the two entries, it is the day upon which the month begins.

1.4.2 On Extracting The Roman, Persian and Sultanic Epochs from the Arab Epoch by Table

Before (undertaking) this labor, all the Arab years are comprehended and set down in the workspace, and the full months are in turn placed beneath them, as well as the current days of the (current) incomplete month (as reckoned) with the mean number (of days) since the beginning of the month.[6] For the incomplete (number) of days of the (current) month are reckoned with that mean calculation, not by the sighting (of the lunar crescent). (This number) is placed beneath the month. Then the total (number of) days is reckoned opposite the full months and is placed under the previously reckoned (number) of days. Then those months are cast off from the (number of) days taken together, and the (number of) complete Arab years is retained above together with (the number of) current days of the (current) incomplete year. Then entrance is made into the table of the thirty year periods of the Arab epoch, and their full years are sought. If any number is found there equal to those (full years), so be it. If one is not found, the greatest number less than that placed in the workspace is sought, and entrance is made into the table opposite that number. And so the full years of the Persian, Roman or Sultanic epoch are found.

The days are reckoned opposite and before the years. The years are placed in the workspace at the top and the days at the bottom. Then the Arab years for which entrance was made into the table are subtracted from (the number of) those years placed earlier in the workspace. If anything is comprehended, entrance is made opposite that in the table of single Arab years, and so (the number of) years and days is reckoned, and (those numbers) are added to those (numbers) of years and days reckoned from the table of thirty year periods. Then that (number of) days of the Arab epoch is added to the (number of) days of each of the three epochs, that is, the number of days of whatever epoch is necessary is added to (the number of

[6] See page 31.

days of) the Arab epoch. Then an examination is made. If (the number of) days of those epochs is greater than 365, 365 is subtracted from (the number of) days and 1 is added to (the number of) years. If anything is found, it is (the number of) full years. Whatever the year is, one is always added to it. And so the incomplete years of that epoch are found.

The (number of) days of that epoch comprehended is examined. Entrance is made opposite that number into the required table of days and months. If this number is not found there, the greatest number less than it is sought. The month found opposite this number is examined. This (month) is not reckoned, but the one after it (is reckoned), and it is placed underneath the (number of) years in the workspace. Then the (number of) days discovered in the table is subtracted from the (number of) days reckoned. If anything is comprehended, it is placed beneath those months. If nothing is comprehended, one is always added beneath the months. Whatever is found is the years, months and days of that epoch. The Persian *basīṭa* year is known.

It is necessary also to know the Persian *kabīsa* year. The (number of) full Persian years is set down in the workspace and 121 is added to this number. The result is divided by 124. If anything results, it is the (number of the) month of the *kabīsa* year in this order, that is, counted form the month of Ādhar. Wherever the counting ends up, those 5 epagomenal days are placed at the end of that month.

1.5 On Comprehending the Easter of Each Nation and Their Manifest and Greatest Days

Some of the manifest days are (tied to) the days of the month, and are always fixed to their own location (in the month), other manifest days are (tied to the calculation

of the) weekdays of the moveable month[7], others are manifest because they are (tied to) the years of the Sun and of the Moon, and other manifest days are (tied to) the weekdays of these two types of years. This chapter is divided into seven sections.

1.5.1 On Comprehending the Times and the Extraction of the 28 Lunar Mansions

All the lunar mansions are equal (in longitude) on the circle of the ecliptic. The beginning of the motion (in the counting) of those mansions is from the first of Aries. The forms of the mansions are composed of the fixed stars. These forms vary in both shape and location. As for the times when these mansions rise, that is, when they appear with the Sun at a distance, the first mansion rose in the Roman year 1452 on the 28th day of Nīsān. After 13 days the second mansion rose, and the other mansions (after it) rise after 13 days in a similar fashion. The 15th mansion, whose name is *Gafir*, rises after 14 days. The rest of the mansions after it rise, in turn, after 13 days.

What has been said (about this) holds true for an ordinary year. In the case of an intercalary year, the 15th mansion, whose name is *Zoumpra*, rises after 14 days. So whenever one mansion rises in the East, the 15th mansion (counting from it) sets in the West.

These mansions have been set down in a table for the hour when each rises. They are comprehended from this table.

1.5.2 On Comprehending the Great Fast of the Christians

The beginning of this fast is always a Monday. This Monday should be the closest to the conjunction of the Sun and Moon which occurs from the second of Shubāt

[7] A: They vary with the calculation of the weekdays.

until the 8th of Ādhar. It should not go beyond this. If the year is intercalary, the conjunction should take place from the 3rd of Shubāt until the 8th of Ādhar. If the conjunction takes place on the Monday before the second of Shubāt, that conjunction is not reckoned, but is cast away, and the next conjunction after it is sought. Then the Monday closest to this conjunction is reckoned, and that is the Monday of the Great Fast. This calculation is made from the epochal value. If this must be comprehended from the astronomical composition, a table has been set down there from which to comprehend the fast.

1.5.3 On Comprehending the Occurrence of the Great Days with Respect to the Great Fast

Know that twenty-two days before the Monday of the Fast, there is the fast of Nineveh, which is always a Thursday, and its fast-break is a Friday. Twenty four days after the Great Fast is the so-called feast of Fārūq, which is always a Wednesday. 42 days after the Great Fast is the Day of the Palms. Its fast break is 49 days after the Great Fast. That day is always a Sunday. The Thursday before the Thursday of the Fast is Great Thursday. The Friday after it is the crucifixion of Christ. The Friday after the fast-break is the little day of Palms. 40 days after the fast is the Resurrection of Christ. 11 days after the Resurrection is the festival of the Holy Spirit. The Sunday of the fast after the festival is called the Sunday of the Dialogue or of Thomas. The Tuesday after the Pentecost is called the fast of *aš-šalḥayn* اَلشَّلحَين. The Friday after that is called Golden Friday. The fast of *aš-šalḥayn* اَلشَّلحَين lasts 48 days, and the 49th day after the fast is called the fast-break of *aš-šalḥayn* اَلشَّلحَين. It is always a Sunday. Thirteen days after thatis the so-called fast-break of *ḏikrān mārmārā* ذِكرَان مَارمَارَى. 50 days after the fast-break of *aš-šalḥayn* اَلشَّلحَين is the fast of Elias. That day is always a Tuesday. This fast lasts 48 days and the 49th day is the day of the fast-break.

1.5.4 On the Feast Days of the Muslims and Their Fast Days

Muḥarram

The 1st – it is considered great by them because it is the first of their year.

The 9th – the day in which the son of ^{c}Alī began the battle against Yazīd.

The 10th – the day in which Yazīd killed the son of ^{c}Alī.

The 16th– the fixing of the *qibla* in the direction of Jerusalem.

The 17 th– when the city of Jerusalem was attacked by elephants.[8]

Ṣafar

The 1st– when the head of the son of ^{c}Alī was brought to Damascus.

The 16th– the sickness of the impious Mohammed.

The 20th– when the head of the son of ^{c}Alī was brought back to the place where he had been killed.

The 24th– the departure from the caves –after their flight–of the impious Mohammed and Abū Bakr.

Rabī^{c} I

The 1st— the death of the impious Mohammed.

The 3rd— the entrance of the impious one into a dark grave in the house of his wife.

The 8th– the arrival of the impious one in Medina.

The 10th– the day upon which he married his wife Khadîja.

The 12th— the birth of the impious one.

The 14th— the death of Yazīd.

Rabī^{c} II

The 3rd— the burning of Mecca by al-Ḥajjâj.[9]

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[8] *qdūm aṣḥāb al-fīl* قدُوم اصحَاب الفِيل "The arrival of the companions of the elephant."

[9] "The Kaaba was burned at the time when Al Ḥajjâj besieged ^{c}Abd Allâh b. Zubair" *Biruni* p

The 14th– (the establishment of the injunction of)[10] prayer for those travelling or remaining at home.

Jumādā I

The 8th— the birth of ^{c}Alī bin Abū Ṭālib. [11]

The 15th— the battle with camels.

Jumādā II

The 3rd– the death of the impious one's daughter, Fāṭima.[12]

The 9th— the death of Abū Bakr.[13]

The 15th — the casting down of their prayer by ibn al-Zubayr.

Rajab

The 1st– the impious one's victory over Barmūk

The 4th— the day on which ^{c}Alī and Mu^{c}âwiya joined in battle at Ṣiffîn.

The 26th— the impious one's revelation to the impious that he was a prophet.

The 27th— the night the impious one traveled to Jerusalem,[14] and from there, as they foolishly allege, he ascended to the sky. The truth, however, is that he went to the house of his father, the devil.

Sha^{c}bān

The 3rd— the birth of Hussayn the son of ^{c}Alī[15].

The 5th– the birth of Hassan son of ^{c}Alī[16]

329.

[10] *taqdīm faraḍ al-ṣalawati* تَقدِيم فَرَض الصَلَوَةِ

[11] Mohammed's son-in-law and cousin. This day is given as the 15th day of Rabī^{c} II in Biruni.

[12] This day is given as the 8th day of Jumādā I in Biruni.

[13] This day is given as the 2nd day of Jumādā II in Biruni.

[14] A2 reads *mḥsd ḥarām* محسد حَرَام. A1 reads *msǧd ḥarām* مسجد حَرَام.

[15] *ḥusayn bin ʿalī* حُسَين بِن عَلِي

[16] Not in A1.

The 13th, 14th and 15th — the white days.

The night of the 15th is (the night of) their accursed prayer named *barʿāt* بَرعَاة[17]. On that same night the direction of their accursed prayer was set to Mecca.[18]

Ramaḍān

The 1st— the descent, as they foolishly allege, of the book of Abraham from the sky.

The 6th— the descent of the book of Moses from the sky.[19]

The 10th— the death of Khadîja, the wife of the impious one.

The 12th— the descent of the book from the sky to David.[20]

The 17th— the battle of Badr in ten days, with the impious one driving back thousands.

The 18th— the descent of the Gospel as they foolishly allege.[21]

The 19th— the conquest of Mecca.

The 21st— the death of ^{c}Alī bin Abū Ṭālib, and the death of ^{c}Alī al-Riḍa, his son.

The 24th— the descent, as they foolishly allege, of the Koran to the Prophet. It is better to say it was the ascent of the Koran to him from his father the devil .

The 26th— the casting out[22] of al-Birqu^{c}î.

The 27th— the night of the worshipping of trees.[23]

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[17] "The night of innocence."

[18] *ṣarafat al-qiblat min bayt al-mqda 'lā 'l-kaʿbat* صَرَفَت القِبلَة مِن بَيت المقدَ الَى الكَعبَة "The direction of the *qibla* was changed from Jerusalem to the Kaaba."

[19] *tazūl al-twūryti ʿlī mwsā* تَزُول التوُورية علِي موسَى "The descent of the Torah to Moses."

[20] *tazūl zabūr ʿalī dāwadi* تَزُول زَبُور عَلِي دَاوَدِ "The descent of the Psalms to David."

[21] *tazūl al-inğa'li ʿalā ʿysī* تَزُول الانجَيلِ عَلَى عيسِي "The descent of the Gospel to Jesus."

[22] Biruni has "revolt" rather than "casting out".

[23] *la'latu 'l-qdr* لَيلَةُ القدر "The night of Fate."

Shawwāl

The 1st— the break of their accursed fast.[24]

The 2nd— the first of 6 days of their accursed prayer.

The 4th— the conversation of the impious one with the Christians.

The 7th— the battle of Uḥud and the death of the impious one's uncle.[25]

The 22nd— the swallowing up of Jonah by the whale[26]

Dhū al-qa^{c}da

The 14th— the expulsion of Jonah from the belly of the whale.

The 15th— the descent from the sky, as they foolishly allege, of the Kaaba, and the forgiving of Adam.[27]

The 29th— the sprouting up of the *Citrullus Colocynthis*[28] plant over Jonah.

Dhū al-ḥijja

The 1st— the marriage of Fāṭima to ^{c}Alī. The first ten days of this month are called "well-known". While their accursed prayer occurs on all these days, the shouting of their prayer on the 8th of these 10 days is the loudest.[29]

The 9th— the day when they strip naked and pray in a Dionysiac frenzy.[30]

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[24] *ʿydu 'l-fiṭri* عيدُ الفِطرِ "The holiday of the fast-break" – the lesser Bairām

[25] *ġazawatu 'ḥdin wamqtl ḥamizati* غَزَوَةُ احدٍ وَمقتل حَمِزَةِ "Someone's military incursion and the death of *ḥamizati* حَمِزَةِ ."

[26] This day is given as the 28th of Shawwāl in Biruni.

[27] *al-rḥmt ʿlī ʾādam ṣlwāt al-lāhi ʿlyh* اَلرحمة علِي آدَم صلوَات اللّٰهِ عليه "The compassion shown to Adam, may the blessing of Allah be upon him." The descent of the Kaaba is given as the 5th of Dhū al-qa^{c}da in Biruni. The forgiving of Adam is given as the 10th of Muḥarram in Biruni.

[28] This is the yaqṭîn plant in Biruni.

[29] A has an 8th day, *ya'mu 'l-trwyti* يَومُ التروية "The day of quenching."

[30] عرفة هوَ الحَجّ الاكبر *ʿrft hwa 'l-ḥağğ al-akbr* "(The visit to) Arafāt. It is (during) the great pilgrimage."

The 10th— the fast-break, which is called the slaughter.[31]

The 11th— the day of seizing.[32]

The 12th— the day of everyone's escape from their prayer.[33]

The 13th– the sitting for three days.[34]

The 17th– the slaying of ^{c}Uthmān by the companions of the impious one.[35]

The 25th— the slaying of ^{c}Umar bin Abī Ṭālib [36]

The 27th— the great heat at Medina. Many died because of it.[37]

1.5.5 The Feast and Great Days of the Persians, Who Count The Days as Coming before the Nights

Farwardīn

The 1st— New Year's Day.

The 6th— Royal New Year's Day.

The 17th— The Day of Serôsh.[38]

The 19th— Farwardīngân.[39]

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[31] عيدُ الضحَى يَومُ النَحرِ *ʿydu 'l-ḍḥā ya'mu 'l-naḥri* "The feast of the victims. The day of slaughter."

[32] *ya'mu 'l-farr* يَومُ الفَرّ "The day of escape."

[33] *ya'm al-nafari* يَوم النَفَرِ "The day of flight."

[34] يَوم الصدر هذه ثلثة ايَام التَشرِيق "The day of the heart. These are the three days of *tashrīq*."

[35] قُتل عثمَان بِن عفَا ن "The slaying of ^{c}Uthmān bin ^{c}Afān." A has an 18^{th}day: غَدِير غُمًا *ġadīr ġuman.*

[36] A has a 24^{th}day تصدق عَلِي بِن ابُو طَالِب بخَا تمِهِ "^{c}Alī bin Abū Ṭālib gives away his seal. "

[37] وَقَعَةُ الحَرَّةِ بِلمدنَته "The occurrence of heat at Medina."

[38] According to Biruni, Serôsh first ordered the *Zamzama.* He is also said by Biruni to be perhaps the angel Gabriel.

[39] "On the 19th, or Farwardīn-rôz, there is a feast called Farwardagân on account of the identity of the name of the day and of the month in which it lies. A similar feast-day they have got in every

Ardībihisht[40]

The 3rd— Ardībihishtagân, its feast.

The 6th— The first of *ḫrğini 'l-suġd* خرجِنِ السُغد

The 26th— The first of Gahanbâr. Five days.

Khurdādh

The 6th— the feast of Khurdādhagân. The $1^{st}$of *nysğ al-suġd* نيسج السُغد.

The 26th— the first of Gahanbâr.

Tīr

The 6th— Chashn-i-nîlûfar.[41]

The 13th— the lesser feast of Tîragân.

The 18th— the greater feast of Tîragân.

Murdādh

The 6th— *ištāḫna 'l-suġd* اِشتَاخنَ السُغد

The 7th— the feast of Murdādhagân.

Shahrīwar

The 4th—the feast of Shahrīwaragân and Ādhar-chashn[42].

The 6th— *maziyḫand al-suġd* مَزِيخَند السُغد.

The 16th— the first autumn. This day is (the first) of the 5th Gahanbâr, which lasts 5 days.

Mihr[43]

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month." *Biruni* p.209. Note that in the case of the Persian names, I use the trasliterations found in Ginzel.

[40]Biruni states that the month name Ardībihisht means "truth is the best" or "the utmost of good".

[41]The day of the water lilies

[42]feast of the fires

[43]Biruni states that the month name Mihr means "love of the spirit".

The 1st— the second autumn.

The 6th— *faġagān as-suġd* فَغَگَان السُّغد

The 16th— the feast of Mihrajân.

The 21st— the Great Mihrajân.

Ābān

The 6th— *abanāğ as-suġd* اَبَنَاج السُّغد.

The 10th— the feast of Ābānagân.

The 25th— the first of Farwardajân.

The 31st— the first of the 5 epagomenal days. (The first day of the) 6th Gahanbâr. In (the case of) the fixed months, these 5 days are (placed) at the end of Isfandārmadh.

Ādhar

The 1st— the riding of the thin-bearded man. It is called Bahār-chashn or *Thersites*.

The 9th— Ādhar-chashn.

Dai

The 1st— Khuram-rāz.

The 8th— their feast.

The 11th— the first of Gahanbâr and the night of the 15th is the feast of *kāktl* کَاکتل.[44]

The 23rd— the feast.

Bahman

The 1st— *zīmadaniğ as-suġd* زِیمَدَنِج السُّغد

The 2nd— the feast of Bahmanagān.

Isfandārmadh

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[44]The feast of *kāktl* کَاکتل is given as the 10th of Dai in Biruni.

The 1st— *awwalu ḫušūmu 's-suġd* اَوَّلُ خُشُومُ السُّغد[45]

The 5th— the feast of Isfandārmadhagān.

The 11th— the first (day of) the second Gahanbâr. Five days.

The 16th— Misk-i-tāza,[46] namely, the time of Spring.

The 26th— the flowing of (the river) *Zadarūḏābān* زَدَرُوذَابَان into *Iṣfahān* اِصفَهَان.

1.5.6 The Names of the Persian Days of the Month

The first of the month, *Hormuz*.

The 2nd— *Bahman*.

The 3rd— *Ardī̄bihisht*.

The 4th— *Shahrī̄war*.

The 5th–*Isfandārmadh*.

The 6th—*Khurdādh*.

The 7th— *Murdādh*.

The 8th— *Dai-ba-Ādhar*.

The 9th– *Ādhar*.

The 10th— *Ābān*.

The 11th— *Khūr*.

The 12th—*Māh*.

The 13th— *Tī̄r*.

The 14th— *Gôsh*.

The 15th— *Dai-ba-mihr*.

The 16th— *Mihr*.

The 17th— *Srôsh*.

The 18th— *Rashn*.

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[45]Biruni states that the month name Isfandārmadh means "intelligence" or "ripeness of mind".

[46]This is "fresh musk" according to Biruni.

The 19th— *Farwardīn.*

The 20th— *Bahrâm.*

The 21st— *Râm.*

The 22nd— *Bâdh.*

The 23rd— *Dai-ba-dīn.*

The 24th— *Dīn.*

The 25th— *Ard.*

The 26th— *Ashtād.*

The 27th— *Āsmān.*

The 28th— *Zamiād.*

The 29th— *Mārisfand.*

The 30th— *Anêran.*

The Names of the 5 Epagomenal Days

The 1st— *Ahnaud.*[47]

The 2nd— *Ushnaud.*

The 3rd— *Isfandhmadh.*

The 4th— *Washat.*

The 5th— *Washat wūsh.*

1.5.7 On the Christian Feasts, Great Days and Month Names

Tishrīn I

The 9th— *Murdādmā ma^{c}taḍid.*

Tishrīn II

The 8th— *Shahrīwarmā ma^{c}taḍid.*

[47] These 5 transliterated from A.

The 22nd— the feast of *Hunaqat*.[48]

Kānūn I

The 1st— the feast of *bathārat*.[49].

The 8th— *Mihrmā ma^{c}taḍid*.

...

This month has 35 days, and in an intercalary year 36.

Shabāṭ

The 2nd— *Shama^{c}i*[50].

The 7th— the first heat from the earth.

The 11th— *Ādharmā ma^{c}taḍid*. He was Caliph and his year was established for this.

The 14th— the second heat from the earth.

The 15th— the beginning of the growth of plants.

The 21st — the third heat from the earth.

Adhār

The 8th— the appearance of swallows and storks.

The 13th—*Daimā ma^{c}taḍid*.

Nīsān

The 12th— *Bahman ma^{c}taḍid*.

The 24th— *ḏikrānu marğūrğas* ذِكرَانُ مَرجُورجَس.[51]

The 25th— the birth of John.

Iyār

The 12th— *Isfandārmā ma^{c}taḍid*.

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[48]the consecration

[49]the annunciation

[50]wax candles

[51]This is the commemoration of "Marcus, author of the second Gospel" according to Biruni.

The 13th— the flooding of the Nile.

The 18th— the passing by of summer and the movement of the winds, 40 days

Ḥazīrān

The 11th— the 1st of *Farwardīnmā ma*^{c}*taḍid.*

The 21st— the birth of *ḥy bin ḏkryā* حى بِن ذكريَا

The 24th— the blowing of the West wind.

The 27th— the end of the 40 days.

Tammūz

The 3rd— *ḏikrānu marmā tūmā* ذِكرَانُ مَرمَا تُومَا.

The 11th— *Ardībihishtmā ma*^{c}*taḍid.*

The 19th— the first day of the heat of the *lapis lazuli*(?).

Ābh

The 1st— the fast for the Virgin.

The 6th— transfiguration day.

The 10th— *Khurdādhmā ma*^{c}*taḍid.*

The 15th— the fast-break for the Virgin.

The 24th— the death of *ḥy bin ḏkryā* حى بِن ذكريَا

Īlūl

The 2nd— (the day) on which the star[52] rises in Iraq.

The 9th— *Tīrmā ma*^{c}*taḍid.*

The 13th– the feast of the raising of the cross.

[52] Canopus

BOOK 2

On the Comprehension of Interpolation, Sine, Arc, The *Sagitta*, and Tangent[1]–Things Which are Very Useful for the Astronomical Composition

This book is divided into 3 chapters.

2.1 On Interpolation

It is necessary to know the nature of a table. That number which has been placed at the edge of a table is a gate, as it were, into calculations involving that table. That number which is the difference of (two adjacent) entries in the table and that number at the edge of the table are always precise with respect to (calculations involving)

[1] lit. shadow

tabular difference. That tabular difference, however, which involves values (intermediate) between two (adjacent) table entries, is not always precise (with regard to such calculations). If this tabular difference (of adjacent entries) in the table has been written down for this table, and the zodiacal signs go (in order) from the top of the table down, then the tabular difference is reckoned opposite that number (with which you enter the table). If the zodiacal signs go (in order) from the bottom of the table up, the tabular difference is reckoned opposite the next number (after the one with which you enter the table). If the tabular difference has not been written down in this table, the number with which entrance was made into the table is examined. The number after it is examined, and the smaller (of the two) is subtracted from the larger. If the second number is greater, that column[2] is said to be *increasing*. If the first is greater, that column is said to be *decreasing*. This is a column of entries in the body of the table, since a column at the edge (of the table) is always increasing.

When it is necessary to engage in this labor, if the number we have reckoned does not have a fractional part, there is no need for (further) labor. The (desired) result is reckoned opposite that number. If, however, our number does have a fractional part, entrance is made (into the table) from the edge of the table opposite the degrees of our reckoned number, and the (desired) number is found and reckoned in the body of the table and examined. Then its tabular difference is made clear, and that tabular difference is multiplied by the fractional part of our reckoned number. The result is divided by the tabular difference (of the two corresponding entries) at the edge of the table. If anything comes out, if the column in the body of the tables — after reckoning and examination — is increasing, this result is added to it (i.e., the number in the body of the table opposite the integer part of our number). If (the column) is decreasing, it is subtracted, so that the interpolated number may be complete.

[2]lit. number

2.1.1

If the number we have reckoned is a (type of) number in the body of the table, and if it is necessary that the (corresponding) number at the edge of the table be made clear from this (number of ours), the number we have reckoned is sought in the body of the table. If a number is found there equal to ours, the number at the edge of the table is reckoned opposite ours, and there is no need for anything else for this calculation. If, however, a number equal to ours is not found there (i.e., in the body of the table), the greatest number less than the number we have reckoned is sought in the body of the table. Then the number at the edge of the table is reckoned opposite this (found) number and examined. Then that number found in the table — opposite which entrance was made into the table — is subtracted from the number we reckoned. The result is multiplied by the tabular difference of the number at the edge of the table and the result is divided by the tabular difference (of the corresponding numbers) in the body of the table. The resulting sexagesimal firsts and seconds are added to the number reckoned at the edge of the table so that the number reckoned at the edge of the table may be complete.

2.2 On the Comprehension of the Arcs of Sines and the *Sagitta*

The ancients divided the circle on the sphere into 360 equal parts. They called those parts *degrees*. They divided the diameter of the circle into 120 units. Each of their degrees was divided into 60 parts, and they called each of them a sexagesimal first. Each of those (sexagesimal firsts) was in turn divided into 60 parts, each of which they called a sexagesimal second. This process of division was continued in the same way on the successive parts (of the circle) until (they reached) sexagesimal tenths.

It is necessary to know that the Sine is a base-point for the comprehension of its

arcs. Astronomers employ the Sine for all their computations. The maximum value of the Sine is half the diameter, the length of which (half) is 60 units.

It is necessary to find the Sine of an arc given the arc. If the arc is less than 90, the Sine is reckoned opposite that arc. If the arc is greater than 90 and less than 180, the difference between that arc and 180 is reckoned, that is, the smaller value is subtracted from the larger value. The Sine is reckoned opposite that result. If that arc is greater than 180 degrees, its value is subtracted from 360 degrees. The Sine is reckoned opposite this result.

If it is necessary that the *sagitta* be reckoned opposite the arc, if the arc is less than 180 degrees, the *sagitta* is extracted opposite that (arc). If the arc is greater than 180 degrees, its value is subtracted from 360. The *sagitta* is reckoned opposite the result. The maximum value of the *sagitta* is the (length) of the diameter of the circle, and this is 120 units. This (i.e., 120) is the *sagitta* of an arc of 180 degrees.

2.2.1 On Knowing the Sine from the Arc and the Arc from the Sine

When we wish to engage in this labor, entrance is made into the table opposite the arc at the top of the beginning of the Sine values. The Sine is extracted from the body of the table opposite this value. If there are fractional parts to the arc in question, that Sine becomes complete with interpolation. This was discussed at the beginning of the first chapter (*page 52*). The result is the Sine of that arc. If it is necessary that the Sine be of the complement of that arc, the arc is subtracted from 90. The result is the complement of the arc and the Sine is reckoned from this. The result (of that calculation) is the Sine of the complement of that arc.

Whenever we have reckoned a Sine, that Sine is sought in the body of the table of Sines, and its arc is reckoned opposite it (going down) from the top of the table,

as was discussed in the beginning of the second chapter[3] (*page 55*).

2.2.2 On Comprehending the *Sagitta* from the Arc and the Arc from the *Sagitta* Using the Sine Table

Whenever we have reckoned an arc, and we wish to know its *sagitta*, the arc is examined. If it is less than 90, the Sine of the complement of that arc is subtracted from 60. If the arc is 90 degrees, the *sagitta* is 60 units. If the arc is greater than 90, it is subtracted from 90. The Sine of this result is reckoned and added to 60. The result is the *sagitta* of that arc.

Whenever we have a *sagitta* and we wish to extract its arc from the table of Sines, the *sagitta* is examined. If it is less than 60, it is subtracted from 60. The result is a Sine. Its arc is reckoned and the result is subtracted from 90. That result is the arc of the *sagitta*. If the *sagitta* is 60 units, it is right and its arc is 90 degrees. If the *sagitta* is greater than 60, it is subtracted from 60. The result is a Sine. Its arc is reckoned. The result is added to 90 and the arc of the *sagitta* is found.

2.3 On the Tangent[4]

(A tangent table) in fingers and feet has been set down along side the Sine table. Entrance is made opposite the altitude and the tangent is reckoned.

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[3]lit. "the section of the first chapter"–but this is incorrect

[4]lit. shadow

BOOK 3

On the First and Second Declination to the North and to the South, (on) the Latitude of Cities, the Culmination of Stars and Rising Times in Right Ascension[1]

This Chapter is divided into 4 sections.

[1] lit. the place of "fortune" with the straight line

3.1 On the First and Second Declination

The obliquity of the ecliptic[2] is the angle between the ecliptic[3] and the celestial equator[4], that is, the circle which makes a complete rotation in a *nychthemeron*. (This angle) is 23 degrees and 35 sexagesimal firsts. The second (type of) declination (which can take on values) greater than the first (type) is divided into two (kinds). The one (kind) is called "first", and it is needed for the comprehension of the ascent of the Sun to the meridian and for the equation of day. The second (kind of) declination is useful for the distance of stars, that is, the distance of stars from the celestial equator. Therefore a table has been set up for these two declinations, so that entrance is made opposite the degrees of the zodiac and the measure of the declination is reckoned. If it is necessary to know whether this declination is to the North, to the South, ascending or descending, the (number of) zodiacal signs is examined. If it is less than 6, it is to the North. If it is greater than 6, it is to the South. If the zodiacal signs are between 9, 0 and 3, it is ascending. If they are between 3, 6 and 9, it is descending.

3.2 On the Comprehension of the Latitude of Each City

The mid-day altitude of the Sun[5] is comprehended and the first declination is reckoned opposite the degrees of the Sun. That declination, if it is to the South, is added to the mid-day altitude of the Sun. If it is to the North, it is subtracted. The result

[2]lit. great declination

[3]lit. circle of the zodiac

[4]lit. complete zone of day

[5]lit. the altitude of the Sun on the circle of the middle of the day

is then subtracted from 90, and that result is the latitude of the city.

If, instead of the Sun's declination, the distance of a star from the celestial equator[6] is used, a method is employed similar to the one just described.

3.2.1 On the Comprehension of the Latitude of a City by Means of a Star Which is Always Visible and Never Sets

The altitude of that star is sought and reckoned at two times, when it is at its greatest distance from the earth, and when it is closest to the earth. Then these two altitudes are added and the result is divided by 2. The result is the latitude of the city.

Whenever the Sun enters the first of Cancer, the complement of the altitude is reckoned with an astrolabe at mid-day. 24 is subtracted from this. The result is the latitude of the city where the altitude was reckoned. If it is reckoned in Capricorn, 24 is added to the altitude and in this case, as in the earlier one, the latitude of the city in question is revealed. It is necessary to know that the result of the subtraction or addition of 24 is subtracted from 90 and so becomes the complement of the latitude.

3.3 On Comprehending the Mid-Day Altitude of the Sun and the Rest of the Stars

After the latitude of the city is reckoned, it is subtracted from 90 and so the co-latitude (of that city) is found. Then the first declination is reckoned from the degrees of the Sun — or the distance of the star from the celestial equator is reckoned. If the declination — or the distance of the star — is to the North, that declination or

[6] lit. the complete circle of day

distance is added to the co-latitude of the city. If it is to the South, it is subtracted from that co-latitude. If the result is less than 90, it is the altitude of the Sun or star on the Southern part of the meridian circle. If the result is greater than 90, it is subtracted from 180. The result is the altitude of the Sun or star on the Northern part (of the meridian circle).

3.4 On Comprehending the Place of the "Fortune" of the Zodiacal Signs with the Straight Line

This is the calculation: whenever this is necessary, the Sine of that degree is multiplied by the Sine of the complement of the declination. The result is divided by the Sine of the complement of that degree. This result is the Sine of the place of the "fortune" with the straight line. The arc of the Sine is reckoned and that (arc) is the place of the "fortune" of that degree. A table has been set up for the place of the "fortune". The order of the table is from the first of Capricorn. Whenever it is necessary, the place of the "fortune" is reckoned from the degrees of the zodiacal signs. The zodiacal sign is sought at the top of the table and the degrees along the side. The place of the "fortune" is reckoned in the body of the table opposite the two (numbers).

If we have reckoned a place of the "fortune" and we wish to know its corresponding degree and zodiacal sign, that place of the "fortune" is sought in the body of the table. Its zodiacal sign and degrees are reckoned opposite the place where it has been found (counting) from the beginning of the table. Interpolation is used and employed as in the way described earlier.

If we wish the place of the "fortune" to be (counted from) Aries instead of from Capricorn, 90 degrees are subtracted from the degrees of the place of the "fortune" in the table, or 270 degrees are added to them, since one number results from both

calculations. The result is the that (the rising time) counted from Aries.

BOOK 4

On the Correction of the Daylight with the Arrow, the Arc of the Day and the Night, the Degrees of the Seasonal Hours, the Places of the Zodiacal Signs for all the *klimata* with the Latitude of Rising

4.1 On Whether the Latitude of Rising is Southerly or Northerly

If the declination of the Sun or the distance of the stars from the complete circle of day to the north is greater than the completed of the latitude of the city, that star

is always visible and does not set below the earth. If its declination or its distance is to the south, that star is always below the earth. In both these cases there is no latitude of rising. If its declination or its distance is each opposite to the complement of the latitude of the city, the latitude of rising is 90 degrees. If the declination or the distance is less than such a latitude of the city, that star rises and again sets, and so its latitude of rising exists.

When there is need for this calculation, the Sine of the declination, or the distance, is divided by the sine of the co-latitude of the city. The result is raised by one step and the Sine of the latitude of rising is found. Its arc is reckoned, and so the latitude of rising is found.

On Knowing Whether the Latitude of Rising is Northerly or Southerly

If the declination is northerly, so is this latitude of rising. If this declination is southerly, so is this latitude of rising southerly. If the Sun has no declination, or the star a distance, then they are on the complete circle of day and thus they do not have a latitude of rising.

4.2 Correction of the Daylight and the Arrow of the Day

If the Sun has no declination or the star a distance, they do not have a correction of daylight, and so one half the arc of daylight is 90 degrees. If the Sun and the star have a declination and a distance, the Sine of each is multiplied by the Sine of the latitude of the city. The result is divided by the Sine of the complement of each. This result is called the *radix*. Then this radix is divided by the Sine of the

complement of the latitude of the city. The result is lowered by one (sexagesimal) step, and the Sine of the correction of daylight is found. Its arc is then reckoned. This is the correction of daylight.

We have set up a table for this, namely, for the complete equation of daylight. The Sine of the correction of daylight is reckoned opposite the latitude of whatever city we wish. Proportional parts [1] are reckoned opposite the degrees of the Sun. These parts are mulitipled by the Sine of the correction of daylight. The result is then lowered by one step, so that the Sine of the correction of daylight is found. Then the arc of this Sine is reckoned and the correction of daylight in degrees of the Sun is found for that day. If the correction of daylight is doubled, the (complete) difference of the daylight [2] is found.

4.2.1 On the Arrow of the Day

If the declination or the distance is northerly, the Sine of the correction of daylight is added to 60. If the declination or the distance is southerly, the Sine of the correction of daylight is subtracted from 60. Thus the arrow of the correction of daylight is found either in addition or in subtraction.

4.3 On the Arc and The Hour of the Nychthemeron and the Degrees of a Seasonal Hour

The ancients held that one nychthemeron is 360 time degrees and again that this nychthemeron is 24 hours. This chapter is set down to explain this.

If the declination or the distance is northerly, the correction of daylight is added to 90. If these are southerly, they are subtracted from 90. The result is half the arc of

[1] "coefficients of interpolation" Neugebauer.

[2] Neugebauer p.14 under περισσεία

daylight. This is doubled and so the complete arc of daylight is found. Alternatively, if the declination or the distance is northerly, the (complete) difference of the day is added to 180 degrees. If the declination and distance are southerly, the declination or the distance is subtracted from 180 degrees, and the daylight of the arc is found. If the arc of daylight is subtracted from 360, the arc of night is found.

4.3.1 On the Equinoctial Hour

The arc of daylight is divided by 15 and the equinoctial hour of every day becomes clear. This complete hour of every day is subtracted from 24, and the hour of every night is found. If the arc of daylight is divided by 12, the parts of a seasonal hour of the day are found. If these are subtracted from 30, the parts of a seasonal hour of the night are found.

4.3.2 (Seasonal Hour)

If an equinoctial hour is multiplied by 5 and the result is divided by 4, the parts of the seasonal hour are found. If the parts of the seasonal hour are multiplied by 4 and the result is divided by 5, an equinoctial hour is found.

4.4 On Obtaining the place of the "Fortune" (Ascendant) of the Zodiacal Signs for the Latitudes of All the *Klimata.*

The correction of daylight is subtracted from the place of "fortune" of the zodiacal signs with the straight line which is from the beginning of Aries in the case of the northerly zodiacal signs. In the case of the southerly zodiacal signs, the correction of daylight is added to the place of "fortune" of the zodiacal signs. The result is the

place of “fortune” at the latitude of the city.

BOOK 5

On the Motion of the Fixed Stars from Their True Longitudes and Their Distances from the Circle which Moves in a Nychthemeron, That is, Their Distance to the Circle of Mid-day, the Ascent of Such Stars, that Degree of that Zodiacal Sign Which is Together with the Star on the Circle of Mid-day, the Degree Which Rises with the Star, the Degree Which Sets with the Star, and that Hour of their Rising and Setting in the Day or the Night.

This book is divided into 5 chapters.

5.1 On the Knowledge of the True Longitude of the Stars

It is necessary to know that (the positions of) 25 stars from those that are visible were set down in this book (corrected for) for the beginning of the Arab year 509. Whenever it is necessary to apprehend their true longitude, 509 is subtracted from the (current number of) Arabic years. The result is divided by 68. The result is in degrees. These are multiplied by 53 seconds. The result is added to their true longitude set down in the table, and the true longitude of those stars is found for that year.

5.2 On the Distance, that is, the Distance of the Stars from the Circle Which Moves in a Nychthemeron and their Extreme Ascent

An examination is made. If the star has no latitude, the first declination is reckoned. This is the distance of the star from the circle of equalization. If the star does have a latitude, the second declination is reckoned and examined. It is determined whether (the declination) is northerly or southerly and whether the latitude is northerly or southerly.

Then an examination is made. If the two–the declination and the latitude– are both northerly or southerly, they are added. If the one is northerly and the other southerly, and if the two are equal, the star is on the circle and has no distance. If they are not equal, the smaller is subtracted from the larger. The result is examined. If the larger is northerly, this distance is northerly. If the larger is southerly, that (distance) under consideration is southerly. Then an examination is made. If the star is in degree zero of Cancer or in degree zero of Capricorn, the result of this

computation is its distance from the circle of daylight. If the star is in neither of these–namely, Cancer or Capricorn– but elsewhere, that which we reckoned is the degree of distance from the circle of equalization of daylight.

5.2.1 On Learning the Distance of the Stars from the Circle of the Equalization of Daylight

The Sine of the degree of the distance is reckoned and multiplied by the Sine of the completed greatest declination. The result is divided by the completed second declination of the true longitude of that star. The Sine of the distance from the circle of the equalization of daylight is found.

If the true longitude of the star has no declination, the result of the multiplication by the Sine of the completed declination is lowered by one step. The result is the Sine of the distance from (the circle) of the equalization of daylight. Its arc is taken.

5.2.2 On the Knowledge of the Ascent of the Equation of Daylight

This has already been discussed (4.2).

5.3 On Knowing the Degrees of those Zodiacal Signs which are Together with the Star on the Circle of Mid-day

If a star has no latitude, that star is at the circle of mid-day together with the degree of its true longitude. If the star has a latitude and if that star is within (the arc) Cancer, Libra and Capricorn, that latitude is southerly and that star sets before its proper degree reaches mid-heaven. If the star is within (the arc) Capricorn, Aries

and Cancer, its latitude is northerly and the star rises before its proper degree is at the mid-day circle.

The Sine of the completed latitude is reckoned and is multiplied by the Sine of the distance of the star from the beginning of Cancer or from the beginning of Capricorn, whichever of these zodiacal signs is closer to the star. The result is divided by the completed Sine of the distance of the star from the circle of the equalization of daylight. The result is the Sine of the correction. Its arc is taken. Then an examination is made. If the true longitude of the star is after Cancer or Capricorn, that correction is added to the place of "fortune", to degree zero of Cancer or degree zero of Capricorn, with the straight line. Entrance is made into the tables of the place of "fortune" with the straight line, and opposite that number the zodiacal signs are reckoned above (the table) and the degrees along the side. The second calculation, that between the two tables, is carried out as mentioned (earlier) (2.1). The result is the degree so that it reaches mid-heaven together with the star.

5.4 On that Degree which Rises with the Star

If the star has no latitude, that star rises with the degree of (its) true longitude. If the star has a latitude, its place of "fortune" with the straight line is apprehended, and its beginning is from the beginning of Capricorn. The result is reckoned. Then an examination is made. If the distance of the star from the circle of the equalization of daylight is northerly, the equation of daylight is subtracted from the place of "fortune". If the star's distance is southerly, it is added to the place of "fortune". Ninety is always subtracted from this result. The result is the place of "fortune" of the degree with which the star rises. Entrance is made into the table of the place of "fortune" opposite this result. Wherever this number is found in the body of the table, there are reckoned opposite this the zodiacal signs above (the table), and the degrees along (its) side and the parts between the two tables we reckoned in the

manner that was described (earlier).

5.4.1 On the Degree Setting with the Star

When there is need for the calculation, the arc of the star in the day is added to the degree of the place of "fortune" which rises after it. This result is sought in the table of the place of "fortune" for the latitude of that city in zodiacal signs and degrees in the manner that was described (earlier). 6 zodiacal signs are added to the result, and the degrees setting with the star are found.

5.5 On When the Star Rises and Sets, Whether by Night or by Day

That degree rising with the star is sought. If it is between the Sun and its diametrically opposite (point), the star rises in the day. If that degree is found between the (point) diametrically opposite to the Sun and the Sun itself, (the star rises) at night. If the star rises in the day, the place of "fortune" of the degrees of the Sun at the latitude of that city are subtracted from the place of "fortune" of the degrees rising with the Sun. The result is the revolution from the beginning of that day (until the time) when the star rises. If the star rises at night, the place of "fortune" of the degrees of the (point) diametrically opposite to the Sun at the latitude of the city is subtracted from the place of "fortune" of the star. The result is the revolution from the beginning of the night until the time when the star rises.

As for this calculation which has been mentioned, if we wish to know when the star sets, that degree setting is reckoned so that it rises. The method is similar.

BOOK 6

On the Knowledge of How Many Hours of the Day that Have Passed, How Many Degrees from a Seasonal Hour, the Hours of the "Fortune", the Correction of the 12 Houses, and the Knowledge of the Point of Each Altitude and the Point of Prayer

This book is divided into 7 chapters.

6.1 On the Knowledge of the Arc of the Sun, When it Rises at What Time We Wish to Know This, Namely the Equinoctial and the Seasonal hour

Whenever there is need to know and to apply this knowledge, first the altitude of the Sun is reckoned by means of the astrolabe at the time we wish, and this is called the altitude of the moment (under consideration). Then the maximum altitude of the Sun for that day is calculated in the same way, and the arrow of the day is sought and found. Whenever we wish to make this calculation we do as follows: the Sine of that altitude is divided by the arrow of the day[1]. The result is divided by the Sine of the maximum altitude. The result is a Sine. This is always subtracted from the arrow of day. The result is an arrow. Its arc is taken. The result is called the *excess of the arc*[2]. Then the time of the altitude is examined. If it is before mid-day, this excess is subtracted from half the arc of daylight. If it is after mid-day, the excess is added to that and the arc from that hour when the Sun rises until the moment under consideration is found. The hours (of the arc of the Sun) are extracted from this.

6.1.1 On Knowing the Altitude of a Star at a Time Which One Wishes From the Arc

When there is need for this calculation, the excess of the arrow is obtained and is subtracted from the arrow of day. The result is a Sine. This Sine is multiplied by the Sine of the maximum altitude at the circle of mid-day. The result is multiplied

[1]Neugebauer p.15 under σαγίτα

[2]Neugebauer p.14 under περισσεία

by the arrow of day. The result is the Sine of the altitude for that time.

6.1.2 Knowing if Anything has Passed of the Night

The altitude of the fixed star is reckoned. The same method is employed as in the case of the Sun, and the calculation is the same without any changes. For here, the Sine of the altitude (of the star) is multiplied by the arrow of day, and the resulting calculation is the same as in the earlier case. And the arc from that hour when the star rises until the hour under consideration is found.

6.1.3 For the Knowledge of How Many Hours Have Passed of the Day in Seasonal Hours

This (number) is apprehended from the altitude for any moment and the altitude of the circle of mid-day. For the Sine of the altitude for any moment is divided by the maximum altitude. The result is lowered by one step. The result is a Sine. Its arc is reckoned and divided by 15. The result is a seasonal hour.

If that altitude is reckoned before mid-day, that discovered seasonal hour is (the time) from the beginning of the day until then. If this altitude is after mid-day, that hour is subtracted from 12. The result is the seasonal hour from the beginning of the day until then. If we wish to know the altitude from the seasonal hours, those hours are divided by 15. The Sine of the result is divided by the Sine of the maximum altitude. The result is lowered by one step. The result is the Sine of the altitude for any moment.

6.2 For Knowing the Hour from the Arc and from Other Things

If there is need to make this calculation, if the arc is in the day, it is added to the place of "fortune" of the true longitude of the Sun for the latitude of the city. If the arc is at night, that arc is added to the place of "fortune" of the point diametrically opposite to the true longitude of the Sun for the latitude of the city. Entrance is made into the middle of the table of the latitude of cities opposite the result (which is the place of "fortune"), and the zodiacal signs, degrees and minutes are reckoned from it using the same method of calculation that has been mentioned many times. The result is the zodiacal signs, degrees and minutes of the "fortune" for that moment when the altitude was reckoned.

If the hour of the day or night which is passing is known, and that hour is equinoctial, it is divided by 15. If it is seasonal, it is divided by the parts of a seasonal hour. The result is the arc from which is extracted the *Lot of Fortune*.

6.2.1 For Knowing the "Fortune" from the Degrees of the 10th House

The place of "fortune" with the straight line is reckoned from those degrees (of the 10th house), and the beginning of them is from the beginning of Capricorn. Entrance is made into the middle of the table of the place of "fortune" for the latitude of the cities, and the zodiacal signs and the degrees are reckoned in accordance with the method mentioned earlier. The result is the "fortune".

6.3 On Knowing the Arc of the Hours from the "Fortune"

The true longitude of the Sun and the degrees of the "fortune" are sought, reckoned, and examined. If the true longitude of the Sun is between the 7th and the 10th house, the place of "fortune" of the true longitude of the Sun[3] from the latitude of the city is subtracted from the place of the "fortune" for the latitude of the city. The result is the arc from the beginning of the current day.

If the true longitude of the Sun is between the 4th and the 7th house, the place of "fortune" of the point diametrically opposite to the Sun is subtracted from the place of "fortune" for the latitude of the city. The result is the arc from the beginning of the night until the hour of that moment. The equinoctial and the seasonal hour is extracted from this arc.

6.4 On Knowing the 12 Houses, that is, Correcting them

Whenever it is necessary to use this method, the degrees of the hours and the degrees of the "fortune" are found out and doubled. The result is the first correction. This is always subtracted from 60, and becomes the second correction. These two (quantities) are examined. Then the place of "fortune" for the latitude of that city is reckoned. This is called the *tenth*. This is the calculation set down for the tenth house.

Then the first correction is added to it. The result is the place of the "fortune" of the eleventh house. Again, the first correction is added to the place of the "fortune" of the eleventh house. The result is the place of "fortune" of the twelfth house. Then

[3]Neugebauer p.17 under τόπος

the first equation is added to the twelfth house and so the place of the "fortune" (of the first house) is found.

Then the second correction is added to this place of "fortune" and becomes the place of "fortune" of the second house. Again, the second correction is added to the place of "fortune" of the second house, and the place of "fortune" of the third house is found. Then the second equation is added to the place of "fortune" of the third house, and the fourth house for the place of "fortune" is found. Then the place of "fortune" of the 10th house is brought to the table of the place of "fortune" with the straight line from the beginning of Capricorn. Opposite the number that was found within the table the zodiacal signs are reckoned above and the degrees along the side with the number found between the two tables. The result is the center of the 10th house. The place of "fortune" of the 11th house is examined in the table of the place of "fortune" with the straight line in the same way. The same holds true for the remaining houses up to the 4th, just as we said in the case of the 10th house also. Their centers are found.

The degrees of the 5th house are opposite (those) of the 11th, and the degrees of the 6th house are opposite (those) of the 12th. The (degrees) of the 7th house are the same as the degrees of the 1st house, and those of the 8th house as those of the 2nd. The degrees of the 9^{th}house are opposite those of the 3rd house. In this way the corrections of the 12 houses are completed and the centers of all are found.

Check of this Calculation

If the numbers of the 10th and of the 4th house are equal in degrees and minutes, the calculation is correct. Again, if the place of "fortune" extracted earlier and set down in the case of the 10th house is equal to the place of "fortune" which was extracted then from the tables of the place of "fortune" with the straight line, the calculation is correct.

There is a (time) when the center of the 10th house is in its own house, but sometimes it tends towards the 11th, and sometimes towards the 9th house. When it tends towards the 11th, it is said to *nod* towards it. When it tends towards the 9th, it is said to *fall*. When it tends neither towards the one nor the other, it is said to *stand*.

6.5 On Knowing the Point of Ascent

When there is need for this method, the Sine of the ascent is multiplied by the Sine of the latitude of that city. The result is divided by the completed Sine of the latitude of the city. The result is the point of the degree of the ascent. Then an examination is made. If the declination of the Sun or the distance of the star is southerly, the Sine of the latitude of the rising is added to the point of the degree of the ascent. If its declination and the distance is northerly, the smaller of these two numbers is subtracted from the larger. The result is the equation of the point.

6.5.1 For Knowing the Point

The equation of the point is divided by the completed Sine of the ascent. The result is lowered by one step. The thing found is the Sine of the point. Whether this point is southerly or northerly is apprehended from this: If the Sun has no declination and the star no distance, the point of the ascent is southerly. If the Sun has a declination and the star has a distance and they are southerly, the point of the ascent is also southerly. If the declination and the distance are northerly, the degree of the point is examined. If it is greater than the Sine of the latitude of rising, that point of ascent is southerly. If it is less, it is northerly.

6.5.2 For Knowing that Ascent which has no Point

This ascent occurs in the case of those cities towards the north, where the declination of the Sun or the distance of the star is less than the distance of that city. When there is need for this calculation, it is computed as follows :

The Sine of the first declination or the Sine of the distance of the star is reckoned and divided by the Sine of the distance of the city. The result is lowered by one step. This result is the Sine of that ascent which has no point.

6.6 For the Extraction of the Line of Mid-Day for the Earth

An accurate correction of the surface of the earth is made when water is poured on it so that the surface is covered without the water proceeding in any other direction. Then a circle as large as one wishes in diameter is drawn on this corrected surface of the earth. A plumb line, of whose two ends the one towards the center is full and thick, while the one above comes to a point, is positioned at the center of the circle.

The length of this plumb line should be less than the diameter of this circle. When the Sun rises in the morning, the shadow of the plumb line is examined (to discover) whether it reaches to the circumference of the circle. When the shadow reaches the circle, a mark is placed there. Then, when the Sun is declining from mid-day, the plumb line is examined (to discover) whether its shadow reaches the circumference of the circle, and a mark is placed there also.

From these two points placed on the circle a line is drawn straight from one point to the other. Then this line is cut in two at a point, and a line is drawn from the middle of that line to the center of the circle. This is the line of mid-day. The line from the former mark on the circle to the other mark is the line of rising and setting.

Then the circle is cut into 4 from the diameter of the circle. It is written in each

part: in one East, in another West, in another North, and in the fourth South. Each quarter of the circle is divided into 90 degrees

6.7 For Knowing that the Abominable Prayer of the Unholy Persians is reckoned from How Much has Passed from the Line of Mid-day

If the longitude of the city in which the unholy live is opposite the longitude of Mecca — may God lay waste to and destroy that place because of the evil-heartedness of the unholy! — the point of their abominable prayer is with the straight line, that is, it is straight along the diameter of the circle (mentioned above). If (the longitude) is greater or less (than the longitude of Mecca), the calculation is made as follows: The longitude of Mecca and the longitude of the city which we wish are examined, and the smaller is subtracted from the larger. The Sine of the result is reckoned, and that Sine is multiplied by the completed Sine of the latitude of Mecca. The result is lowered by one step. This is the Sine of the complete longitude.

This is examined. Then the Sine of the latitude of Mecca is divided by it. The result is the Sine of the complete longitude. Its arc is reckoned and added to the completed latitude of the desired city. Then this result is called the base. Then that Sine is reckoned, and this is multiplied by the completed Sine of the complete longitude. The result is lowered by one step. The result is the Sine of the completed distance between the desired city and Mecca, hateful to God. Its arc is reckoned and subtracted from 90. The result is the distance between that city and Mecca.

Then the Sine of the complete distance is increased by one step, that is, up. This is divided by the Sine of the distance between the two — the city (in question) and Mecca. The result is the Sine of the place with the straight line of the polluted prayer. An examination is made again. If that base is less than 90, the point of that

prayer hateful to God is southerly with respect to the line extending from East to West. If it is greater than 90, the point of the prayer of the unholy is northerly. If the number is exactly 90, the place of the abominable prayer of the unholy is to the point on the straight line extending from East to West. And the point of that most polluted prayer of the unholy for that city is extracted by means of this calculation and is set down in this table.

City	Showing of the Direction		Noon Setting Portion of Prayer	City	Showing of the Direction		Noon Setting Portion of Prayer	City	Showing of the Direction		Noon Setting Portion of Prayer
	longitude	latitude			longitude	latitude			longitude	latitude	
Babylon[1]	76	40		Ṭabaristān	55	0		Balkh	9	20	
Mawṣil	82	20		Jīlān	57	0		Khutlān	27	30	
Hamadān	64	30		Jurjān	48	40		Ṭukharistān	26	0	
Rayy	51	55		Kirmān	43	30		Ghūr	29	0	
Dāmghān	50	30		Sijistān	18	20		Khwārizm	50	0	
Iṣfahān	48	0		Rhaoua[3]	19	20		Bukhārā	40	40	
Persia	45	0		Bouj[4]	21	30		Samarqand	39	0	
Aoulaz[2]	49	30		Nīshābūr	42	50		Ṣīrān	48	1	
Adharbayjān	70	0		Marw	38	20		Ṭarās	43	1	
Armenia	80	0		Harāh	29	0		Khutan	36	30	

1. For Baghdād. 2. For Ahwāz. 3. For Ghaznah. 4. For Bust.

This calculation of the table was set down in this way from the straight line beginning from the West, not from the line of mid-day.

BOOK 7

On the Extraction of the Mean Motions of the Seven Planets

ᶜAbd ar-Raḥman al-Khāzinī says the following: let us make a procedure for the mean motions of the planets in three ways. The first is this: with reference to the longitude of 90 (degrees) from the edge of the Western sea for the mean motion of this composition[1]. The second is this: for the longitude of each city with the correction for the two longitudes — (that) of the composition and (that) of that city. This is called the mean motion for the city. The calculations of the true longitudes are made from this mean motion. The third is that the mean motions are corrected with the equation of daylight for nativities and entrance (of the years).

This book is about the extraction of the mean motions of the planets and the apogees and corrections of each, the beginning of Sultanic years in days of the week with the years for their beginning and end, and (concerning) the knowledge of the basis of the true longitude for one year of the Sun. This book is divided onto four chapters.

[1]Neugebauer p.12 under μῆκος

7.1 On the Extraction of the Mean Motions of the Planets for a Latitude of 90 (Degrees)

When there is need for this method, the year of the Arabs is first corrected with the mean number for the weekday which we wish in the way described earlier (see 1.3.2). Then the incomplete years of the Arabs are placed in one part of the tablet. The month which we wish is placed under this, and the number of days of that month are placed under the month. Then a number equal to the (number of) previously apprehended years is sought in the table for thirty year periods of the Arabs. Entrance is made into the table wherever the years equal to these are found. If the years equal to these in number are not found in the tables, the closer number less than it is sought.

Entrance is made into the table opposite that (number) and a reckoning is made. The zodiacal signs, degrees, minutes and seconds, if there are any, (are reckoned) in the table of the desired planet opposite that, and are placed on the tablet in the following order: first zodiacal signs, then degrees, then minutes, and after these seconds.

Then whatever is found of later days and of these from the side is placed separately in one part of the tablet.

Then the years in the table from which entrance was made into this are subtracted from (those) reckoned earlier and placed on the tablet. The result is sought in the table of single years of the Arabs. Entrance is made into the table of that planet opposite (the place) where that number is found, and the zodiacal signs, degrees and minutes are reckoned and placed on the tablet under the previously reckoned mean motion for the thirty year periods, zodiacal signs under zodiacal signs, and so on. The weekdays found afterwards are reckoned in the same way and are added to the days found earlier from the thirty year periods.

Then entrance is made into the table of months opposite the month we have reckoned, and this value of the mean motion of that planet is reckoned in the way described and placed under the number for the single years — zodiacal signs under zodiacal signs and so on, just as in the other cases. Then the days after it are reckoned and added to the days reckoned from the years and the months. Then the reckoned days of the month are sought in the table of the days. Entrance into the table of the days of that planet occurs opposite (the place) where they are found. The result is placed under the number for the months — zodiacal signs under zodiacal signs and so on, just as in the other cases.

Then the days after it are reckoned and added to the days reckoned from the years and months. If the number is greater than seven, there occurs subtraction by sevens. Whatever is left, if they are equal to the previously reckoned days of the month, the calculation is correct. If they are not equal, the calculation occurs again starting with the years. If the calculation is correct, all the numbers of the mean motions are added together. If the number in the seconds place is greater than 60, 60 are subtracted from it, and one is added to the minutes. Again, if the number of minutes is greater than 60, 60 are subtracted from these minutes, and one is added to the degrees. If the number of degrees is greater than 30, 30 are subtracted from the accumulated degrees, and one is added to the zodiacal signs. If in turn the number of zodiacal signs is greater than the number 12, 12 are left aside, and one (rotation) is reckoned as remaining.

The result is the mean motion of that planet in zodiacal signs, degrees, and minutes with respect to the mean motion of the composition for mid-day of that day for a longitude of 90 (degrees). If there is with us a fraction of an hour, entrance is made into the table of the hours (which is) under the months opposite that hour. And the mean motion of that planet is reckoned and added to the mean motion reckoned earlier.

7.1.1 On the Correction of the Apogee

After the mean motion is reckoned, entrance is made opposite that year (into the table) in years, months and days, and the mean motion of the apogee is reckoned in zodiacal signs, degrees, minutes, and seconds. Then the apogee under the months of that planet found for the beginning of the year of the Arabs is added to that motion of the apogee. The result is the apogee with the correction.

7.2 On the Correction of the Mean Motions of the Planets

This is done in two ways. The first is this, that from the difference of the two longitudes, the number of the mean motion of the composition is carried over to the longitude of the other city. The second is this: the mean motion corrected with the longitude of the city is complete with the equation of daylight. The first number is reckoned from two things. It is the difference between the two, the (longitude of the) city which we wish and the longitude of 90 (degrees). The result is divided by 15 or multiplied by four minutes. The result is an hour or a fraction of an hour. Then entrance is made into the table of hours under the months opposite those hours, and the mean motion of that planet is reckoned and examined. Then it is multiplied by the longitude of that city. If this is less than 90 (degrees), the mean motion reckoned from the hours is added to the mean motion from the composition. If it is greater than 90 (degrees), it is subtracted from that, and the mean motion for that city is found. The difference (in longitude) is for the correction of the mean motion for that city with the equation of daylight.

Entrance is made into the tables of the equation of daylight opposite the mean motion of the Sun, and the fraction of an hour is reckoned. Then entrance is made into the tables of hours under the months opposite this fraction (of an hour), and

the mean motion of that planet is reckoned. The result is always subtracted from the mean motion for that city, and the complete correction of the mean motion for that city is found.

7.2.1

If this method of true longitudes occurs through nativities, the longitude of the city is examined. If it is less than 90 (degrees), that hour resulting from the two longitudes is added to that year in which the birth took place. If the longitude of the city is greater than 90 (degrees), that hour is subtracted from that year. Then the fraction (of an hour) of the equation of daylight is subtracted from the year, and the year is corrected with a complete correction. Then entrance is made into the table of the mean motions of the planet opposite that year, and the numbers of these from the composition are reckoned. These mean motions are correct for that moment.

7.3 On the Entrance of the Well Known Sultanic *Kabīsa* Years

Know that one year of the Sun is 365;14,27,20,36,47 (days). Such is the year of the Romans, and such are the fractions for it[2]. The excess of the year of the Sun is 0;0,32,39,23,13. These fractions make one complete day in 110 years. The year of the Persians is less than the year of the Sun by 0;14,27,20,36,47 (days). The year of the Moon is such: 354;22,1,36,51 (days). The year of the Sun is greater than the year of the Moon by so much: 10;52,25,43,45,55 (days). The cycle of the week exceeds the year of the Sun by one day (in addition) to as many fractions as a year of the Persians is less than a year of the Sun. A table has been set down for this for the Sultanic year in which the years are set down in 20 (year intervals) of the Sun.

[2]See Neugebauer, appendix 15

7.3.1 For Knowing this, on what Day the Perceptible Years, Namely the the Well Known Sultanic Years, Begin in Those Three Calendars and in the Days of a Week

Entrance is made into the table of thirty year periods and single years opposite the completed Sultanic years. The result is reckoned opposite the two tables for the years of the three calendars. In the same way the days of the years along with their first and second (sexagesimal) parts (are found) on the side. Then the days of the week which are at the end of the tables and their first and second (sexagesimal) parts are examined, as well as their arrangement. If the number of seconds is greater than 60, 60 are subtracted from them, and one is added to the minutes. If these, in turn, are greater than 60, 60 are subtracted from them, and one is added to the days. If these days are greater than the days of a year, the days of a year are cast out, and one is added to the years. Then it is multiplied by the reckoned minutes of the days of a week. If this result is less than 15, the year's beginning is from the reckoned days of the week. If these are more than 15, the year's beginning is on another day. One day is added to the days found, and one day is added for each calendar of the three.

7.3.2 On Knowing that the Coming Year is *Basīṭa* or *Kabīsa*

An examination is made into the reckoned minutes of the days of the week. If they are less than so many: 0;45,35, the coming year is *basīṭa* and the days of that year are so many: 365. If those minutes are greater than 0;45,35 the coming year is *kabīsa*. Its days are so many: 366. This calculation is for a longitude of 90 (degrees), not for the longitude of other cities.

7.4 On the Base of the True Longitude of the Sun for One Year of the Sun

A table has been made for the motion of the planets for one year of the Sun and for the months of that year. These months are set up in such a way that at the beginning of each month the Sun is at the beginning of a zodiacal sign. Then on whatever day, month and year of the calendar of the Arabs the beginning of the year of the Sun occurs , entrance is made (into the table) at that year, month and day, and the mean motions of the planets are reckoned and their apogees extracted. The proper motions and those mean motions are corrected with the difference of the two longitudes in the way described (7.1). And the apogee of each planet is subtracted from its mean motion. The result is called the center[3]. All these things extracted have one name–the base of the beginning of the year. All these things are set down for the beginning of the month Farwardīn according to the Sultanic calendar – each in its own place just as it was arranged – and in the table which was (made) for this purpose.

Mention must be made of how many tables are necessary. Five tables were set down for the epochs and the days of the week, two tables for the center and the true longitude of the Sun, five tables for the Moon and its mean motion and its proper motion and the center and the true longitude of the descending node.

Each of the 5 planets has three tables: one for the center, one for the proper motion, and one for the true longitude. Other tables have been set down: one for the declination of the Sun, one for the latitude of the Moon, and five for the latitudes of the planets. Two others were set down for the hours of rising.

When all the completed tables have been set down, this base — the mean and proper motion and the rest— is written down for the beginning of the month Far-

[3]Neugebauer p.10 under κέντρον

wardīn. Then entrance is made into the table of the motion of the seven planets and of the descending node for the months of the Sultanic year of the Sun. The motion of the planets is reckoned opposite each month. Whatever is found of the motion of the planets is always added to that base of the planets — the motion of the Sun to the base of the Sun's true longitude and so on.

The beginning of each month from Farwardīn until the end (of the year) is placed at the beginning of each leaf. The number for the motions of the planets resulting opposite each month is always added to the base of that planet. That which is found is placed at the beginning of the true longitude. Then entrance is (made) into the tables of days. The number for one day is reckoned from two, the number for five days is reckoned from six, the number for ten days is reckoned from eleven, and the number for 15 days is reckoned from 16. Each one is added to the base of each month, and the number for that day of that month is written down.

When one is comfortable with the calculation of the mean motion from the months and the days, then each true position of that planet in longitude and latitude is extracted. The (number) of the mean motion is written in the table of true longitude. When this has occurred, the number for the true longitude is divided for each day with the help of God.

BOOK 8

On the True Position of the Planets in Longitude and Latitude and on Some Other Things of those Planets whose True Position is Extracted in Longitude: the Sun and the Moon and their Velocities More or Less, for the Knowledge of their Diameter and the True Longitude of the Descending Node and the True Longitude of the Five Planets, and for the Knowledge of the Direct and Retrograde Motion of the Planets; and of those Planets whose True Position is Extracted in Latitude — the Moon and the 5 Planets — whose Latitude is Extracted to the North or to the South

All these things, having been examined, were written in the tables of the corrections of the planets. Two columns have been set up opposite these at the beginning of the

tables. The name *measure* was given to these two (columns). The calculation of the complete circle (or sphere) was set down there.

The first column is for the calculation of the zodiacal signs from zero through the fifth zodiacal sign, and there is the calculation of the degrees from 0 to 180. The number(s) in the second column (go) in reverse, being made from the bottom to the top. The beginning of this is from the six zodiacal sign through Aries, through which the reckoning of the entire sphere is completed. With the calculation of the degrees, the beginning is from 181 up to 360 degrees for this calculation of the sphere.

There is another calculation if the calculation is in zodiacal signs, from the beginning of nine zodiacal signs with their arrangement through zero (namely Aries) and the beginning of three (zodiacal signs). This is called the upper half of the sphere, with the calculations of the degrees from 270 to 360 and up to 90. This is called the lower half of the sphere, from three zodiacal signs through six zodiacal signs and the beginning of nine. With the calculations of degrees, (this is) from 90 degrees to 180 and up to 270 degrees.

This book is divided into 4 chapters.

8.1 On the Knowledge of the True Longitude of the Sun, the Moon, the Five Planets and of the Descending Node

This chapter is divided into 4 (sections).

8.1.1 On the True Longitude of the Sun

When we wish to calculate the true longitude of the Sun, we do as follows: The mean motion of the Sun is set down in two places on the tablet, and the apogee of the Sun is subtracted from one place of the mean motion. The result is the argument

of the Sun. Entrance is made into the table of corrections of the Sun opposite that argument, and this argument is sought in the two tables of the first and second column. The correction is reckoned opposite this (place) where it is found in the third column, and the difference (2.1) is reckoned from the fourth column. These two (values) are placed on the tablet. If the argument has minutes with the calculation of the two tables, the computation of the correction is rectified, and the correction becomes complete.

Then an examination is made. If the argument is in the first column, the correction is subtracted from the mean motion. If it is in the second column, the correction is added to the mean motion, and the true longitude of the Sun is found. If the correction is subtracted from the argument or added to it, then the complete apogee is added to the argument found later more or less by addition or subtraction, and again that is the true longitude of the Sun.

8.1.2 On the True Longitude of the Moon

The mean motion, the proper motion, and the argument of the Moon are placed on the tablet, as well as the mean motion of the ascending node – everything in its own place. Then entrance is made into the tables of corrections of the Moon opposite the argument, and the argument is sought there in the first and second column. Entrance is made into the third column where it is found opposite this, and the first correction of the Moon[1] is reckoned with the number between the two tables.

Then an examination is made. If the argument is found in the first column, the first correction is added to the proper motion. If it is found in the second column, it is subtracted from that, and the final proper motion is found.

This is examined. Then entrance is made into the table of the fourth column opposite the argument, and the proportional parts are reckoned and are placed in

[1]Neugebauer p.14 under ὄρθωσις πρώτη

one section of the tablet[2]. Then entrance is made into the table of corrections of the Moon opposite the final proper motion, and the proper motion is sought in the first and second columns of the argument. Entrance is made into the table of the fifth column opposite the place where this is found, and the second correction of the Moon is reckoned with this number found between the two tables, and is placed in one section of the tablet. This is not the final correction.

Then entrance is made into the table of corrections of the Moon in the first and second column opposite the final proper motion. Entrance is made into the table of the sixth column opposite that (place) where this is found. The nearer[3] distance is reckoned — degrees and minutes. It is divided by the proportional parts. The result is always added to the second correction, and the second correction becomes final.

Then an examination is made. If the final proper motion is found in the first column, this second final correction is subtracted from the mean motion. If it is found in the second column, it is added to the mean motion, and the true longitude of the second sphere of the Moon is found.

If we wish to calculate the true longitude of the first sphere of the Moon, the mean motion of the descending node is added to the true longitude of the Moon. The result is the portion of latitude[4] of the Moon. If the true longitude of the descending node is subtracted from the true longitude of the Moon, the result again is the portion of latitude of the Moon. Then entrance is made into the table of the corrections of the Moon opposite this, and it is sought in the second column. Entrance is made into the table of the seventh column of the Moon opposite that (place) where it is found, and the minutes of the third correction of the Moon are sought and reckoned. Then the

[2]See Neugebauer pp. 19-20 for the procedure.

[3]Neugebauer p.12 under μῆκος ἐγγύτερον

[4]Neugebauer p. 15 under πλάτος. The argument of latitude is "the distance from the ascending node to the Moon".

portion of latitude of the Moon is examined. If it is less than three zodiacal signs, more than six zodiacal signs, and less than nine zodiacal signs, the third correction is subtracted from the true longitude of the second sphere of the Moon. If it is it greater than three zodiacal signs, less than six, or more than nine zodiacal signs, this third correction is added to the true longitude of the Moon, and becomes the true longitude of the first sphere of the Moon. This first sphere of the Moon is "correct" together with the sphere of the twelve zodiacal signs.

8.1.3 On the True Longitude of the Descending Node and the Ascending Node

After the extraction of the mean motion of the descending node in the way described, it is subtracted from twelve zodiacal signs. The result is the true longitude of the descending node. Six zodiacal signs are added to this, and it becomes the true longitude of the ascending node.

8.1.4 On the Knowledge of the True Longitude of the Five Planets

The mean motion, the proper motion and the apogee of the planet are placed on the tablet, each in its own (place). The apogee is always subtracted from the mean motion, and the argument is found.

Then the argument is sought in the first or the second column of the measure[5] in the tables of planetary equations. Entrance is made into the table of the third column opposite the place where it is found. And the first equation is reckoned in degrees and seconds with the calculation of what is found between the 2 tables.

Then the argument is examined. If it is in the first column, the first equation is

[5] See p.92

added to the proper motion and subtracted from the argument. If the argument is in the second column, the first equation is added to the argument and subtracted from the proper motion. And the two (equations) become final. Then entrance is made into the table of the fourth column opposite the the final argument, and the proportional parts are reckoned. If they are written in red, there is an excess, if in black, a deficiency. These (proportional parts) are placed in one part of the tablet. Then entrance is made into the first and second column in the tables of equations opposite the final proper (motion). Entrance is made into the table of the sixth column opposite the (place) where this is found. And the second equation is reckoned — in degrees and minutes — and the computation between the 2 tables. This is not the final equation.

Once again entrance is made (into the table) opposite the final proper motion. If the proportional parts are in excess, (the entrance) is opposite the table of the sixth column, and the nearer distance[6] is reckoned. But if the proportional parts are a deficiency, entrance is made into the table of the fifth column, and the further distance[7] is reckoned. The result is always multiplied by the proportional parts. That result, if the proportional parts are in red, is added to the second equation. If they are in black, they are subtracted from it, and the second equation becomes final.

Then an examination is made. If the final proper (motion) is in the first column, the final second equation is added to the final argument. If it is found in the second column, it is subtracted from it. Then the apogee is always added to this result, and the true longitude of the planet is found. This same method is used for the remaining planets.

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[6]Neugebauer p.12 under μῆκος ἐγγύτερον

[7]Neugebauer p.12 under μῆκος ἐπιμηκέστερον

8.2 On the Direct and Retrograde Motion of the Planets

When it is necessary to know this, entrance is made into the tables of equation for the planet in the first or second column opposite the final argument of that planet. Entrance is made into the table of the eight column opposite the place where this is found, and the first station is reckoned and kept aside. Then this (result) is subtracted from twelve zodiacal signs and becomes the second station. Then the final proper motion is examined. If it is equal to the first station, the planet is standing still, that is, is stationary. It is then about to retrograde. If the final proper motion is greater than the first station and less than the second station, the planet is retrograde. If this final proper motion is opposite (i.e., equal to) the second station, the planet is stationary and is about to move directly. If it is greater than the second station and less than the first, the planet moves directly.

8.2.1 On Knowing When a Planet Moves Directly and When it Retrogrades

If the planet moves directly and we wish to know when it turns, the final proper motion is subtracted from the first station. The result is divided by the proper motion of the planet in a nychthemeron. The result is the time when the planet begins to retrograde. If we wish to know for how many days the planet moves directly, the second station is subtracted from the final proper motion. The result is divided by the proper motion of the planet which it moves in one nychthemeron. The result is the time, for as many days as the planet moves directly.

8.2.2

If the planet is retrograde and it is sought when it will move directly, the final proper motion is subtracted from the second station. The result is divided by the proper motion which the planet moves in a nychthemeron. The result is the time when the planet will move directly after this (station) is completed. If you wish to know for how many days the planet is retrograde, the first station is subtracted from the final proper motion. The result is divided by what has been frequently mentioned[8]. The result is the time when the planet is retrograde. That proper motion of the planet moving in a nychthemeron (is as follows:) Saturn 0;57, Jupiter 0;54, Mars 0;28, Venus 0;37, Mercury 3;6.

8.3 On the Northern and Southern Latitude of the Planets

This is divided into three (sections).

8.3.1 On the Latitude of the Moon

The true longitude of the ascending node is subtracted from the true longitude of the Moon, and the portion of the latitude is the remainder, or the mean motion of the ascending node is added to the true longitude of the Moon, and the portion of the latitude becomes clear. Then entrance is made into the tables of the correction of the Moon in the first and second column opposite the portion of latitude. Entrance is made into the table of the ninth column opposite (the place) where the portion of latitude is found, and the latitude of the Moon is reckoned with the computation found between the two tables. Then the portion of the latitude is examined. If it

[8] i.e., the proper motion of the planet in a nychthemeron.

is in the first column, the latitude is northern. If it is in the second(column), the latitude is southern. If it is from zero to three zodiacal signs, there is northerly ascent. If it is from three to six zodiacal signs, northerly descent. If it is from six to nine zodiacal signs, southerly descent. If it is from nine zodiacal signs to zero, southerly ascent.

8.3.2 On the Latitude of the Planets above the Sun – Saturn, Jupiter and Mars

The final argument is sought in the tables of the equations of the planets in the first and second column for Saturn and Jupiter. If the argument is found in the first column, entrance is made opposite the ninth column, and the proportional parts are reckoned. If the argument is found in the second column, entrance is made opposite the table of the tenth column, and the proportional parts are reckoned. Then an examination is made. If the proportional parts are in red, the latitude is northern. If they are in black, the latitude is southern. This (result) is placed seperately in one part of the tablet. Then the final proper motion is sought in the the tables of the equations in the first and second column. Entrance is made opposite that (place) where it is found, and the latitude is reckoned, southern or northern.

In the case of Mars, entrance is made into the table of the ninth column opposite the final argument and the proportional parts are reckoned. If they are in red, the latitude is northern. If they are in black, the latitude is southern. Then entrance is made opposite the final proper (argument). If the proportional parts are in red in the table of the tenth column, the northern latitude is reckoned . If they are in black in the table of the eleventh column, thence the southern latitude is reckoned. Then the proportional parts are multiplied by the latitude, and the final latitude, whether southern or northern, is discovered.

If it must become clear whether it is an ascent or descent, an examination is

made. If the final proper argument is less than six zodiacal signs and the latitude is northern, it is a northern ascent. If the latitude is southern, it is a southern descent. If the final proper argument is greater than six zodiacal signs and the latitude is northern, it is a northern descent. If the latitude is southern, it is a southern ascent.

8.3.3 On the Latitude of Venus

This (planet) has three latitudes.

First Latitude

Entrance is made into the tables of Venus in the way mentioned earlier. Entrance is made into the table of the thirteenth column opposite the final argument, and the fractional parts of the latitude are reckoned. This latitude is always northern.(The fractional parts), (placed) in one part of the tablet, are examined.

Second Latitude

Entrance is made into the tables of the ninth column opposite the final proper (motion), and the proportional parts are reckoned and, (placed) in one part of the tablet, are examined. The sign[9] of this is reckoned as follows:

If the argument is in the first column, the sign is *one*. If the argument is in the second column, the sign is *two*. That sign is reckoned. Then entrance is made into the table of the tenth column opposite the final proper (motion), and the latitude is reckoned.

Then this is reckoned thus:

If the proper (argument) is in the upper hemisphere, its sign is *one*. If it is in the lower hemisphere, its sign is *two*. This sign is reckoned. Then the latitude is multiplied by the proportional parts reckoned in this (way), and the final latitude is

[9]See Neugebauer under σημεῖον, p.15 and his appendix 8.

found, kept aside, and examined. Then if the two signs are *two* and *two*, or the two (signs) are *one* and *one*, the latitude is northern. If one (sign) is *two* and the other (sign is) *one*, the latitude is southern.

Third Latitude

As for the third (latitude), entrance is made into the table of the eleventh column opposite the final argument, and the proportional parts are reckoned. If it is in the upper hemisphere, its sign is *one*. If it is in the lower hemisphere, (its sign) is *two*. These are examined. Then entrance is made into the table of the twelfth column opposite the final proper (motion), and the latitude is reckoned. Its sign is this: if the proper (motion) is in the first column, (the sign) is *one*. If it is in the second column, (the sign) is *two*. Then its latitude is multiplied by its proportional parts. The final latitude is found. Then an examination is made. If the two signs are equal, the latitude is northern. If the two signs are not equal, the latitude is southern.

Then the three latitudes are placed each in its own place on the tablet. If the three are northern, then the three are added together, and the latitude of Venus is then found. If one latitude is southern, and another northern, the northern and the southern are reckoned separately. Then an examination is made. The smaller is subtracted from the larger. The result is the latitude of Venus in the direction where the latitude was greater. If the two are equal, (one) northern (and the other) southern, Venus has no latitude.

8.3.4 On the Latitude of Mercury

This (planet) has three latitudes.

First latitude

Entrance is made into the table of the equations of Mercury opposite the final argument. Entrance is made into the table of the thirteenth column opposite that (place) where in either the first or the second column it is found, and the proportional parts of the latitude are reckoned and kept aside. These are always in a southern direction.

Second latitude

Entrance is made into the table of the ninth column opposite the final argument, and the proportional parts are reckoned and examined. This is its sign: if the argument is in the first column, (its sign is) *two*. If it is in the second column, (its sign is) *one*. These are examined. Then entrance is made into the table of the tenth column opposite the final (proper) motion, and the latitude is reckoned. Its sign is this: if the proper (motion) is in the upper hemisphere, (its sign is) *one*. If it is in the lower hemisphere, (its sign is) *two*. Then the latitude is multiplied by its proportional parts, and the final latitude is found.

Then an examination is made. If the two signs are equal, the latitude is northern. If they are not equal, the latitude is southern.

Third Latitude

Entrance is again made opposite the final argument into the table of the eleventh column, and the proportional parts are reckoned. Its sign is this: if (it) is in the upper hemisphere, (its sign is) *one*. If the argument is in the lower hemisphere, (its sign is) *two*. These are reckoned. Then according to two, entrance is made into the table of the twelfth column opposite the final proper (argument), and the third latitude of Mercury is reckoned. This latitude is called "not final".

When it is necessary to know its correction, that latitude is set down in two places, and the one is examined. The other is multiplied by six minutes. The result

is the correction of the latitude. Then an examination is made. If the final argument of Mercury is in the upper hemisphere, this correction is subtracted from the third latitude which was examined. If (it) is in the lower hemisphere, (it) is added to this, and the latitude becomes final for this equation.

This latitude is examined. Then an examination is made. If the proper (motion) is in the first column, its sign is *two*. If it is in the second column, (its sign) is *one*. Then this latitude is multiplied by its proportional parts, and the final latitude is found.

Then an examination is made. If the two signs are equal, the latitude is northern. If they are not equal, the latitude is southern. Again the three latitudes are placed separately on the tablet and examined. If the three (latitudes) are southern, the three are added together, and the final latitude of Mercury is found in the southern direction. If one is in the northern direction and one is to the south, the smaller is subtracted from the larger, and the latitude of Mercury is found in the greater direction. If the northern and the southern (latitudes) are equal, Mercury is completely without latitude.

When it is necessary to know the ascent and descent of Venus and of Mercury in latitude, their latitude is extracted for one time. Then after the passing of a sufficient (number of) days from that day, once again their latitude is extracted. If the (initial) latitude is northern and the extracted latitude is greater, there is an ascent of the latitude. If it is less, there is a descent. If the latitude is southern and what is extracted for the second is greater, there is descent. If it is less, there is an ascent. If the latitude extracted first is northern and that extracted afterwards is southern, the star is of a northern descent. If that extracted first is southern and the second is northern, there is a southern ascent.

8.4 On the Knowledge of the Velocity of the Sun and the Moon, the Diameters of them with Calculation and through Tables

The motion of the planets in true longitude from the mid-day of a day until the next mid-day of a day is called the velocity. If it is necessary to know the velocity of the planet for one hour, this velocity of the planet is divided by 24.

8.4.1 [Solar Diameter]

When it is necessary to know the diameter of the Sun for an eclipse, its velocity is divided by 58. The result is divided by 105, that is, by 1 degree and 45 minutes. The result is the diameter of the Sun. Alternatively, the velocity of the Sun for one hour is divided by 53 minutes. The result is divided by four, and becomes the diameter of the Sun.

8.4.2 For the Moon

When it is necessary to know the diameter of the Moon for an eclipse, its velocity is multiplied by five. The result is divided by 121 or 2 degrees and one minute, and it becomes the diameter of the Moon.

If we wish to come to a knowledege of the diameter of the shadow from its diameter, the diameter of the Moon is multiplied by thirteen. The result is divided by five, and the diameter of the shadow is found. This is useful for an eclipse of the Moon.

8.4.3 For Knowing the Velocity of the Sun and the Moon and their Diameter from the Table in the Case of the Sun

Entrance is made into the table of the velocity of the Sun and the Moon and the diameter and the shadow opposite its (the Sun's) argument, and that argument is sought there in the table of the measures[10]. The velocity of the Sun for one nychthemeron and one hour is reckoned opposite that (place) where it is found, and its diameter with the correction of the shadow, and each is set down separately. There is no need for further work. In the case of the Moon, entrance is made into such a table opposite the proper motion of the Moon. The velocity of the Moon for one nychthemeron and for one hour is reckoned opposite that (place) where it is found in the table of measures, and its diameter with the shadow, and all are set aside. Then the correction of that shadow is subtracted from the diameter of the shadow. The result is the final diameter of the shadow.

[10]See page p.92

BOOK 9

On Knowing the More and Less of Vision

It is sought for this with so many calculations through this art with number and through tables. This (book) is divided into three chapters.

9.1 On these so Many Calculations

This (chapter) is divided into five sections.

9.1.1 On Knowing the Altitude of the Location of the Poles of the Sphere of the Zodiacal Signs, namely, the Poles of the Axis around which the Sphere Rotates

The calculation of this is as follows: the Sine of the altitude of the tenth house of the "fortune" of the house is divided by the Sine of the arc of that which is between the tenth house and the "fortune" of the house. The result is lowered by one step, and the completed Sine of the altitude of the location of the poles of the axis is found. Its arc of that is taken, and this is subtracted from 90. The result is the altitude of

the location of the poles.

9.1.2 On the Altitude of Whatever Degree We Wish and the Altitude of the Moon when it has no Latitude

The calculation is as follows: the Sine of the distance of that which is between the "fortune" of the house and the degree we wish is multiplied by the Sine of the arc of that which is between the "fortune" and the tenth house. The result is the Sine of the altitude of the degree we wish.

9.1.3 On Knowing the Three Angles from the More and Less of Vision

It is thus concerning the first angle: if the Moon is in the first degree of the "fortune" and the "fortune" of the house is 6;0,0, the altitude is zero of Cancer on the circle of mid-day. The completed angle of the distance[1] is for 90, and this is the angle of the latitude. If the "fortune" of the house is 0 0;0 — zero degree of Aries, the altitude is at zero of Capricorn on the circle of mid-day. The completed angle of the distance is for 90, and this is the angle of the latitude. If the "fortune" of the hosue is not at zero of Aries or Libra, the altitude of the location of the poles is the completed angle of the latitude, and this is the angle of the distance.

It is this concerning the second angle: that the Moon is in the degree of the tenth house at the beginning of Aries or Libra at the declination of the whole distance, when the completed angle of latitude ... the angle. If the Moon is at the beginning of Cancer or Capricorn, there is no angle of the distance there. If the Moon is not in (any of) these four places, the beginning of Aries or Libra is examined, how near

[1]Neugebauer p. 7 under γωνία has for *angle of distance* — γωνία τοῦ μήκους — "*angle* between the circle of altitude and the circle of latitude".

it is to the tenth house. And the distance between either Aries or Libra and the tenth house is reckoned with the straight degrees of the zodiacal sign(s), and again the distance[2] of the "fortune" with the straight line is reckoned. Then the Sine of the two distances is reckoned. Then the Sine of the place of "fortune" is divided by the Sine of the distances. The result is lowered by one step. The result is a Sine. Its arc is taken. The result is the angle of the latitude, and its complement is the angle of the distance.

Concerning the third angle: If the Moon is not at the "fortune" or at the tenth house, or between the "fortune" and the tenth house, or between the tenth house and the seventh house, the Sine of the altitude of the location of the poles is reckoned. That is divided by the Sine of the completed altitude of the Moon. The result is lowered by one step. The result is a Sine. Its arc is reckoned. The result is the angle of the latitude. And this as the completed angle of latitude.

9.1.4 For Knowing the More and Less of Vision for the Circle of Altitude, which is Necessary for the Eclipse of the Sun, with the Table

A table is set down for the more and less of vision for the Sun and the Moon. Entrance is made into that table opposite the completed altitude[3] of the Sun and the Moon, and the more and less of vision is reckoned— in the case of the Sun from the second column, and in the case of the Moon from the third and fourth column. Everything is placed on the tablet. Then entrance is made into the table of the velocity of the Sun and Moon opposite the proper (motion) of the Moon or opposite the velocity of the Moon. The minutes of the true longitude are reckoned opposite

[2]This use of μῆκος for τόπος is noted by Neugebauer on p. 17 under τόπος.

[3]Neugebauer p.16 under τετελειωμένη ἀνάβασις

this. These are multiplied by the number coming from the fourth column. This result is added to the number coming from the third column. The result is the more or less of vision of the Moon for the circle of altitude.

Then the more or less of the Sun is subtracted from the more or less of vision of the Moon, and the reminder is the completed more or less of vision of the Moon, which is necessary for an eclipse of the Sun.

9.1.5 On the More and Less of Vision of the Moon with Calculation in Longitude and Latitude

The Sine of each (i.e., the angle of the longitude and of the latitude) is multiplied separately by the Sine of the more and less of vision of the Moon (on) the circle of altitude. What is found is lowered by one step and the result is the Sine of the more and less of vision. Its arc is reckoned, and the *ikhtilāf manẓar*, i.e., the more and less of vision, is found. If the Sine is of the angle of the longitude, this is for the longitude. If it is that of the latitude, this is for the latitude.

9.2 On the More and Less of Vision for the Longitude and the Latitude by Means of a Table, which is Easier

Know that Theon of Alexandria set down a table for the seven *klimata* in increments of half an hour with this calculation when the Moon is at the beginning of each zodiacal sign. This calculation set out by him was thus: that the more and less of vision of the Sun is subtracted from the more and less of vision. This calculation is for an eclipse of the Sun only.

If there is need of another calculation of the Moon, not through an eclipse, each

of those things — the more and less of vision of the longitude and the latitude — is multiplied by eighteen, and the result is divided by seventeen. The location of the Moon, namely the true longitude, is corrected by that which comes out from the longitude or the latitude. This more and less of vision of the Moon is reckoned opposite the hour of the distance from mid-day[4]. Once entrance is made in the tables of more and less of vision, that hour[5] of distance ought to be taken first. The hour of that day when the Sun is about to be eclipsed is reckoned and placed on the tablet. Then the hour of conjunction is also placed on the tablet. The larger of the two is examined, and the smaller is subtracted from the larger. The result is the hour of distance. This is examined. If the hour of mid-day is larger, the hour of distance is before mid-day. If the hour of mid-day is smaller, the hour of distance is after mid-day.

9.2.1 On the More and Less of Vision of the Moon in Longitude and Latitude with the Calculation of the Latitude of the City

When there is need for (this) calculation, the table is sought from among the tables of the more and less of vision so that the latitude of the table is equal to the latitude of the city. Whatever table is found, the zodiacal sign in which the Moon is is sought in that table. The hours of distance are sought by depth opposite the table of that zodiacal sign. If the hour is before mid-day, the hours of distance are sought in the part of the table above mid-day. If (they are) after mid-day, in the part below. If the hour is mid-day, entrance is made from this. The more and less of vision in longitude and latitude is reckoned opposite that (place) where the hour of distance is found.

[4]Neugebauer p.12 under ὥρα τοῦ μήκους

[5]Neugebauer p.18 under ὥρα

If the hour has minutes, this becomes final with calculation between the two tables.

9.2.2 Very Useful (Things) for the More and Less of Visibility

If one forgets, it is as follows: these marks ○ ○ ○ are placed between the hour with which entrance was made into the table and the (hour) following it. Wherever these marks are found between the two numbers, the difference (of the two numbers) is not reckoned, but the two numbers are reckoned, added and placed on the tablet in two places. The (value in) one place is kept aside, and the other is multiplied by the minutes of the distance of that first hour (up till) mid-day or after mid-day. The result is examined. If it is equal to the part set aside, it is clear that there is no more and less of visibility. If it is not equal, the difference between the two is extracted, namely, the smaller is subtracted from the larger. The result is the more and less of visibility in longitude.

9.2.3 On the Correction for the Degrees of the Zodiacal Signs

If the Moon is at the beginning of a zodiacal sign, if anything is found opposite the zodiacal sign in the table of more and less of visibility, that more and less of visibility is not final. So when there is need for this (parallax of the zodiacal sign) to be corrected with the (parallax of the) zodiacal sign after it, the more and less of visibility is reckoned opposite that (second zodiacal sign). Then the difference between the two more and lesses of visibility of the middles of the two zodiacal signs is reckoned. That difference is multiplied by the degrees of the Moon and the result is divided by 30. The result is the correction. Then, from these two more and lesses of visibility between the two zodiacal signs, if the more and less of visibility from the first zodiacal sign is greater than the second more and less, this correction is

subtracted from it. If it is less, the correction is added to it.

9.2.4 On the Correction for the Two Latitudes

If the latitude in the table of more and less of visibility is equal to the latitude of the city we wish, the number is reckoned from this table. If the latitude in the table is not equal to the latitude of the city, the (greatest) latitude less than that of the city and nearer to it is sought in the table. Then one seeks another latitude in the table greater than the first latitude. The difference between the two latitudes — the larger and the smaller — is reckoned. Then the difference between the latitude of the city and the smaller latitude in the table is reckoned and multiplied by that difference. The result is divided by the difference of the two latitudes in the tables. The result is the correction. Then of the two latitudes reckoned in the table — the latitudes from which that difference was reckoned — if the value of the first latitude is greater than the second, the correction is subtracted from the first latitude. If the (value of the) first is less than the second, the correction is added to it, and so the more and less of visibility is found. This value is (the time) when the Moon is at the apogee of its small epicycle.

9.2.5 On the Correction for the More and Less of Visibility with the Location of the Moon

Entrance is made into the table of the velocity, diameter, and shadow of the Sun and the Moon. Entrance is made into the tables of the proper (motion) or the altitude of the Moon opposite the proper (motion) or altitude of the Moon, and the minutes found in the table of the more and less for the proper (motion) of the Moon are reckoned opposite this. The more and less of visibility in longitude and latitude are multiplied by this result. The result is the complete more and less of visibility. This is set aside for an eclipse of the Sun.

9.3 On the Reliable Method for the Location of the Moon in Longitude and Latitude

If there is need for this calculation, an examination is made. If the distance of the Moon from the "fortune" is less than 90 degrees, the more and less of visibility in longitude is added to the true longitude of the Moon. If (the lunar distance from the ascendant) is greater (than 90 degrees), (the longitudinal parallax) is subtracted from the true longitude. The result is the place of the sighting of the Moon.

9.3.1 Concerning the Solid Calculation of the Place of the Moon in Longitude

Before making this calculation, it is necessary to know whether the more and less of visibility is northerly or southerly. This is apprehended from the rising of the tenth house from the "fortune" for the (given) moment[6] as follows: if the rising of the tenth house over our heads is southerly, the more and less of visibility for the latitude is southerly. If (the rising) is northerly, (the parallax) is northerly.

Alternatively, the same thing (is arrived at) through a different method. The latitude of the city we wish is examined. If (the latitude) is greater than the declination, the more and less of visibility for the latitude is always southerly. If the latitude of the city is such that the whole declination when added to the latitude of the Moon is equal to the latitude of the city, the more and less of visibility in latitude is sometimes northerly and sometimes southerly. For whatever city this is true, the more and less of visibility in latitude (for that city) and the latitude of the Moon are examined. If it is the case that they are both northerly or southerly, the two are added. If one is northerly and the other southerly, the smaller is subtracted from the larger. The result is called the latitude of the vision of the Moon, or the

[6]Neugebauer p.17 under τύχη τοῦ καιροῦ

solid latitude[7]. It is necessary for one wishing to compute the true longitude to make tables for the more and less of visibility of the Moon for the latitude of the city for which the true longitude was computed.

This is how we did this: the latitude of our city is 38 (degrees). We computed this from the two tables from which the latitude of one was 36, and the latitude of the other was 41.

[7]Neugebauer p.28 appendix 9.

BOOK 10

On Conjunctions and Oppositions of the Sun and Moon

These are computed via three calculations.

10.1 First Calculation: On the Conjunction of the Sun and the Moon and Their Diameter(s) and the Distance of Their Motion

10.1.1 (Determination of the Hour)

The true longitude of the Sun and Moon are examined (to determine) the day they come together in conjunction or opposition in one (and the same) zodiacal sign, one degree and one minute. Once this is found, (the calculation) is at the middle of that day, at conjunction or opposition, and at that degree in which the Sun is in opposition to or in conjunction with the Moon.

If the true longitude(s) of the Sun and the Moon are not (found in the table) opposite the middle of that day, two (consecutive) mid-days are sought such that at

one mid-day the true longitude of the Moon is less than the true longitude of the Sun, and at the mid-day after that (the true longitude of the Moon) is greater than the true longitude of the Sun. Then which mid-day is closer is investigated. At that mid-day the distances of both the Sun and the Moon are reckoned and examined. Then the velocity of each — the Sun and the Moon — is extracted for the two mid-days. Then the velocity of the Sun is subtracted from the velocity of the Moon. The result is called the complete velocity.[1]

Then the mean distance of the Sun and the Moon is multiplied by 24. The result is divided by that complete velocity. This result is the hour of the distance[2]. This result is kept aside. Then the true longitude(s) of the Sun and the Moon at that mid-day are examined. If the true longitude of the Moon is less than the true longitude of the Sun, the hour of the difference is added to the hour of mid-day. If the result is less than the hours of that whole day[3], that (resulting) hour is the hour of the conjunction or the opposition on that day. If the result is found (to be) greater than the hour(s) of the whole day, the hour(s) of the day are subtracted from that. The result is the hour of the conjunction or opposition during the coming night. If the true longitude of the Moon is greater than the true longitude of the Sun, the hour of the difference is examined. If it is less than the hour of mid-day, it is subtracted from that hour of mid-day. The result is the hour of the conjunction or opposition during that day. If the hour of the difference is greater than the hour of mid-day, the two are added together and the result is subtracted from 24. The result is the hour of the conjunction or opposition during the following night.

In order for this computation to be precise, (it is made) for when the true longitude(s) of the Sun and Moon are complete with the equation of the day. If they are

[1]Neugebauer p.12 under μετάβασις

[2]Neugebauer p.12 under μῆκος

[3]Neugebauer p.18 under ὥρα τῆς ἡμέρας

not complete, entrance is (made) into the table of the equation of the days opposite the true longitude of the Sun, and the equation of the day is reckoned for the minutes and seconds of the hour. The result is always added to the hour of the conjunction or opposition, and so the hour becomes complete.

10.1.2 (Variant)

If we wish to make this calculation easier, the true longitude(s) of the Sun and Moon are calculated for that hour when the conjunction or opposition occurs. If both of these are equal in degrees and minutes, that hour is correct. If they are not equal, the difference between these (two longitudes) is reckoned, and is (treated) as was said in the case of the first calculation (p. 115), so that the hour becomes correct.

10.1.3 On the Determination of That Degree in Which the Sun and the Moon are in Conjunction or Opposition

That difference (in longitude) which was reckoned between the Sun and Moon is placed in two (separate) places on the tablet. The one is merely examined and the other is multiplied by five minutes. The result is the correction of the degree (of longitude) of the Sun. It is examined separately, and is in turn added to the distance merely examined. The result is the correction of the degree (of longitude) of the Moon.

Then the true longitude(s) of the Sun and Moon, which were found for the middle of that day, are placed on the tablet separately. The correction is placed under each of these. Then an examination is made. If the true longitude of the Moon is less than the true longitude of the Sun, the correction of the degree of the Moon is added to its own true longitude, and in the same manner the correction (of the degree) of the Sun is added to its true longitude. If the true longitude of the Moon is greater than the true longitude of the Sun, the correction of each is subtracted from (their)

respective true longitude(s).

The result is examined. If they both are equal in degrees and minutes, the calculation for the Moon is correct. If they are notequal, it is not correct. If the calculation for the conjunction either in the day or the night is correct, that degree is always one; that calculation is written down as for the true longitude. If the opposition is in the day, the degree (of longitude) of the Sun is reckoned. (If it is at) night, the degree (of longitude) of the Moon (is reckoned). If it is necessary that the "fortune" for the conjunction or opposition be extracted, the calculation is carried out in the fashion mentioned earlier.

10.2 Second Calculation. Concerning the Calculation of an Eclipse of the Moon both by Computation and by a Table

This is divided into two chapters.

10.2.1 On Knowing Whether the Moon Will Be Eclipsed Or Not by Computation

This is divided into five subsections.

10.2.1.1 Whether the Moon will be Eclipsed or Not

Here are such things as ought to be controlled. First, that the opposition of the Sun and Moon should be at night or close enough to night so that there are two hours or less between daytime and nighttime for the beginning and the totality of the (eclipse) when the Sun is diametrically opposite the Moon. The second is that that (the distance) between the lunar nodes and the degrees of the Moon should be

less than twelve, or if the latitude of the Moon is less than 63 minutes either to the north or to the south, the eclipse occurs. If it is greater than these (minutes), it is not eclipsed. If the Moon is going to be eclipsed, the hour of the conjunction is called the hour of the middle of the eclipse.

10.2.1.2 On Knowing that the Moon is Going to be Eclipsed or not by Calculation

When it is necessary to speak by calculation about an eclipse of the Moon, the diameter(s) of the Sun and of the Moon as well as the shadow — these three are extracted. Then the diameter of the Sun is added to the diameter of the Moon. The result is divided by two. This result is called the half of the two diameters. This is examined. Then the latitude of the Moon is examined for the hour of the opposition. If this is greater than or equal to the half of the two diameters, the Moon will not be eclipsed. If it is less, (the Moon) will be eclipsed.

10.2.1.3 On Knowing How Much of the Moon is Going to be Eclipsed, a Part of it or All; and if a Part of it is Going to be Eclipsed, How Many Digits, and if All (of it) will be Eclipsed, is it Going to Delay in the Eclipse or Immediately Begin to Return Again to its Original State

The latitude of the Moon is subtracted from half of the two diameters. The result is called the parts of the eclipse. Then they are examined. If the parts of the eclipse of the Moon are equal to the diameter of the Moon, the whole Moon will be eclipsed and immediately turn back. If the parts of the eclipse are greater than the diameter of the Moon, the whole Moon will be eclipsed and will remain for a little while in the eclipse. If the parts of the eclipse are less than the diameter of the Moon, a small (part) of the Moon will be eclipsed.

If it is necessary to know how much of the Moon will be eclipsed, the parts of the

eclipse of the Moon are multiplied by twelve. The result is divided by the diameter of the Moon. The result is the (number of) digits of the diameter of the Moon out of the 12 digits of its diameter.

10.2.1.4 On the Hour of the Eclipse of the Moon

The latitude of the Moon is multiplied by itself. For example, if the latitude is 25, it is multiplied by 25 and so the square of the latitude of the Moon is found. This is subtracted from the half of the (two) diameters. The multiplication of this result is reckoned. What is found is said to be the parts of the eclipse of the Moon. These (parts) are multiplied by 24, and the result is divided by the complete motion (10.1.1) of the Moon in a nychthemeron. The result is the hour which is called the falling hour of the eclipse[4].

Then the time of the opposition is written in three places on the tablet. The falling hour is subtracted from the hour of the opposition set down previously on the tablet, and it is added to the (hour) set down in the third place. The result in the first (place) is the hour of the beginning of the eclipse of the Moon. The result in the second place is the middle hour of the eclipse of the Moon. The result in the third place is the hour of the complete return of the Moon. That is the calculation at a time when a part of the Moon is eclipsed.

10.2.1.5 (Duration of Totality)

When the whole Moon is eclipsed, the diameter of the Moon is subtracted from half of the two diameters. The square of the latitude of the Moon is then subtracted from the square of this result. The multiplication (by itself) of the remainder results, and so the fractions of the duration[5] are found. These are multiplied by 24, and the

[4]Neugebauer p.18 under ὥρα τῆς πεσούσης

[5]Pingree: στάσις is evidently the half-duration

result is divided by the complete motion (of the Moon) in a nychthemeron. The result is the hours of the duration.

Then the hour of the opposition is set down in five places. The falling hour is subtracted from the first hour[6] and added to the fifth. The hours of the duration are subtracted from the second hour and added to the fourth.

The first place of the five is the beginning of the eclipse of the Moon, the second is the hour of the beginning of totality[7], the third is the hour of the middle of the eclipse, the fourth is the the beginning of the return of the Moon[8], and the fifth place is the final hour at which the Moon returns.

Then the falling hours are doubled. The result is the hour from the beginning of the eclipse of the Moon until the complete return.

10.2.2 On the Eclipse of the Moon by Means of Tables

10.2.2.1 (Magnitude)

The latitude of the Moon is extracted for the time of the opposition of the Sun and Moon and kept aside. Then entrance is made into the table of the velocitie(s) of the Sun and Moon. The fractional parts of the true longitude are reckoned opposite the latitude and examined. Then once again entrance is made into the table of the observation of the Sun opposite the aforementioned latitude of the Moon for the closer distance in the three tables. The digits of the falling hour are reckoned. The hour of the duration and the correction for each are kept aside separately. Then the correction for eachis multiplied by the fractional parts of the true longitude. The result is added to each of the corrections kept aside separately. The result is final.

Then the digits of the eclipse are examined. If they are greater than twelve, the

[6]Pingree: reading here as elsewhere ὥρας instead of μοίρας

[7]Pingree: middle of the eclipse (τῆς μέσης ἐκλείψεως) is wrong

[8]Neugebauer p.6 under ἀποκατάστασις

eclipse of the Moon is total and it remains for (some) time in the eclipse. If there are (exactly) twelve digits, the whole Moon is eclipsed, but it does not remain in the eclipse. If the digits are less than twelve, a part of the Moon in proportion to the digits of the diameter is eclipsed.

It is necessary to know how much of the Moon is (eclipsed). Entrance is made into the table of the diameter of the Moon. The number of digits of the surface[9] of the Moon is reckoned opposite the digits. The result is the (number of digits) from the surface in digits of the entire Moon.

10.2.2.2 On Knowing the Time of the Eclipse of the Moon

It is in the same way as was described in the fourth and fifth sections of the first chapter (10.2.1.4, 10.2.1.5).

10.2.2.3 On the Time of a Eclipse of the Moon if a Part of it is Eclipsed at Night and a Part in Daytime

If the eclipse occurs during the daylight, if the hour of the eclipseof the Moon is greater than the (length of) daylight, the hour of daylight is subtracted from that (hour of the eclipse). The result is during the night. If a total eclipse occurs at night, the hour at night of the eclipse is greater than the hour of night which is subtracted from that. The result is the hour during the day.

10.3 Third Calculation. On the Eclipse of the Sun

This is divided into three chapters.

[9] twelfths of area

10.3.1 On Obtaining the Best and (Most) Proper Table for the Eclipses of the Sun

The calculation of the eclipse of the Sun with a table should be made to be easy because if there is a lot of calculation, this will extend (it)in length and it will be difficult to apprehend. We have set down this table at length for the sake of clarity. Three calculations are set in it. The first calculation: they are the hours of distance[10] before mid-day and after mid-day. The second: the more and less of visibility for the longitude. The third: the more and less of visibility for the latitude. The construction of this table is completed[11] in three sections.

10.3.1.1 On the Construction of the Table of the More and Less of Visibility for the Latitude of the City for which there is no Table in this Composition

This table is made from two tables. One is that for a latitude less than that of that city, and the other is for a latitude greater (than that of the given city). This calculation was described earlier in the second chapter of the ninth book (9.2.4). We have set down this table for a latitude of 38 degrees.

10.3.1.2 On the Extraction of the More and Less of Visibility for the Degree (of Longitude) of the Sun and the Moon when They are in Conjunction

When this degree is not at the beginning of a zodiacal sign, the calculation is made with two zodiacal signs. This calculation was described in the ninth book in the second chapter (9.2.3).

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[10] Neugebauer p.12 under μῆκος

[11] Pingree: read πληροῦται

10.3.1.3 On the Correction of the More and Less of Visibility for the Position of the Moon, that is, for its Proper Motion on the Small Circle

This calculation was described in the second chapter of the ninth book along with the others (9.2.5).

We calculated this table for the entrance of the Sun at 25 degrees of Leo. This calculation was between zero (degree) of Leo and zero (degree) of Virgo. The Sun was eclipsed after mid-day. This is the reason the table was for after mid-day, since there was no need to calculate a table for the time before mid-day, just as when an eclipse occurs before mid-day there is no need to calculate a table for after mid-day.

The latitude of the city was 38 (degrees). This was extracted from the tables of their two latitudes, 36 (and) 41 (degrees). The result was multiplied by the fractional parts of its more and less. This result has been set down in this table.

	First: The Beginning of Leo and Virgo													Second: 25 Degrees of Leo		The More and Less of Vision of the Anomaly of the Moon		
	Hours	At the Beginning of Leo						At the Beginning of Virgo								Hours	EasyTable	
		36		41		38		36		41		38		8	36			
		Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude		Longitude	Latitude
Before Noon	7															7		
	6															6		
	5															5		
	4															4		
	3															3		
	2															2		
	1															1		
Noon	0	3	14	4	18	3	15	8	20	9	23	8	21	7	20	0	8	23
After Noon	1	8	16	6	20	6	17	2	24	0	27	2	29	3	24	1	4	28
	2	17	20	15	24	17	21	12	29	9	31	11	30	12	28	2	14	33
	3	24	24	22	28	24	25	19	33	16	36	18	34	19	32	3	22	37
	4	31	28	27	32	30	29	24	37	21	39	23	38	24	36	4	28	42
	5	35	33	30	35	33	34	27	40	24	42	26	41	27	40	5	31	42
	6	34	37	31	38	32	33	28	42	27	43	27	43	28	42	6	33	49
	7	33	40	28	42	31	40	28	43	28	45	28	44	28	43	7	34	50
Half of the table was not calculated because the eclipse occurred before noon																		

10.3.2 On the Calculation of an Eclipse of the Sun by Means of both a Table and Calculation

This is divided into three sections.

(Method of Computation)

When there is need for this method, first the true longitude(s) of the Sun, the Moon and the ascending node are (calculated) daily for one year. Then all the conjunctions are extracted. Then a conjunction is sought which occurs during the day or near the day by so much that there is less than one hour from it until day. The latitude of the Moon is extracted for the hour of the conjunction. If the latitude of the Moon is southerly, it should be less than 35 minutes. If it is northerly, it should be less than 93 minutes. The eclipse will take place in this (interval). If it is more than this, the eclipse will not take place.

Before entering into this calculation, it is necessary first to mention what methods should be used. First, it is necessary to know that conjunction in which an eclipse is going to take place, then the hours until the conjunction, then the degree at which the conjunction takes place. The true longitude of the ascending node is apprehended for that time. Then the diameter of the Sun and the motion of the Sun in one hour are determined. The diameter of the Moon and its motion in one hour are extracted. Then the complete motion of the Moon in one hour is apprehended, as well as the hour of mid-day[12]. All these are apprehended and examined. Then is reckoned the "fortune" for that time when the conjunction of the Sun and Moon takes place. Then the zodiacal sign, degrees and minutes of the conjunction of the Sun and the Moon are subtracted from the "fortune" for (that) time. The result is the longitude of the conjunction in degrees. This is kept aside and examined.

If this longitude is 90 degrees, the extracted hour of the conjunction is the middle hour of the eclipse. The degree in which the Sun is in conjunction with the Moon is the location of the visibility of the Moon. In this case there is no need for the hour of the conjunction to be precise.

If this longitude is less than 90 degrees, that degree in which the Sun is in

[12]Neugebauer p.18 under ὥρα τοῦ μέσου τῆς ἡμέρας

conjunction with the Moon is towards the east. If (this) longitude is greater than 90, the degree of the conjunction is towards the west.

Between these two it is is necessary to correct that hour, (by a method) which is (given) in three (sections).

10.3.2.1 On the Correction of the Hour of the Mid-Eclipse

This is done in two (ways) — by calculation and by table. The calculation requires five things.

The first is the reckoning of the hour of the conjunction. The "fortune", the tenth house, and the altitude of the tenth house should be reckoned from that hour. This is examined. The second is the apprehension of the altitude of the Moon. The third is the knowing of the more and less of visibility of the Sun and the Moon in the circle of altitude. Then the more and less of visibility of the Sun is subtracted from the (that) of the Moon. The result is reckoned. The fourth is the apprehension of the angle of latitude and longitude. The fifth is the apprehension of the more and less of visibility of the Moon in longitude and latitude.

We do not (have) need of these five for this calculation. These five ought to be treated methodically in three.

The Calculation of an Eclipse of the Sun through the Table

The hour of the conjunction is examined and the hour of mid-day. If these two hours are equal numerically, entrance is made into the hourly table[13] opposite mid-day and the more and less of visibility in longitude is calculated. If the hour of the conjunction is less than the hour of mid-day, that (first) is subtracted from that hour. The result is the hour of distance before mid-day. If the hour of the conjunction is greater than the hour of mid-day, the hour of mid-day is subtracted from that. The result is the

[13]Neugebauer p.18 under ὡραῖον κανόνιον

hour of distance after mid-day. Whether this is before mid-day or after mid-day, it is called the hour of the first distance. Then entrance is (made) into the hourly table opposite this hour, and the more and less of visibility in longitude, which is called the first more and less of visibility, is reckoned. This more and less of visibility is divided by the complete motion of the Moon in one hour. The result is the hour of the first more and less of visibility. This hour is always added to the hour of the first distance and the hour of the second distance is found. Then the more and less of visibility in longitude is reckoned opposite that hour of the second distance, and this, in turn, is divided by the complete motion of the Moon in one hour. The result is the hour of the more and less of visibility at the second distance. This hour added to that hour of mid-day. The result is the hour of the third distance. Once again entrance is (made) into the hourly table opposite this hour. This calculation occurs frequently in this manner — four and even six times — until two (consecutive) more and lesses of of visibility which are reckoned are equal numerically[14]. The last more and less of visibility is final, and that hour of the last distance is final.

Then is reckoned the degree in which the Sun is in conjunction with the Moon. If it is in the East, the more and less of visibility of the distance which resulted last is subtracted from that degree. If the (degree of conjunction) is in the West, it is added to it. The result is the location of the sighting of the Moon at the middle of the eclipse. If that degree (of conjunction) is in the East, the hour of the final distance is subtracted from the hour of mid-day. If (the degree of conjunction) is in the West, it is added to it. The result is the hour of the mid-eclipse.

[14] i.e., until convergence is achieved

10.3.2.2 On Knowing of Whether or Not an Eclipse Will Occur and, if it will, How Great it will be

When we wish to make this calculation, the true longitude of the descending node is always subtracted from the place of the sighting of the Moon, and the degree of latitude of the Moon results. Entrance is (made) into the table opposite the degree of this latitude of the Moon, and the latitude of the Moon is reckoned. This is called the final latitude.

Then it is examined whether (this final latitude) is northerly or southerly. This (result) is kept aside. Then entrance is (made) into the hourly table opposite that hour of the final distance, and the more and less of visibility for the latitude is reckoned and kept aside. Then it is examined whether (this) is northerly or southerly. If the final latitude of the Moon with the more and less of visibility for the latitude is northerly or southerly, the two are added together. If one is northerly and the other southerly, the smaller is subtracted from the larger. The result is the solid latitude of the Moon. This is examined. Then the diameter of the Sun is added to the diameter of the Moon, and the result is divided by two. The result is called the half of the two diameters (p.119). This is placed on the tablet, and the solid latitude of the Moon is placed near it and examined. If the solid latitude of the Moon is equal to the half of the two diameters or is greater than it, the eclipse does not occur. If it is less, an eclipse occurs.

Then if it is necessary to know how much of the Sun will be eclipsed, that solid latitude is subtracted from the half of the two diameters. The result is called the fractional parts of the eclipse. Then an examination is made. If these fractional parts of the eclipse are equal to the half of the two diameters, the eclipse of the Sun is total. If the fractional parts of the eclipse are less than the half of the two diameters, a part of the Sun is eclipsed.

Then that total eclipse with the diameters of the Sun and Moon is examined. If

the two diameters are equal, the Sun will be totally eclipsed and it will not have any duration in the eclipse. If the diameter of the Moon is greater, the whole Sun will be eclipsed and it will remain a sufficient time in the eclipse. If the diameter of the Sun is greater, the center of the Sun will be eclipsed, but the periphery will not.

Then that partial and not total eclipse is examined, how many digits from the diameter of the Sun will be eclipsed with this calculation, since the complete diameter of the Sun is 12 digits. When it is necessary for this calculation to take place, the fractional parts of the eclipse discovered earlier are multiplied by twelve. The result is divided by the diameter of the Sun, and so the digits of the eclipse are discovered from the diameter of the Sun.

10.3.2.3 On How Much of the Sun will be Eclipsed and the Knowing of the Time by Means of a Table

Once the hour of the mid-eclipse together with the the solid latitude of the Moon has been extracted, entrance is (made) into the table of the motion of the Sun and Moon opposite the (proper) motion of the Moon or its velocity. The fractional parts of the true longitude are reckoned from that and kept aside. Then entrance is made into the table of the eclipse of the Sun opposite the solid latitude of the Moon. The digits and their correction are reckoned and the falling hour with its correction. Each is examined individually. Then the fractional parts of the true longitude are multiplied by the correction of each. The result is lowered by one (sexagesimal) step. This result is always added to the digits and the (falling) hour, and so the digits and the falling hour become final.

Then an examination is made. If the digits are 12 or more, the whole Sun will be eclipsed. If they are less than twelve, the whole (Sun) will not be eclipsed.

Then it is examined how much of the twelve digits will be eclipsed. Then the calculation is from this. Those digits are the diameter of the Sun.

If it is necessary to reckon[15] the digits of the surface of the Sun[16] (that will be eclipsed), entrance is made into the table opposite the digits of the diameter of the Sun, and the number found is reckoned as of the surface of the Sun in digits. These are the digits of the eclipse. When the final falling hour was clear, the hour of the mid-eclipse is set down in three places on the tablet. The falling hour is subtracted from the first and added to the third, and so the times of the eclipse are discovered in the way described earlier (see page 120).

[15]Pingree: read καταληφθῆναι

[16]Neugebauer p.8 under δάκτυλοι

BOOK 11

On Understanding When the Moon Becomes New and When the Planets Appear after Conjunction with the Sun

Our observations about the Moon will be discussed. This computation is very difficult because the ancients made no mention of it. Why did they say nothing? (They said nothing) because the beginning of the months of the Moon were reckoned from the moment there was (some) distance of the Moon from the Sun after conjunction (and not from the sighting of the lunar crescent).

When the Persians, however, had need for this because of (their) feast, fast and great days, their great days become clear through the sighting of the new Moon. We have therefore set down in this book that which those astronomers[1] set down in their books, along with computation and by a table, and some other things necessary for these, not from those calculations which someone might suppose are easy, and from

[1]Pingree: He (C) means the Persians

those calculations which do not seem to turn away faith, but which are most useful for this (topic). It is therefore difficult to find such a calculation in other books because of the loftiness of this (topic).

One would not find in another how this calculation was set down in this book. Why have I put such a marvelous calculation in this book? Because the months of the Moon are reckoned by the Persians through sighting the apparent new Moon, not through a middling calculation. Whoever wants the benefit of this calculation should know that the vision of all men is not the same, and the new Moon does not always appear at the same place, and in each city it is viewed one way or another. If the person searching for the sighting of the new Moon does not understand how and where to search for it, he will be left behind completely empty. He will have so much difficulty in looking towards the sky that his vision will be blinded, so that even when the Moon does appear to all, he will not be able to see it before it sets.

In as much as the man is clever, with this calculation and understanding of the altitude of the Moon at the time of its sighting and its point in heaven, it will appear to him in one place as soon as he looks in the sky.

The method of this art is divided into five chapters.

11.1 On the Computations Necessary for this Method

This chapter is divided into eight (sections).

11.1.1 On the Apprehension of the True Longitude of the Sun and Moon at that Time When the Degree of the True Longitude of the Moon is Setting

Thus is the calculation: the motion of the Moon in one hour is apprehended and subtracted from fifteen. The result is the fast motion of that hour. This is examined.

Then the true longitude of the Sun and Moon for mid-day of the 29th day in the Arabic month is apprehended.

Then entrance is made into the table of the place of "fortune" with a straight line opposite each true longitude, and the number discovered for the place of "fortune" of each with the straight line is reckoned. Then the difference of each place of "fortune" is examined and added to half the arc of the day[2]. The result is divided by the fast motion. The result is the hour between (the middle) of that day and the setting of the degree of the Moon.

Then the motion of the Sun and the Moon in one hour is sought and each (of these) is multiplied by those hours (between) the middle of that day and the setting (of the lunar degree). The result from the motion of each is added to the true longitude of each for half of a day. The result is the true longitude of the Sun and Moon for that hour when the degree of the Moon sets. The true longitude of the descending node is extracted for that hour. Then when there is need to know the true longitude of the Moon at the time of the setting of the Sun, the hour of mid-day is multiplied by the motion of the Moon in one hour. The result is added to the true longitude of the Moon at mid-day, and the true longitude of the Moon for the hour when it sets is found.

11.1.2 On the Accurate Correction of the Location of the Moon for the More and Less of Visibility in Latitude and Longitude

The location of the Moon is in the west when it sets. This is corrected. This is an easy method arising from the tables of more and less of visibility along with the fractional parts of the true longitude found in the table of the motion of the Sun and

[2]Neugebauer p.17 under τόξον

Moon as was said previously in book nine.

11.1.3 On the Accurate Correction of the Location of the Moon with the Equation of the Day

Entrance is made into the table of the equation of the day opposite the degree of the Sun, and the fractional parts of the hour are reckoned. Entrance is made into the table of hours for the months opposite this result, and the mean motion is reckoned. This is subtracted from the true longitude of the Moon, and so this becomes final.

11.1.4 On the Degree Which Sets with the Moon

An examination is made. If the Moon[3] does not have a latitude, it sets with that degree (which is) together with the true longitude. If it does have a correct latitude, its Sine is reckoned. This is multiplied by the Sine of the altitude of the location of the "highest point". The result is divided by the completed Sine of the complement of the altitude of the place of the "highest point". The result is a Sine. Its arc is taken. The result is a correction. It is examined. If ever there is need that this computation be easier, through only one method, the degree of the Moon which was found for the motion of the Moon is sought in the table of more and less for the place of "fortune" for the third *klima*. Entrance is made (into the table) opposite that (degree), namely of the zodiacal signs there, for the desired *klima* and the city closest to us. The number found there is reckoned in degrees and minutes. The result is multiplied by the solid latitude of the Moon. The result is a correction.

Then that solid latitude is examined. If it is northerly, the correction is added to the location of the Moon. If it is southerly, it is subtracted from that (location of the Moon). The result is the degree setting with the Moon. If the calculation

[3]Pingree: In Greek, p. 161 line 7, read Σελήνη for τραχηλαῖα

occurs through the degree setting with the Moon, it occurs in an opposite way to that calculation, that is, where there was subtraction, there is addition with the correction, and where there was addition, there is subtraction.

11.1.5 On the Arc of the Light

The solid latitude of the Moon is squared, that is, multiplied by itself, and is added to the square of the distance (in latitude) between the Sun and the Moon. The "multiplication" of this result is sought. The result is the arc of light, that is, the shining of the Moon[4].

11.1.6 On the Arc and the Time When the Moon is above the Earth after the Setting of the Sun

The place of "fortune" of the degree of the diameter of the Sun is reckoned for the latitude of the city. Then it is examined. Then the place of "fortune" of the degree of the diameter is reckoned along with the degree with which the Moon sets for the latitude of the city. Then the place of "fortune" of the Sun is subtracted from the place of "fortune" of the Moon. The result is that which was mentioned.

11.1.7 On the Arc of the Setting of the Sun Below the Earth at the Time when the Moon Sets

When there is need for this calculation, the true longitude of the Sun is subtracted from the location of the Moon which we corrected. The Sine of this result is then reckoned. Then it is multiplied by the completed Sine of the altitude of the place of the "highest points". The result is lowered by one (sexagesimal) step. The result is

[4]Neugebauer p.17 under φῶς

a Sine. Then its arc is reckoned, and the setting of the Sun is found. We have set up a table for the latitude of 37 degrees.

If there is need for this arc of time to be apprehended for the highest altitude of the degree of the diameter of the Sun, entrance is made into the table of the setting of the Sun and the altitude of the Moon opposite that altitude, at the number in red for the altitude of the degree of the diameter of the Sun on the circle of mid-day, and (at) the number, also in red, at the top of the table for the arc of the time of the altitude of the Moon. Wherever the values from the distances come together, the number found there is reckoned. The result in degrees and minutes is the arc of the setting of the Sun .

11.1.8 On the Altitude of the Moon after the Setting of the Sun from this Table

When it is necessary to know this method, the latitude of the Moon is extracted, and it is determined whether it is southerly or northerly. This latitude is kept aside. Then the highest altitude[5] of the degree of the Moon is apprehended and examined. If the latitude of the Moon is northerly, it is added to the altitude. If (the latitude of the Moon) is southerly, it is subtracted from that (altitude). And the highest altitude of the Moon is found. Then this (highest altitude) is sought in the table of the setting of the Sun and the altitude of the Moon in the red numbers. The time of the arc is sought opposite (the place) where this is found within the table. The red number at the top of the table is reckoned opposite (the place) where it is found. This is the altitude of the Moon when it appears new.

[5]Neugebauer p.6 under ἀνάβασις

11.2 On the Apprehension of Arcs

It was investigated concerning the New Moon that appears after conjunction in the books of the ancients. It was found that 4 arcs were set down by them (for its determination). The first is the arc of time, the second is (the arc) of the rays, another is (the arc) of altitude, and the other is the arc of setting. These four arcs with the computation of the proper (place) of the Moon are corrected into the computation that exists with us.

These four arcs are not straightforward in all (locations) Why? Because of the excess and deficiency in the latitudes of cities and because there is excess and deficiency in the arcs of the time of rising and setting. We have sought to extract this so that the excess of each arc and (its) deficiency and quantity might be obtained.

11.2.1 On the Apprehension of the Arc from Ten Degrees until Twelve

The arc[6] of time is from eight until twelve, the arc of the altitude of the Moon from six degrees until eight, and the arc of the setting[7] of the Sun from eight degrees until ten. When there is need to have the number of each, the difference of each is reckoned in excess and deficiency. This is multiplied by the fractional parts of the true longitude. The result is lowered by one (sexagesimal) step. This is a correction. It is added to each of the four arcs. The result from each of these (four additions) is a limit of the visibility of the Moon.

When there are four arcs and four limits, and each of these four arcs is extracted by calculation in the way mentioned (earlier), one by one (these arcs) are observed opposite the number of the limit. If each is equal to or greater than the number of its

[6]Pingree: text, p. 165, l. 12, read τοῦ τόξου and om. second τοῦ φωτὸς

[7]Pingree: p.165 l.15 read καταβάσεως

limit, the Moon is observed. If it is less, (the Moon) is not observed. It is possible to see the Moon with the number of one of these 4 arcs, but it is not possible with the other 3. Therefore the computation is for these 3. If it is possible to see (the Moon) through the 3 numbers, it is not possible through these. Because of this there is no way for this calculation to be avoided. There is another method (of determination of visibility) which will be discussed next.

11.3 On the Complete Basis of Seeing the Moon

Know that the sighting of the New Moon when it appears is with respect to the vision of the eyes. There are eyes sharing in more light, and there are others sharing in less, and there are those participating in a middling of sight. For this (reason) three numbers were set forth. The first calculation is large (and is) by means of eyes having the least light, the second (number) is middling (and is) by means of eyes having middling light, and the third number is small (and is) by means of eyes having the most light. This, the middling number, is trusted by all.

When there is need for such a method, the true longitude(s) of the Sun and of the Moon are extracted for that time when the Moon sets so that the arc of light might be extracted with the setting of the Sun. These two — the arc and the setting — are examined. Then entrance is made from the proper (motion) or the velocity of the Moon into the tables of the sighting of the Moon, from its visibility.

The middling number found between the two marks, which is called the mean number, is reckoned opposite these, the proper (motion) and the velocity. This number is reckoned for one and for two separately. Then the number from one is subtracted (from the number) from the second. The result is called a correction. This result—the correction— is examined. There are two things in this number on which it is necessary for the mind to dwell.

11.3.1 For the First Sighting

There is an investigation into the first sighting. If it is less than or equal to the first arc, there is no sighting of the Moon. Why? Because the Moon is still hidden under the light of the Sun. If it is equal to or greater than the second arc, the Moon has come out from under the light of the Sun and appears before the Sun sets. (In this case) there is no need for a calculation on the tablet. If the arc of light is greater than the first arc and less than the second, the New Moon is or is not at the stage of appearing[8].

In this case there is absolutely a need of calculation for (whether) or not one sees the Moon. When we want to make this calculation we do as follows: we subtract the first arc from the arc of light. The result is called the excess. We multiply this excess by the first arc. We divide the result by the correction which was kept aside. This result is subtracted from the first arc, and the remainder is the arc of complete visibility[9].

11.3.2 On the Second Sighting

The setting of the Sun is examined. If it is equal to or greater than the arc of complete visibility, the New Moon is visible.

If one wishes to examine this method without error with regard to the two other ones — the first and the third —, it its necessary to do the work.

If the Moon appears with the number of this first table, we say that the Moon ought to appear large so that even the blind see it. If the number comes out of the second table, we say that the Moon ought to appear neither very dim nor large, so that eyes middling in vision see it. If the number comes out of the third table, there is no work because the Moon is then very dim, so that unless there is a cloud in the

[8]Neugebauer p.7 under βαθμός

[9]Neugebauer p.16 under τόξον

horizon or a mist, (only those) eyes that see clearly see it, and the beginning of the month is not reckoned from that time, but it is written at the beginning of the true longitude that the Moon may perhaps appear.

11.4 On the Calculation so that the Moon is Shown in Digits

If there is need for (this) calculation, four minutes are added to the location of the Moon so that the location of the Moon may be found when the Sun sets up to an eighth of one hour because the Sun has not set so much under the earth and the light of the Sun does not yet let the Moon appear. Then the altitude of the Moon is extracted in the way described earlier just as is the point of altitude[10] as was described in the fifth chapter of the sixth book.

Then a plumbline is placed at the point of altitude with its demonstration so that neither a hill nor a cloud comes in front of the direction of setting.

11.4.1

Then the astrolabe is hung on that plumbline and is aligned with the straight line which is on the earth. Then the altitude of the Moon is examined, how much comes out of the table of the setting of the Sun and the altitude of the Moon. The tip of the "beam"[11] of the astrolabe is placed against this number. Then with one eye, with the other closed, one looks through the sighting holes of the "beam" (to see) if the Moon is visible. If the Moon does not appear through these sighting holes, that location visible in the sky is where the Moon should be sought.

[10] Neugebauer appendix 14.

[11] Pingree: "beam" = diopter

11.5 Concerning the Five Planets, at what Time They Come Out or Stand Out from under the Light of the Sun, and at what Hour They Enter under the Light of the Sun, in the Morning or Evening

This calculation is the same as in the case of the Moon.

When there is need for this calculation, the degree rising with the star or the degree setting with the star is determined in the way that was described earlier (5.4). The arc of the time of the setting of the Sun should be extracted just as it was extracted for the calculation of the apparent New Moon. The arc(s) for the visibility of the planets are as follows according to the Indians: Saturn, 15; Jupiter, 11; Mars, 13; Venus, 9 , and Mercury, 13[12].

(The arcs for the visibility of the planets) are as follows according to Ptolemy, with the calculation of the arc of the setting of the Sun for the time when the planet sets or rises: Saturn, 11; Jupiter, 10; Mars 11;30 ; Venus, when it has direct motion, 60[13], and when it is in retrograde, 5; Mercury 10.

Then how much the distance of the planet from the Sun is is examined. If it is opposite these arcs or greater, the planet is visible. If it is less, the planet is not visible.

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[12]Pingree: should be 17.

[13]Should be 7 (ξ mistake for ζ).

11.5.1 On the Knowledge of When the Planet May Appear and When it May Set with a Table

We have set down a table (for this), and have put the arcs we need in this table with the number(s) of the settings for the fourth *klima* at the beginnings of the zodiacal signs. If the planet is at the beginning of a zodiacal sign, it is reckoned in the table. If it is not at the beginning of a zodiacal sign, the number which is at the beginning of the zodiacal sign is reckoned and examined as well as whatever is found at the beginning of the following zodiacal sign. This is reckoned, and with the number(s) of the two zodiacal signs is corrected as was described for the more and less of visibility. The result is the arc of the sighting of the planet. Then the mean difference of the true longitude(s) of the Sun and of the planet is reckoned and examined. If this number is for (when) the planet appears, and if that difference is greater than the arc of the (planet) when it appears, the planet is visible. If it is less, the planet is not visible. If this number is for when the planet sets, if that difference is greater than the arc of where we look, the planet has not yet set. If it is less, the planet has set.

11.5.2 For Ascertaining at What Time the Planet Sets and at What (Time) it Rises

The motion of the Sun and of that planet are apprehended and placed on the tablet. Then they are examined. If the planet is retrograde, the two motions are added. If the planet moves directly, the smaller (value) is subtracted from the larger. The result is the final motion. This is examined. Then the difference is put down on the tablet, and the apparent arc is placed alongside it. Then the smaller is subtracted from the larger. The result is divided by that final motion. The result is the day when the planet either sets or rises.

11.6 On the New Moon When it Appears with the Calculations which were Combined with Others Which Have Been Produced from the Mind of Khāzinī for an Easy Road without the Difficulty of those Long Methods, Since These are Worked out for Clarity and Brevity

This is in two sections.

11.6.1 On the Accurate Correction of the Arc of Time

The true longitude(s) of the Sun and of the Moon (are calculated) for the beginning of the night which is of the morning following the thirtieth day (reckoned) in the days of the Arabs. Then the arc of time, the arc of light, and the motion of the Moon are calculated. Then the motion is put on the tablet and subtracted from 25;30. The result is the not final arc of sighting. It is examined. Then the arc of light is placed alongside it and examined. If the two are equal, the arc of sighting is final. If they are not equal, the smaller is subtracted from the larger. The result is the excess. This is examined. If the arc of light is less than the arc of sighting, that excess is added to the arc of sighting. If it is greater than the arc of sighting, this final arc is placed on the tablet. The arc of time is placed alongside it and examined. If the arc of time is equal to or greater than the arc of sighting, the Moon is visible. If it is not, it is not visible. Then the arc of light is examined. If it is 25;30 or more, the Moon comes out from under the light of the Sun and is visible before the Sun sets. If it is less, it is not visible.

11.6.2 On the Accurate Correction of the Arc of the Setting of the Sun and for the Extraction of the New Moon with Other Calculations

The true longitude(s) of the Sun and of the Moon are (calculated) for the thirtieth night of the month of the Arabs when the Moon sets. Then the arc of light, the setting of the Sun and the motion of the Moon are examined. Then the motion of the Moon is subtracted from 24:30. The result is the not final arc of sighting. This is multiplied by the arc of light. If it is less than the arc of sighting, there is no need of looking for the Moon. If it is equal to or greater than it, it is visible.

The Calculation

The arc of light and the arc of sighting are put in two places on the tablet. The difference of the two is reckoned and subtracted from the arc of light, and it becomes final. This is put on the tablet. The (setting) of the Sun is placed alongside it. Then the setting of the Sun is examined. If it is equal to or greater than the arc of sighting, the Moon is visible. If it is less, it is not visible.

Then an examination is made. If the arc of light is 24;30 or more, the Moon is visible before the Sun sets. If it is less than this, it is not visible before the Sun sets.

BOOK 12

On the Beginning of the Years and Genethlialogical (Dates), and on Ascertaining the Location(s) of the Planets, the Motion of the Degrees, and Ascertaining the Location(s) of the Degrees

When we wish to know how much has passed of year(s) of the Sun with respect to the genethlialogical (date), the year of the Persians when the birth occurred is subtracted from the current year of the Persians, or the then year of the Romans from the current year of the Romans. The result is (the number of) the complete years of the Sun which have elapsed since the birth. This book is divided into four chapters.

12.1 On the Beginning(s) of Complete Years, of Genethlialogical Years, and of the Place of "Fortune" of Each

This calculation should be apprehended[1] (as follows): if it is such that the true longitude of the Sun at the time when the birth took place was complete with the equation of day, the true longitude of the Sun for this time in which we are should be complete with the equation of the day. If that is not complete, then neither is this. This calculation should be reckoned enthusiastically.

12.1.1 On the Extraction of the Hours of the Beginning(s) of the Years at the Time When the Sun is at the Beginning of (one of) the Zodiacal Signs, or at the Time When the Sun is at That Degree at which (it was when) the Seeking of the Birth Occurred

This is called the location of the *radix* of the Sun for the calculation of the genethlialogical (horoscope). This calculation will be described in this book with respect to the distance of motion. If we wish to know the hour of the time when the Sun arrives at that degree, the true longitude of the Sun is sought for the mid-day which is close(st) to that degree for the longitude of the city where the birth (took place). If the true longitude is equal to that degree, the hour of mid-day is the hour of (its) entrance (into that degree). If it is not equal, the difference found between the two of them is reckoned. This is multiplied by 24. The result is divided by the motion of the Sun. The result is the hours of distance.

[1] Pingree: text p. 176, line 12 read καταληφθῆναι

This is examined. If the true longitude of the Sun is less than that degree, the hour of distance is added to the hour of mid-day. If it is greater, it is subtracted from that degree. The calculation is made complete just as was described for the opposition and conjunction of the Sun and the Moon. And the hours of the entrance are found in the day or the night for the calculation of the genethlialogical (horoscopes) and of the complete perceived years.

One thing should be considered in the case of a perceived year. If the true longitude of the Sun was not complete with the equation of day, entrance is made into the table of the equation of day opposite the true longitude of the Sun, and the minutes and seconds of the hour are reckoned. These are added to the hour of the entrance.

12.1.2 On The Entrance of the Place of "Fortune"

From what(ever calculation) the hour of entrance was ascertained[2], from that hour the "fortune" is extracted as was described previously.

If we wish to extract the "fortune" of the entrance with another calculation, that calculation is the calculation of the excess of the years[3]. A search is made for how many years have passed since the birth. Entrance is made into the table of excess of the years opposite those years, and (the excess) is reckoned opposite it.

That excess is made final with the correction for the apogee. This is always added to the place of the "fortune", that is, to the beginning of the birth. If the result is greater than the circumference of a circle, 360 (degrees), the circumference is subtracted from it until it becomes less than that. The result is the place of "fortune" of the entrance. Entrance is made opposite this into the table of the place

[2]Pingree: p. 178, 9 read καταληφθῇ

[3]Neugebauer p.14 under περίσσεια

of "fortune" for the latitude of that city[4] in which the search for the genethlialogical (horoscope) was made. And the "fortune" is extracted opposite that in the way described earlier.

12.1.3 On Ascertaining the "Fortune" of Middle of the Inhabited (Earth) in Longitude and Latitude

The difference between the longitude of the city and 90 is reckoned. The result is an arc. If the longitude of our city is less than 90, that arc is added to the place of "fortune" for our city. If it is greater than 90, it is subtracted. The result is the place of "fortune".

Entrance is made opposite this (result) into the table of the place of "fortune" with the straight line whose beginning is from the beginning of Aries, and the "fortune" is extracted. If the beginning of this table with the straight line is from the beginning of Capricorn, the "fortune" is extracted counting from that.

That place of "fortune" which is with us is more than 270. The result is the place of "fortune" in that table. If we wish to extract the "fortune" from the middle of the inhabited (world), where the latitude is 33 (degrees), that place of "fortune" — not the one added to 270, but the one before it — is extracted from the place of "fortune" in the table for the latitude of 33.

[4] oblique ascension of the ascendant

12.2 On Ascertaining the Location of the Light of the Stars, or their Configuration with Each Other

Before entering into this calculation, there are certain basic things which should be known. Know that from the tenth (house) (and) the first until the fourth is the half(-circle)[5] of descent, from the fourth house (and) the seventh until the tenth is the half(-circle) of ascent[6].

12.2.1 On the Distance of the Stars from the Seventh (House) – which is at the center– and the Fourth (until) the Tenth — with the Calculation of Ptolemy

The place of "fortune" of the stars is reckoned with the straight line. Then it is examined. If the star is above the earth, the degree of the tenth house is reckoned with the straight line. If the star is beneath the earth, the degree of the place of "fortune" of the fourth house is reckoned with the straight line. Then an examination is made. If the star is under the earth between the seventh and the fifth, the place of "fortune" of the star is subtracted from the place of "fortune" of the tenth house. The result is the distance from the tenth. If the star is between the tenth and the first house of the place of "fortune", the place of "fortune" of the tenth[7] is subtracted from the place of "fortune" of the star. The result is the distance of the star from the tenth. If the star is under the earth, it is examined. If it is between the ascendant and the fourth, the place of "fortune" of the star is subtracted from the place of

[5]Pingree: p.180, line 8 read καταβάσεως

[6]Neugebauer p.6 under ἀνάβασις

[7]Pingree: p.181, line 2 τοῦ for ὁ[2]

"fortune" of the fourth. The result is the distance of the star from the fourth. If the star is between the fourth and the seventh, the place of "fortune" of the fourth[8] is subtracted from the place of "fortune" of the star. The result is the distance of the star from the fourth.

12.2.2 On the Latitude of the Circle of Motion, Namely, the Latitude of Cities

When there is need (for) this calculation[9], the distance of the planet from the center of the tenth or the fourth is multiplied by the latitude of the city. The result is examined. This is called a radix. Then this is examined. If the planet is above the earth, that radix is divided by half the arc of the day[10] — the *haylāj* according to the Indians. If the planet is beneath the earth, that radix is divided by half the arc of the night — the *haylāj*. The result is the latitude of the circle of motion.

For this latitude there is a table of place(s) of "fortune" of the zodiacal signs so that this might be the radix for the motion of the planets.

12.2.3 On the Place of Light of the Planets, that is, the Configuration with Respect to Each Other of those (Planets) which have a Latitude, with Calculation and by Means of a Table

Know if a star has no latitude, the arcs of sextile, square, trine and opposition are 60, 90, 120, 180, 240, 270. If the planet has a latitude, these arcs greater and less, are (ones) for which there is a need of correction.

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[8]Pingree: p.181, line 8 τοῦ for ὁ

[9]Neugebauer p.15 under πλάτος

[10]Neugebauer p.16 under τόξον

The Sine of 30 is reckoned. It is multiplied by the completed Sine of the latitude of the planet. The result is lowered by one (sexagesimal) step. The result is a Sine. Its arc is reckoned. This is called the correction. It is examined. Then 90 is placed in three places (on the tablet). Then that correction is subtracted from the first and added to the third. The result from the first is the arc of the sextile, the "diameter"[11] of this is the trine. The second arc is of a square, the "diameter" of this is again square. The third arc is of a trine; the "diameter" of this is the arc of a sextile.

Calculation with the Table from which the Latitude of the Planet is Clear

Entrance is made into this table of the configurations of the planets opposite the latitude of the planet, and (a value) is reckoned opposite that. Whatever is found from the first and the second table and what is found from the two tables are examined. The true longitude of the planet is placed on the tablet in two places. The number reckoned from the first table is subtracted from the true longitude of the planet which was placed first on the tablet, and added to the true longitude which was placed second. The result in the second (place) is the place of the light of the sextile of the planet from the left, and its "diameter" is its right trine. The result from the first is the right sextile and its "diameter" is its left trine.

The number (from) the second table is the latitude of the sextile in the direction where is the latitude of the planet. This number is also the latitude of the trine in the direction where there is no latitude of the planet. The square has no latitude. If it is necessary to comprehend[12] the square, 90 degrees are added to the true longitude of the planet, and the left square is found. The "diameter" of this is the right square. The latitude of the opposition of the planet is opposite the latitude of the planet in that direction where the planet is not.

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[11] The διάμετρος of angle θ is here apparently $180 - \theta$, or the *supplement* of θ.

[12] Pingree: p.183, 15 read καταληφθῆναι

12.2.4 On the Place of Light of the Planets with the Combination of the Two Places of "Fortune" with the Calculation of Ptolemy

When there is a need, an examination is made. If the planet is in the half(-circle) of ascent of the sphere (12.2), entrance is made into the table of the place of "fortune" with the straight line opposite the degree of the planet, and the place is reckoned from within the table. This is set down in 6 places on the tablet. 60 is added to the first place. 90 is added to the second, 120 to the third; and 60 is subtracted from the fourth, 90 from the fifth, 120 from the sixth. Then each of the six is sought within the table of the place of "fortune" with the straight line. The zodiacal sign is reckoned above the table and the degrees along the side. The minutes are extracted from between the two tables as was described earlier (2.1). The result is placed in the same order in six places. The left sextile is found from the first place, the left square from the second, the right trine from the third, the right sextile from the fourth, the right square from the fifth, and the right trine from the sixth. These six, namely the six configurations, are examined.

Then entrance is made opposite the true longitude of the planet into the table of the place of "fortune" of the zodiacal signs for the latitude of the city where the birth took place, and the place of "fortune" is reckoned from the middle of the table and set down in six places. Then this number — as the first is set down in 6 places opposite those six numbers, the first below the first, the second below the second, and so on. Then it is examined whether, (concerning) these two numbers, each is with the other opposite (it) or not, the first with the first and so on. If the two (rows) are equal, the place of the six lights of the planets (that is, their configurations) is correct.

If they are not opposite, they must be corrected. Once one is corrected, the rest will be also. When it is necessary to extract the correction of each, the difference of

each (pair) is examined, that is, the (difference) found between the first and so on. That (result) is multiplied by the distance of the planet from the tenth or the fourth center. The result is called the basis. This is examined.

Again it is examined. If the planet is above the earth, the basis is divided by half the arc of the day of the planet (A). If the planet is below the earth, the basis is divided by half the arc of the night of the planet. The result is the correction. This is multiplied by the three ray-castings of the planet, that is, by the three aspects from the left, each of which came out from the two numbers so as to be close to the planet. This correction is added to that which is closer. Then it is added to the three ray-castings from the right to that which is farther, and the six configurations are found.

If the planet is in the half(-circle) of descent of the sphere, these mentioned calculations are made for the place of "fortune" of the (opposite) point[13] of the planet. The result is the opposite (point) of the light of the planet. 6 zodiacal signs are always added to that opposite (point) and the light of the planet is found.

If we wish to perform this art in a different way, the latitude of the circle of motion[14] is ascertained, and the table of the place of "fortune" for that latitude that is recognized so the computation may be easier.

When we wish to make the calculation, it is examined. If the planet is in the half(-circle) of ascent of the sphere (12.2), the place of "fortune" of that degree is reckoned from the table. If the planet is in the half(-circle) of descent of the sphere, the place of opposition to the degree of the true longitude of the planet is reckoned in the table of the place of "fortune" for the latitude of the city with the straight line. The number of each ray-casting for that place of "fortune" is combined as was

[13]Here and elsewhere *opposite point* is used to signify the point which is 180 degrees away from the point in question

[14]Neugebauer p.15 under πλάτος

said (12.2.4), when there is addition and subtraction with the values 60, 90 and 120. The other calculation is completed in the way described earlier. The result is the diametrical point of the light of those planets. Six zodiacal signs are added to each, and the light of the planets is found.

The Calculation by Means of another, Easier Method

When the calculation of this is (made) by means of one place of "fortune" the table of the place of "fortune" along with the latitude of the circle of motion is brought to (one's) hands, and these numbers are read from the table. There is no need of the place of "fortune" with the straight line.

12.3 On the Motion of the *Haylāj*, that which Exists from its Proper Purpose, and the Place of that Degree

Know that the motion of the *haylāj* is one degree of the place of "fortune" for each year of the Sun. Since one degree per year is (equivalent to) 5 minutes in one month, and there are 6 days for one minute, and ten seconds are one day, and it is thus for all calculations, this *haylāj* which moves with the planets and good and bad hours, it moves so that from this it is ascertained[15] whether a man will live or die. Two calculations are employed for this motion of the *haylāj*. One calculation is for when the *haylāj* moves twice to that degree; this is the second, that the time ought ot be ascertained, but not necessarily the degree. For this (reason) this chapter is divided into two (sections).

[15]Pingree: p. 188, l.1 read καταληφθῇ

12.3.1 On the Calculation so that the Degree of the Unknown Time may be Known

When it is necessary that this calculation occur, first the place of "fortune" of the *haylāj* together with the place of "fortune" of the degree with the latitude of the city are reckoned, and each is placed separately. Then the *haylāj* is examined. If it is in a degree of the tenth or the fourth house, its place of "fortune" with the straight line is subtracted from the place of "fortune" with the straight line of that (*haylāj*). If the *haylāj* is in a degree of the seventh house, the place of "fortune" of its opposite (point) together with the latitude of the city is subtracted from the place of "fortune" of the opposite (point) of that degree together with the latitude of the city. The result is the arc of motion.

One year is reckoned for each degree as was mentioned earlier (12.3), so that the time of motion may be known. If the *haylāj* is between two cardines, correction is made as follows: if the *haylāj* is in the half(-circle) of ascent of the sphere, the difference between the place of "fortune" with the straight line of its degree for the latitude of the city is reckoned and examined. This is multiplied by the distance of the *haylāj* from the cardine. the result is a basis. This is examined. If the *haylāj* is above the earth, that basis is divided by half the arc of day(light) of the *haylāj*. If it is beneath the earth, it is divided by half the arc of night (of the *haylāj*). The result is the correction. Then it is examined with the place of "fortune" (with) the straight line. If it is greater than the place of "fortune" of the city, the correction is subtracted from it. If it is less, it is added to it. The result is the final place of "fortune" of the degree of the *haylāj*. This is examined. Then the difference between the place of "fortune" with the straight line of that degree (compared) with the place of "fortune" of that degree for that city is reckoned. This is multiplied by the distance of the *haylāj* and divided by half the arc of day(light) or of night of the *haylāj*. The second calculation is completed in the way described, so that the final

place of "fortune" of that degree may be found.

Then the final place of "fortune" of the *haylāj* is subtracted from the place of "fortune" of that degree. The result is the arc of motion. If the *haylāj* is in the half(-circle) of descent of the sphere, the place of "fortune" of the opposite (point) of the *haylāj* is reckoned from that degree, and the calculation occurs so that the arc of motion is found.

If we wish to make this computation easier, first the place of "fortune" of the zodiacal sign together with the latitude of the circle of motion is obtained. Then one place of "fortune" is reckoned, either that of the *haylāj* or (that) of its opposite (point), and again its degree similarly. Then the place of "fortune" of the *haylāj* is subtracted from the place of "fortune" of that degree so that the arc of motion may be found. The degree of each is reckoned in the way described.

12.3.2 On the (Temporal) Subdivision of the Degree of the Haylāj

When the time is known, even though the degree to which the *haylāj* is moving is not known, when it is necessary that this calculation occur, the genethlialogical (horoscope) is examined, how many years, months and days have elapsed from it. Each year of the Sun is reckoned as one degree, each month is reckoned as 5 minutes, and each day is reckoned as 10 seconds. The result is called the arc of motion or the march. This is kept aside. Then it is investigated if the *haylāj* is in a degree of the tenth or the fourth cardine, this arc of motion is added to the place of "fortune" with the straight line (of the *haylāj*). The result is examined in the middle (of the table) of the place of "fortune" with the straight line, and the zodiacal sign is reckoned above, and the degrees along the side. The number of minutes is extracted from between the two tables just as was described earlier (2.1).

The result is the location of the degree of the *haylāj*. If the *haylāj* is at the degree

of the "fortune", this calculation is made with the place of "fortune" for the city. If the *haylāj* is at the degree of the seventh house, this calculation is (made) with the place of "fortune" of the opposite (point) of the *haylāj* for the place of "fortune" for the city. The result is the opposite (point) of the degree of the portion of the *haylāj*. Six zodiacal signs are added to this, and the degree of the portion of the *haylāj* is found. If the *haylāj* is between the two cardines, the calculation should occur with the two places of "fortune" (of the centers), (that is), with the place of "fortune" (with) the straight line and (that for) the city. This is examined. If the *haylāj* is in the half(-circle) of ascent of the sphere, this calculation occurs with the place of the degree of the *haylāj*. If it is in the half(-circle) of descent of the sphere, this calculation occurs with the opposite (point) of the degree of the *haylāj*. The result from the two places of "fortune" in zodiacal signs, degrees and minutes — (is) that the degree is the degree of (the) *haylāj* (made) with the number of each place of "fortune". This is again examined. If the two (values) are equal in zodiacal signs, degrees and minutes, that degree is the final degree of the *haylāj*. If they are not equal, a correction occurs.

Its calculation is thus. The difference between the two places of "fortune" is reckoned. This is multiplied by the distance (from) the *haylāj* to the tenth or fourth cardine. The result is a basis. Again, this is examined. If the *haylāj* is above the earth, the basis is divided by half the arc of the day of the *haylāj*. If the *haylāj* is beneath the earth, the basis is divided by half the arc of the night of the *haylāj*. The result is the correction.

Then it is examined (in realtion) to the place of "fortune" with the straight line. If it is greater than the place of "fortune" for the city, the correction is subtracted from it. If it is less, the correction is added to it. The result is the place of "fortune"

of the degree, which degree[16] is of the *haylāj*, with the straight line. The degree[17] of the *haylāj* is extracted from that place of "fortune". If the *haylāj* is in the half(-circle) of descent of the sphere, this calculation occurs with the place of "fortune" of the opposite (point) of the *haylāj*. The result is the degree of the opposite (point) of the degree of the *haylāj*. Six zodiacal signs are added to this. The result is the degree of the *haylāj*.

This calculation with another order (is) easier, being with one place of "fortune". When there is need that this calculation occur, the place of "fortune" of the zodiacal signs of the latitude (of the circle) of motion (12.2.2) is reckoned. Then it is examined. If the *haylāj* is in the half(-circle) of ascent (of the sphere), this number occurs together with the place of "fortune" of the degree of the *haylāj* from its table. If it is in the half(-circle) of descent, this number occurs together with the place of "fortune" of the opposite (point) of the *haylāj* from this table.

12.4 On Considering the Motion of the Degree of the "Fortune" of the Genethlialogical (Horoscope) in a Year, in Months and Days

There are four sections for the motion of its "fortune".

12.4.1 On Considering that Calculation that it Moves One Zodiacal Sign in Each Year

When there is need of this calculation, the completed years of the Sun that have passed from the genethlialogical (horoscope – date) are placed on the tablet. The

[16]Pingree: p.192, 10 read ἡ μοῖρά

[17]Pingree: p.192, 11 read ἡ μοῖρα[τῆς μοίρας]

point of the zodiacal sign of the "fortune" in the base genethlialogical (horoscope)[18] is additional to those years. The result is divided by 12, that is, there is a subtraction of those (years) by twelve. The result should be the zodiacal sign at which the the motion of the "fortune" has arrived at that year. That zodiacal sign is called the *intihā'*. The degree and its minutes are the degree and minutes of the "fortune" in the (horoscopic) diagram.

This motion is in three (ways) The first is that for each year[19], it moves one zodiacal sign, for each month two and a half degrees, and for each day 5 minutes. With this calculation the degree of the "fortune" moves together with the light of the planets when there is a "fortune" of the base (horoscope) and a "fortune" of the "entrance".[20] The second (type of motion) is that 13 zodiacal signs are counted for each year, one degree and 4 minutes for each day, and for every 28 and one tenth of a day it passes by one zodiacal sign. This is called the motion of the months.

The third (type of motion) is that 13 zodiacal signs are counted for every 28 days and one tenth of a day, and 13 degrees and 53 minutes for every day (this is the motion in that (way) of days). A table has been set up for each of these three so that this calculation may be easily (found) there.

12.4.2 On the Calculations of the Motion of the "Fortune" of the " Entrance"

Know that the degree of the "fortune" of the "entrance" and its houses and their planets moves 12 zodiacal signs in a year and 59 minutes and 8 seconds in a day — that (this) is the mean motion of the Sun — and they move with this number along with the light of all the planets through a complete rotation of the sphere. The

[18]Pingree: base horoscope = اصل

[19]Pingree: p.194, 3 read χρόνον for ζῴδιον

[20]Pingree: εἰσέλευσις = منتهاء

second (type) is for the motion of the months. This is 12 degrees and 49 minutes for one day. With this number one zodiacal sign is completed in so many days, minutes of a day, and seconds: 30;26,12, in a month of the Sun.

12.4.3 On the March of the "Fortune" of the "Entrance" for a Month with this Calculation

In so much time: 30;26,12 (days), 12 zodiacal signs are traversed so that a rotation is completed. In each day are so many degrees (and) minutes: 11;50, so that in one month the calculation of the "fortune" of the months returns to their beginning with all the ray-castings of the planets. Tables have been set up by means of these calculations so that the computation is easy.

12.4.4 On the March of the "Fortune" of the "Entrance" with another Calculation

The place of "fortune" of the "entrance" is placed on the tablet. For one month of the Sun 7 degrees and 13 minutes are additional. The result is sought within the table of the place of "fortune" for the city. The zodiacal signs and degrees are reckoned opposite that so that the degree for one month may be found.

The degree for each day is extracted there (in the table) with this calculation for one year of the Sun. 86;44,4 (degrees) are additional to the place of "fortune" of the "fortune" of the "entrance"[21].

A table has been set up by means of the calculation so that the calculation is easier.

Whatever was found by us from the beginning (of this work) and whatever we have supplied beforehand in these twelve books and the chapters of each book and the

[21] Pingree: place of "fortune" = مطالع; "fortune" = طالع

sections of all these (chapters), we have brought this to an end with the will of God as (our) helper. May God maintain that man who, going through this composition, learns (the problems) worked out in it by us accurately as behoves (him).

Appendix A

First Scholium

Shams (al-Bukhārī) with respect to this.

Half the arc of that night and half the star's arc in the day are examined. If these two are equal, that discovered arc when the star rises is of the beginning of the night. If half the star's arc in the day is less than half the arc of the night, that is subtracted from half the arc of the night. The result is added to the arc. The result is the arc from the beginning of the night. If half the star's arc in the day is greater than half the arc of the night, the smaller is subtracted from the larger. The result is subtracted from the arc. The result is the arc of the beginning of the night, and the desired hours of the night are apprehended from this.

PART III

Glossary

- Entries are given in alphabetical order
- Within the alphabetical order, entries are listed by order of appearance in the text
- Nouns are given in the nominative
- Verbs are left in the finite form
- Adjectives and participles are given in the nominative
- Adjectives and participles are given in the masculine singular, unless used as substantives
- the form of each entry is
  - Greek word
  - one or two corresponding Arabic words (if applicable)
  - location in text (book, chapter, section, subsection)
  - Greek lemma
  - Arabic corresponding to the Greek lemma
  - English translation of the Arabic

α΄ (الطالع) 12.2.1

ὁ ἀστὴρ μέσον τοῦ ι΄ καὶ τοῦ α΄ οἰκήματος τοῦ τόπου τῆς τύχης

— الكوكب ـ ان كان فيما بين العاشر والطالع if the star is between the tenth and the ascendant

Ἀβδουραχμάν (الخازنى) 7.0.0

ὁ Ἀβδουραχμὰν ὁ Χαζανής — الخازنى al Khāzinī

Ἀδάρ (اذارماه) 1.5.2

Ἀδάρ — اذارماه Adhār-māh

τὸ 0 τοῦ Αἰγοκέρωτος (نقطتى الانقبلاتين) 5.2

ἐὰν ὁ ἀστὴρ εἰς τὸ 0 ἐστὶ τοῦ Καρκίνου ἢ εἰς τὸ 0 τοῦ Αἰγοκέρωτος — كان بالاتفاق فى احدى نقطتى الانقبلاتين in agreement with one of the two solstitial points

αἰλάτζ (الهيلاج) 12.2.2

τὸ αἰλάτζ — الهيلاج the *haylāj*

αἰλάτζ (الهيلاج) 12.3

περὶ τῆς κινήσεως τοῦ αἰλὰτζ — فى تسيير الهيلاج on the prorogation of the *haylāj*

αἰλάτζ (الهيلاج) 12.3.1

ὁ τόπος τῆς τύχης ὁ τέλειος τοῦ αἰλὰτζ — مطالع الهيلاج المحصل the resulting rising time of the *haylāj*

αἰλάτζ (الهيلاج) 12.3.1

τὸ μῆκος τοῦ αἰλὰτζ ἀπὸ τοῦ κέντρου

— بعد الهيلاج عن الوتد distance of the *haylāj* from the cardine

αἰλάτζ ( ) 12.3.1

εἰ δὲ τὸ αἰλὰτζ μέσον ἐστὶ τῶν δύο κέντρων — اذا كان بين الاوتد if it is between the cardines

αἰλάτζ ( ) 12.3.2

ἡ μοῖρα τοῦ μέρους τοῦ αἰλάτζ — موضع القسمة location of the division

αἰλάτζ ( ) 12.3.2

ἡ μοῖρα εἰς ἣν κινεῖται τὸ αἰλάτζ — موضع القسمة location of the division

αἰλάτζ (الهيلاج) 12.3.2

τοῦ μερισμοῦ τῆς μοίρας τοῦ αἰλάτζ — القسمة من الهيلاج the division of the *haylāj*

Αἰλούλ (ايلول) 1.1

Αἰλούλ — ايلول Ēlūl

αἰσθητός ( ) 12.1.1

τῶν χρόνων τῶν αἰσθητῶν ὅλων — سنى العالم years of the world

ἄκρον ( ) 2.2.1

εἰς τὸ ἄκρον τῆς ἀρχῆς — فى سطر عدد القسى in the column of the numbers of arcs

ἄκρον (قطب) 9.1.1

τοῦ τόπου τῶν ἄκρων τῆς σφαίρας τῶν ζῳδίων — قطب فلك البروج the poles of the sphere of the zodiacal signs

ἀκτινοβολία ( ) 12.2.4

τὰς $\overline{\gamma}$ ἀκτινοβολίας τὰς ἐξ δεξιῶν — الايمن dexter (rays)

ἀκτινοβολία (الشعاع) 12.2.4

τὰς γ̄ ἀκτινοβολίας τοῦ ἀστέρος ἤγουν τοὺς τρεῖς σχηματισμούς

— الشعاع الايسر sinister ray

ἄκτις (النور) 11.2

α΄ τόξον τοῦ καιροῦ ἕτερον τῶν ἀκτίνων ἄλλο τῆς ἀναβάσεως καὶ ἕτερον τόξον τῆς καταβάσεως

— قوس النور والمكث والارتفاع والانحطاط the arc of light; of duration; of altitude and of declivity

Ἀλεξανδρηνός (ثاون الاسكندرانى) 9.2

ὁ Θαβὰν ἐκεῖνος ὁ Ἀλεξανδρηνός — ثاون الاسكندرانى Theon of Alexandria

ἀλληλουχία (سطر) 8.3.1; 8.3.2

τὴν α΄ καὶ β΄ ἀλληλουχίαν — سطر العدد column of numbers

ἀνάβασις (رفع) 1.3.4

ἀνάβασις τῶν χρόνων καὶ τῶν μηνῶν. — فى رفع الايام المحصلة سنيا وشهورا on the raising of the days summarized in years and months

ἀνάβασις (ارتفاع) 3.1

τῆς ἀναβάσεως τοῦ ἡλίου εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας —

غاية ارتفاع الشمس فى دائرة نصف النهار limit of the altitude of the sun on the circle of half the day

ἀνάβασις (الصعور) 3.1

ἀνάβασις — الصعور ascending

ἀνάβασις (الارتفاع) 3.3

ἀνάβασίς ἐστι τοῦ ἡλίου ἢ τοῦ ἀστέρος — غائة الارتفاع عن سمت الراس limit of the altitude from the zenith

ἀνάβασις (ارتفاعه) 5.2

τῆς ἐσχάτης ἀναβάσεως — غائة ارتفاعه limit of its altitude

ἀνάβασις (الارتفاع) 6.1.1

ἀνάβασις τοῦ ἀστέρος — الارتفاع من الدائرة altitude from the circle

ἀνάβασις (ارتفاع) 6.1.3

τῆς ἀναβάσεως τοῦ καιροῦ — ارتفاع الوقت altitude of the time

ἀνάβασις (ارتفاع) 6.1.3

τῆς ἀναβάσεως τοῦ μέσου κύκλου τῆς ἡμέρας — ارتفاع نصف النهار altitude of half the day

ἀνάβασις (ارتفاع) 6.5.2

τῆς ἀναβάσεως — ارتفاع altitude

ἀνάβασις (صاعد) 8.3.1

ἀνάβασις — صاعد increasing

ἀνάβασις (الصعود) 8.3.4

ἐπεὶ δὲ χρεία εἰδέναι τὴν ἀνάβασιν καὶ κατάβασιν — الصعود ascending

ἀνάβασις (صاعد) 8.3.4

ἀνάβασίς ἐστι τοῦ πλάτους — الكوكب صاعد فيه the star is ascending in it

ἀνάβασις (صاعد) 8.3.4

εἰ δὲ ἔλαττον ἀνάβασις — هو صاعد فيه it is increasing in it

ἀνάβασις (صاعد) 8.3.4

ἡ ἀνάβασις νοτία — هو صاعد فى الجنوب it is increasing in the south

ἀνάβασις (ارتفاع) 9.1.1

τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων τῆς σφαίρας τῶν ζῳδίων ἤγουν τῶν ἄκρων τῆς κερκίδος δι᾽ ἧς κινεῖται ἡ σφαῖρα — ارتفاع قطب فلك البروج altitude of the pole of the sphere of the zodiacal signs

ἀνάβασις (ارتفاع) 9.1.1

τῆς ἀναβάσεως τοῦ ι᾽ οἰκήματος τῆς τύχης τοῦ καιροῦ — ارتفاع عاشر الاوقت altitude of the tenth of time (nonagesimal)

ἀνάβασις ( ) 9.1.1

ἡ τραχηλαῖα ἡ τετελειωμένη τῆς ἀναβάσεως του τόπου τῶν ἄκρων τῆς κερκίδος — جيب تمام عرض اقليم الرؤية sine of the complement of the latitude of the place of observation

ἀνάβασις (ارتفاع) 9.1.1; 9.1.3

ἡ ἀνάβασίς ἐστι τοῦ τόπου τῶν ἄκρων — ارتفاع قطب فلك البروج altitude of the pole of the sphere of the zodiacal signs

ἀνάβασις (ارتفاع) 9.1.2

τῆς ἀναβάσεως οἵας βουλόμεθα μοίρας — ارتفاع اية درجة نريد altitude of whatever degree we wish

ἀνάβασις (ارتفاع) 9.1.2

τῆς ἀναβάσεως τῆς σελήνης ἡνίκα πλάτος οὐκ ἔχῃ

— ارتفاع القمر اذا لم يكون له عرض بالتقريب the altitude of the moon when it has no latitude approximately

ἀνάβασις (ارتفاع) 9.1.3

ἡ ἀνάβασίς ἐστιν — مقدار ارتفاع measure of altitude

ἀνάβασις (ارتفاع) 9.1.3

ἡ ἀνάβασις τοῦ τόπου τῶν ἄκρων — مقدار ارتفاع قطب فلك البروج measure of the altitude of the pole of the sphere of the zodiacal signs

ἀνάβασις (ارتفاع) 9.1.4

τῆς τετελειωμένης ἀναβάσεως τοῦ ἡλίου καὶ τῆς σελήνης

— تمام ارتفاع الشمس والقمر complement of the altitude of the sun and moon

ἀνάβασις (بهت) 9.2.5

κατ' ἐναντίον τοῦ ἰδίου τῆς σελήνης ἢ τῆς ἀναβάσεως ταύτης — بهت القمر the daily velocity of the moon

ἀνάβασις (مسير) 9.2.5

τὰ κανόνια ἢ τοῦ ἰδίου ἢ τῆς ἀναβάσεως τῆς σελήνης — جدول مسير النيرين

table of the motions of the two luminaries

ἀναβάσις (ارتفاع) 9.3.1

τῆς ἀναβάσεως τοῦ ι´ οἰκήματος τῆς τύχης τοῦ καιροῦ — ارتفاع درجة العاشر altitude of the degree of the tenth

ἀνάβασις (ارتفاع) 10.3.2.1

ἡ ἀνάβασις τῆς σελήνης — ارتفاع جزء الاجتماع وهو ارتفاع القمر بالتقريب altitude of the degree of the conjunction and it is the altitude of the moon approximately

ἀνάβασις (ارتفاع) 10.3.2.1

ἡ ἀνάβασις τοῦ ί οἰκήματος — وارتفاع and its (the tenth's) altitude

ἀνάβασις (ارتفاع) 11.1.7

τὴν ἐσχάτην ἀνάβασιν τῆς διαμέτρου τῆς μοίρας τοῦ ἡλίου

— غاية ارتفاع نظير جزء الشمس limit of the altitude of the opposite point of the degree of the sun

ἀνάβασις (ارتفاعه) 11.1.8

ἡ ἀνάβασις τῆς σελήνης ἡνίκα νέα φανῇ — ارتفاعه its altitude

ἀνάβασις (ارتفاع) 11.1.8

ἡ ἐσχάτη ἀνάβασις τῆς σελήνης — غاية ارتفاع limit of the altitude

ἀνάβασις (ارتفاع) 11.1.8

ἡ ἐσχάτη ἀνάβασις τῆς μοίρας τῆς σελήνης — غاية ارتفاع درجة limit of the altitude of the degree

ἀνάβασις (ارتفاع) 11.1.8

τῆς ἀναβάσεως τῆς σελήνης μετὰ τὴν δύσιν τοῦ ἡλίου

— ارتفاع القمر عند مغيب الشمس altitude of the moon at the setting of the sun

ἀνάβασις (الارتفاع) 11.2

α΄ τόξον τοῦ καιροῦ ἕτερον τῶν ἀκτίνων ἄλλο τῆς ἀναβάσεως καὶ ἕτερον τόξον τῆς καταβάσεως

— قوس النور والمكث والارتفاع والانحطاط the arc of light; of duration; of altitude and of declivity

ἀνάβασις (انحطاط) 11.2.1

τὸ τόξον τῆς ἀναβάσεως τοῦ ἡλίου — قوس انحطاط الشمس arc of the declivity of the sun

ἀνάβασις (ارتفاع) 11.2.1

τὸ τόξον τῆς ἀναβάσεως τῆς σελήνης — قوس ارتفاع القمر arc of the altitude of the moon

ἀνάβασις (ارتفاع) 11.4

ἀνάβασις τῆς σελήνης — ارتفاع القمر altitude of the moon

ἀνάβασις (الرتفاع) 11.4.1

ἡ ἀνάβασις τῆς σελήνης — ارتفاع القمر altitude of the moon

ἀνάβασις (الهابط) 12.2

μέχρι καὶ τοῦ ι΄ τὸ ἥμισύ ἐστι τῆς ἀναβάσεως

— النصف الهابط the descending half

ἀνάβασις (الصاعد) 12.2

μέχρι καὶ τοῦ τετάρτου ἥμισύ ἐστι τῆς ἀναβάσεως — النصف الصاعد the ascending half

ἀνάβασις (الصاعد) 12.2.4

τὸ ἥμισυ τῆς ἀναβάσεως τῆς σφαίρας — النصف الصاعد the rising half

ἀναβιβάζων (الجوزهر) 8.1.2

ἡ μέση κίνησις τοῦ ἀναβιβάζοντος — وسط الجوزهر mean (motion) of the node

ἀναβιβάζων (الذنب) 8.1.3

τοῦ ἀναβιβάζοντος — الذنب tail (node)

ἀναβιβάζων (الجوزهر) 8.3.1

ἡ μέση κίνησις τοῦ ἀναβιβάζοντος — وسط الجوزهر mean (motion) of the node

ἀναβιβάζων (الرأس) 10.3.2

τὸ αὐθημερινὸν τοῦ ἀναβιβάζοντος — تقويم الرأس true position of the head (node)

ἀνάληψις (القيامة) 1.5.3

ἀνάληψις — القيامة resurrection

ἀνατολή (شرقى) 10.3.2

τὸ μέρος τῆς ἀνατολῆς — شرقى eastern

ἀνατολή (شرقيا) 10.3.2.1

εἰς τὸ μέρος τῆς ἀνατολῆς — شرقيا eastern

ἀνέτειλεν (طلعت) 1.2

ἀνέτειλεν ὁ ἥλιος — طلعت الشمس the sun rises

ἀνίσχει (طلوع) 4.1

ἀνίσχει — طلوع rising

ἀνίσχει (طلوعه) 5.5

ὅταν ἀνίσχει καὶ δύνῃ — فى اوقات طلوعه وغروبه in the times of its rising and its setting

ἀνίσχει (طلوع) 11.5

τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου εἰς τὸν καιρὸν ἡνίκα δύνῃ ὁ ἀστὴρ ἢ ἀνίσχῃ

— قوسى انحطاط الشمس عند مغيب الكوكب او طلوعه التى يسمى قوس الرؤية الكلّية the arcs of the declivity of the sun at the time of the setting of the planet or its rising which is called the arc of complete sighting

ἀνίσχει (طلع) 11.5.2

ὁ ἀστὴρ κατὰ ποῖον καιρὸν δύνει καὶ κατὰ ποῖον ἀνίσχει — طلع rise

ἄνω ( ) 9.3.1

ἐὰν ἡ ἀνάβασις τοῦ ι΄ οἰκήματος ἄνω οὖσα τῆς κεφαλῆς ἡμῶν νοτία τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ πλάτους εἰς τὸ νότιον μέρος

—

نقيسه بارتفاع درجة العاشر ان كان شماليا عن سمت الرأس فهذا شمالى وان كان جنوبيا فهذا جنوبى

we measure it (the parallax) by the altitude of the degree of the tenth. If it is northerly from the zenith it (the parallax) is northerly. If it is southerly (from the zenith) it (the parallax) is southerly

Ἄπ (الاب) 1.1

Ἄπ — الاب al-Ab

ἀποκαθίσταται (الانجلاء) 10.2.1.5

ἡ τετελειωμένη ὥρα καθ' ἣν ἀποκαθίσταται ἡ σελήνη — ساعات تمام الانجلاء hours of the completion of the clearing

ἀποκατάστασις (عودة) 1.1

ἀποκατάστασις — عودة return

ἀποκατάστασις (الانجلاء) 10.2.1.4

ἡ ὥρα τῆς τελείας ἀποκαταστάσεως τῆς σελήνης — ساعات تمام الانجلاء hours of the completion of the clearing

ἀποκατάστασις (الانجلاء) 10.2.1.5

ὥρα ἐστὶν ἀπὸ τῆς ἀρχῆς τῆς ἐκλείψεως τῆς σελήνης μέχρι τῆς τελείας ἀποκαταστάσεως

— ساعات وقوع الخسوف من البداء الى تمام الانجلاء hours of the occurrence of the

eclipse from the beginning to the completion of the clearing

ἀποκατάστασις (الانجلاء) 10.2.1.5

ἡ ἀρχὴ τῆς ὥρας τῆς ἀποκαταστάσεως τῆς σελήνης — بداء الانجلاء (ساعات)

hours of the beginning of the clearing

ἀπώλεια (هلاك) 1.2

ἀπώλεια κόσμου — هلاك امة destruction of the world

ἀριστερός (الايسر) 12.2.3

ὁ τόπος ἐστὶ τοῦ φωτὸς τοῦ ἑξαγώνου τοῦ ἀστέρος ἐξ ἀριστερῶν

— موضع نور تسديسه الايسر the location of the illumination of its sinister sextile

ἀριστερός (الايسر) 12.2.4

τὰς $\overline{\gamma}$ ἀκτινοβολίας τοῦ ἀστέρος ἤγουν τοὺς τρεῖς σχηματισμούς

— الشعاع الايسر sinister rays (aspects)

ἀριστερός (الايسر) 12.2.4

τὸ ἀριστερὸν τρίγωνον — التثليث الايسر sinister trine

ἀριστερός (الايسر) 12.2.4

τὸ ἀριστερὸν τετράγωνον — التربيع الايسر sinister quartile

ἀριστερός (الايسر) 12.2.4

τὸ ἀριστερὸν ἑξάγωνον — التسديس الايسر sinister sextile

ἀρχαῖος (المتقدمين) 2.2

οἱ ἀρχαῖοι ἐκεῖνοι — المتقدمين the predecessors

ἀρχή (الاوّل) 1.1

ἀρχή — الاوّل first

ἀρχή (نقطة) 1.2

ἥλιος ἐς τὴν ἀρχὴν τοῦ Κριοῦ — حلت الشمس نقطة الاعتدال الربيعى the sun came to the point of the Spring equinox

ἀρχή (مدحل) 1.4

τῆς καταλήψεως τῆς ἀρχῆς τῶν χρόνων καὶ τῶν μηνῶν τούτων τῶν ἐτῶν κατὰ ποίαν ἡμέραν εἰσέρχονται τῆς ἑβδομάδος — مدحل الشهور فى ايام الاسابيع on the entrance of the months in days of the week

ἀρχή (مفتتح) 1.4.1

ἡ ἀρχὴ τοῦ χρόνου — مفتتح السنة beginning of the year

ἀρχή (اوّل) 4.4

τῆς ἀρχῆς τοῦ Κριοῦ εἰς τὰ βόρεια ζῴδια — من اوّل الحمل فى البروج الشمالية from the beginning of Aries in the northern zodiacal signs

ἀρχή (مفتتح) 7.3.1

ἡ ἀρχὴ τοῦ χρόνου — مفتتح السنة beginning of the year

ἀρχή (رأس) 7.4

εἰς τὴν ἀρχὴν ἑκάστου μηνὸς ὁ ἥλιος εἰς τὴν ἀρχὴν γίνεται τοῦ ζῳδίου — الشمس تنزل فى رأس كلّ شهر رأس برج the sun alights at the beginning of every

month at the beginning of a zodiacal sign

ἀρχή ( ) 9.1.3

εἰς τὴν ἀρχὴν τοῦ Κριοῦ ἢ τοῦ Ζυγοῦ — وموضعه نقطتى الاعتدالين its location is one of the two equinoctial points

ἀρχή ( ) 9.1.3

τὴν ἀρχὴν τοῦ Καρκίνου ἢ τοῦ Ἀιγοκέρωτος — موضعه احدى نقطة الانقلابين its location is one of the two solstitial points

ἀρχή (رؤس) 9.2

εἰς τὴν ἀρχὴν ἑκάστου ζῳδίου — فى رؤس البروج at the beginnings of the zodiacal signs

ἀρχή (رأس) 9.2.3

τὴν ἀρχὴν τοῦ ζῳδίου — فى رأس ذلك البرج in the beginning of that zodiacal sign

ἀρχή (بداء) 10.2.1.4

ὥρα τῆς ἀρχῆς τῆς ἐκλείψεως τῆς σελήνης — ساعات بداء الخسوف hours of the beginning of the eclipse

ἀρχή (بداء) 10.2.1.5

ὥρα ἐστὶν ἀπὸ τῆς ἀρχῆς τῆς ἐκλείψεως τῆς σελήνης μέχρι τῆς τελείας ἀποκαταστάσεως

— ساعات وقوع الخسوف من البداء الى تمام الانجلاء hours of the occurrence of the eclipse from the beginning to the completion of the clearing

ἀρχή (بداء) 10.2.1.5

ἡ ἀρχὴ τῆς ὥρας τῆς ἀποκαταστάσεως τῆς σελήνης — (ساعات) بداء الاجلاء hours of the beginning of the clearing

ἀρχή (بداء) 10.2.1.5

ἀρχὴ τῆς ἐκλείψεως τῆς σελήνης — ساعات بداء الخسوف hours of the beginning of the eclipse

ἀρχή (رؤس) 11.5.1

Ἡμεῖς κανόνιον ἐθήκαμεν καὶ τὰ τόξα ἅπερ ἔδομεν τεθείκαμεν εἰς ἐκεῖνο τὸ κανόνιον μετὰ τοῦ ψήφου τῶν καταβάσεων εἰς τὸ δ΄ κλίμα εἰς τὰς ἀρχὰς τῶν ζῳδίων — وضعنا اقدار حدود الرؤية من اجزاء البروج وللانحطاطات اضلية فى الاقليم الرابع على رؤس البروج

We have set out the values of the limits of sighting in degrees of the zodiacal signs and for the initial declivities (we have set them out) for the fourth clime at the beginnings of the zodiacal signs

ἀρχή ( ) 11.6.1

εἰς τὴν ἀρχὴν τῆς νυκτὸς — عند مغيب الشمس at the setting of the sun

ἀρχή (اوائل) 12.1.1

εἰς ἐκεῖνον τὸν καιρὸν ὅτι ὁ ἡλίος γίνεται εἰς τὴν ἀρχὴν τῶν ζῳδίων — عند نزول الشمس اوائل البروج المنقلبة when the sun alights upon the beginnings of the coming zodiacal signs

ἀρχή (اوّل) 12.1.3

τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς ἧς ἡ ἀρχὴ ἀπὸ τῆς ἀρχῆς τοῦ Κριοῦ

— مطالع الفلك المستقيم من اوّل الحمل rising time in the right sphere from the first of Aries

ἀστήρ (الكواكب) 1.2

μέσαι κινήσεις τῶν ἀστέρων — اوساط حركات الكواكب mean motions of the planets

ἀστήρ (كواكب) 1.5.1

τῶν ἀπλανῶν ἐκείνων ἀστέρων — كواكب الثابتة fixed planets

ἀστήρ (كوكب) 3.2.1

τοῦ ἀεὶ φαίνοντος ἀστέρος καὶ μήποτε δυομένου — كوكب ابدى الظهور always visible star

ἀστήρ (الكواكب) 5.0.0

τῶν ἀπλανῶν ἀστέρων — الكاكب الثابتة fixed stars

ἀστήρ (المتحيرة) 8.0.0

τοῦ αὐθημερινοῦ τῶν ε̄ ἀστέρων — تقويم المتحيرة correction of the planets

ἀστήρ (الكواكب) 8.1.4

τῶν ε̄ ἀστέρων — الكواكب الخمسة المتحيرة the 5 moveable stars

ἀστήρ (الكواكب) 8.3.2

τοῦ πλάτους τῶν ἀστέρων τῶν ἄνω τοῦ ἡλίου — عرض الكواكب العلوية lat-

itude of the superior planets

ἀστήρ ( ) 8.3.4

ὁ ἀστὴρ τῆς βορείας καταβάσεως — هو هابط فى الشمال it is decreasing in the north

ἀστήρ (الكواكب) 11.0.0

οἱ ἀστέρες πότε ἵνα φανῶσι μετὰ τὴν σύνοδον τοῦ ἡλίου

— تشريق الكواكب المتحيرة وتغريبها the rising of the planets and their setting

ἀστήρ (الكواكب) 11.5

ἐκείνη ἡ μοῖρα ἡ ἐξερχομένη μετὰ τοῦ ἀστέρος τηρεῖται ἢ ἐκείνη ἡ μοῖρα ἡ μετὰ τοῦ ἀστέρος δύνουσα — الدرجة التى يطلع معه الكواكب او يغرب the degree with which the planet rises or sets

ἀστήρ (الكواكب) 11.5

περὶ τῶν ε̄ πλανωμένων ἀστέρων ὅτι κατὰ ποῖον καιρὸν ἐξέρχονται ἤτοι ὑπεξίστανται τοῦ φωτὸς τοῦ ἡλίου καὶ κατὰ ποίαν ὥραν εἰσέρχονται ὑπὸ φῶς τοῦ ἡλίου κατὰ τὸ πρωΐ ἢ τὴν ἑσπέραν — فى تشريق الكواكب المتحيرة وتغريبها on the rising of the moveable stars (planets) and their settings

ἀστήρ ( ) 12.0.0

τοῦ τόπου τῶν ἀστέρων — مطرح الشعاعات casting of the rays

ἀστήρ ( ) 12.2

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων ἤτοι τοῦ πρὸς ἄλληλα τούτων σχηματισμοῦ

— مطرح الشاعات casting of rays

ἀστήρ (كوكب) 12.2.1

εἰ δὲ ὁ ἀστὴρ μέσον τοῦ δ΄ καὶ τοῦ ζ΄

— ان كان الكوكب فيما بين الرابع والسابع if the star is between the fourth and the seventh

ἀστήρ ( ) 12.2.1

μῆκός ἐστι τοῦ ἀστέρος ἀπὸ τοῦ δ΄ — بعده من الرابع its (the star's) distance from the fourth

ἀστήρ (الكوكب) 12.2.1

τοῦ τόπου τῆς τύχης τοῦ ἀστέρος — مطالع الكوكب المستقيم rising time of the star in right ascension

ἀστήρ (الكوكب) 12.2.1

ὁ ἀστὴρ μέσον τοῦ ι΄ καὶ τοῦ α΄ οἰκήματος τοῦ τόπου τῆς τύχης

— الكوكب ـ ان كان فيما بين العاشر والطالع if the star is between the tenth and the ascendant

ἀστήρ (الكوكب) 12.2.1

τόπος τῆς τύχης τοῦ ἀστέρος — مطالع الكوكب المستقيم rising time of the star in right ascension (A2 / in marg A1)

ἀστήρ (الكوكب) 12.2.1

τοῦ μήκους τῶν ἀστέρων — بعد الكوكب distance of the star

ἀστήρ (الكوكب) 12.2.2

τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ κέντρου τοῦ ι΄ ἢ τοῦ δ΄

— بعد الكوكب عن وتدى العاشر او الرابع the distance of the star from the tenth or fourth cardine

ἀστήρ (الكوكب) 12.2.3

τὸ πλάτος τοῦ ἀστέρος — عرض الكوكب latitude of the planet

ἀστήρ (الكوكب) 12.2.3

τὸ αὐθημερινὸν τοῦ ἀστέρος — تقويم الكوكب the true position of the planet

ἀστήρ ( ) 12.2.3

κανόνιον τόδε τῶν σχηματισμῶν τῶν ἀστέρων

— جدول مطرح الشعاع بحسب العرض table of the casting of the rays by the calculation of latitude

ἀστήρ (الكوكب) 12.2.3

τὴν τετελειωμένην τραχηλαΐαν τοῦ πλάτους τοῦ ἀστέρος

— جيب تمام عرض الكوكب sine of the complement of the latitude of the planet

ἀστήρ (الكوكب) 12.2.3

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων — مطرح شاعات الكوكب casting of rays of the planet

ἀστήρ (الكواكب) 12.4.2

τοῦ φωτὸς τῶν ἀστέρων ὅλων — بجميع الكواكب والشعاعات التحويلية with all the stars and the aspects of revolution

ἀστρολάβος (الاسطرلاب) 11.4.1

ὁ ἀστρολάβος — الاسطرلاب astrolabe

ἀσφαλής (تصحيح) 11.1.2

τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόπου τῆς σελήνης — تصحيح موضع القمر correction of the place of the moon

ἀσφαλής (تصحيح) 11.1.3

τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόπου τῆς σελήνης μετὰ τῆς ὀρθώσεως τῆς ἡμέρας — تصحيح موضع القمر بتعديل الايام بلياليها correction of the place of the moon with the equation of days with their nights

αὐθημερινόν (تصحيح) 5.1

τοῦ αὐθημερινοῦ τῶν ἀστέρων — تصحيح مواضعها correction of their (the planets') places

αὐθημερινόν (درجة) 5.2.1

τοῦ αὐθημερινοῦ τοῦ ἀστέρος — درجة الكوكب degree of the star

αὐθημερινόν (بعد) 5.3

τοῦ αὐθημερινοῦ τοῦ ἀστέρος — بعد الكوكب distance of the star

αὐθημερινόν (جزء) 6.3

τὸ αὐθημερινὸν τοῦ ἡλίου — جزء الشمس degree of the sun

αὐθημερινόν (تقويم) 7.4

τὸ αὐθημερινὸν τοῦ καταβιβάζοντος — تقويم الجوزهر true position of the

node

αὐθημερινόν (تقويم) 7.4

τὸ αὐθημερινόν — تقويم true position

αὐθημερινόν (التقويم) 8.0.0

τοῦ αὐθημερινοῦ τῶν ἀστέρων — التقويم true position

αὐθημερινόν (تقويم) 8.0.0

τοῦ αὐθημερινοῦ τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

αὐθημερινόν (تقويم) 8.0.0

τοῦ αὐθημερινοῦ τῶν ε̄ ἀστέρων — تقويم المتحيرة true position of the planets

αὐθημερινόν (تقويم) 8.1

τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ τῆς σελήνης — تقويم النيرين true position of the two luminaries

αὐθημερινόν (تقويم) 8.1.1

τοῦ αὐθημερινοῦ τοῦ ἡλίου — تقويم الشمس true position of the sun

αὐθημερινόν (مركز) 8.1.1

βουλομένων ἡμῶν ποιῆσαι αὐθημερινὸν του ἡλίου

— اذا اردنا ان نحول حساب مركز الشمس if we wish to calculate the center of the sun

αὐθημερινόν (تقويم) 8.1.1

καὶ αὖθις ἐκεῖνο τὸ αὐθημερινὸν τοῦ ἡλίου

— تقويم الشمس فى منطقة البروج true position of the sun in the zone of the zodiacal signs

αὐθημερινόν (تقويم) 8.1.2

τὸ αὐθημερινὸν τῆς β ´ σφαίρας τῆς σελήνης — تقويم القمر فى الفلك المائل true position of the moon in the inclined sphere

αὐθημερινόν (تقويم) 8.1.2

τῷ αὐθημερινῷ τῆς σελήνης — تقويم القمر true position of the moon

αὐθημερινόν (تقويم) 8.1.2

τὸ αὐθημερινόν τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

αὐθημερινόν (تقويم) 8.1.3

τοῦ αὐθημερινοῦ τοῦ καταβιβάζοντος καὶ τοῦ ἀναβιβάζοντος — تقويمى الرأو والذنب true positions of the head and tail (nodes)

αὐθημερινόν (تقويم) 8.1.3

αὐθημερινὸν τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

αὐθημερινόν (تقويم) 8.1.3

αὐθημερινὸν τοῦ ἀναβιβάζοντος — تقويم الذنب true position of the tail

(node)

αὐθημερινόν (تقويم) 8.1.4

τοῦ αὐθημερινοῦ τῶν ε̄ ἀστέρων — تقويم الكواكب الخمسة المتحيرة true position of the 5 moveable stars

αὐθημερινόν (تقويم) 8.1.4

αὐθημερινὸν τοῦ ἀστέρος — تقويم الكوكب true position of the planet

αὐθημερινόν (تقويم) 8.3.1

τὸ αὐθημερινὸν τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

αὐθημερινόν (تقويم) 8.3.1

τοῦ αὐθημερινοῦ τῆς σελήνης — تقويم القمر true position of the moon

αὐθημερινόν (موضعه) 9.3

τὸ αὐθημερινόν — موضعه its location

αὐθημερινόν (موضع) 10.1.1

τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης ἐγένοντο τέλεια μετὰ τῆς ὀρθώσεως τῆς ἡμέρας — موضع القمر معدلا بتعديل الايام بلياليها location of the moon corrected with the equation of the day and its night

αὐθημερινόν (البعد) 10.1.1

εἰ δὲ τὸ αὐθημερινὸν τῆς σελήνης πλέον ἐστὶ τοῦ αὐθημερινοῦ τοῦ ἡλίου — ان كان البعد للقمر if there is distance to the moon

αὐθημερινόν (البعد) 10.1.1

ἐὰν οὖν τὸ αὐθημερινὸν τῆς σελήνης ἔλαττον ᾖ τοῦ αὐθημερινοῦ τοῦ ἡλίου — ان كان البعد للشمس if there is distance to the sun

αὐθημερινόν (موضعى) 10.1.1

τὸ αὐθημερινὸν τοῦ ἡλίου καὶ σελήνης — موضعى النيرين longitudes of the two luminaries

αὐθημερινόν (تقويم) 10.2.2.1

τὰ λεπτὰ τοῦ αὐθημερινοῦ — دقائق التقويم minutes of the true position

αὐθημερινόν (تقويم) 10.3.2

τὸ αὐθημερινὸν τοῦ ἀναβιβάζοντος — تقويم الرأس true position of the head (node)

αὐθημερινόν (تقويم) 10.3.2

τὸ αὐθημερινόν — تقويم true position

αὐθημερινόν (تقويم) 10.3.2.2

τὸ αὐθημερινὸν τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

αὐθημερινόν (التقويم) 10.3.2.3

τὰ λεπτὰ τοῦ αὐθημερινοῦ — دقائق التقويم minutes of the true position

αὐθημερινόν (موضع) 11.1.1

αὐθημερινὸν τῆς σελήνης — موضع القمر place of the moon

αὐθημερινόν (تقويم) 11.1.1

Εἰς τὴν κατάληψιν τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ τῆς σελήνης εἰς ἐκεῖνον τὸ καιρὸν ὅτι ἡ μοῖρα τοῦ αὐθημερινοῦ τῆς σελήνης κατέρχεται δύνουσα

— تقويم النيرين عند مغيب جزء القمر the true position of the of the two luminaries at the setting of the degree of the moon

αὐθημερινόν (موضع) 11.1.3

τοῦ αὐθημερινοῦ τῆς σελήνης — موضع القمر place of the moon

αὐθημερινόν (التقويم) 11.2.1

τὰ λεπτὰ τοῦ αὐθημερινοῦ — دقائق التقويم minutes of true position

αὐθημερινόν ( ) 11.6.1

Γίνεται τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης — قومنا النيرين we rectify (the position of) the two luminaries

αὐθημερινόν ( ) 11.6.2

γίνεται αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης — قومنا النيرين we rectify (the position of) the two luminaries

αὐθημερινόν (موضع) 12.1

τὸ αὐθημερινὸν τοῦ ἡλίου — موضع الشمس فى التقاويم the position of the sun in true positions

αὐθημερινόν (موضع) 12.1.1

ἐὰν ᾖ οὕτως ὅτι τὸ αὐθημερινὸν τοῦ ἡλίου τέλειον οὐκ ἐγένετο μετὰ τῆς ὀρθώσεως τῆς ἡμέρας

— اذا لم يكن موضع الشمس محققا بتعديل الايام بلياليها if the location of the sun is not corrected by the equation of the days with their nights

αὐθημερινόν (تقويم) 12.1.1

τὸ αὐθημερινὸν τοῦ ἡλίου — تقويمها its (the sun's) true position

αὐθημερινόν (تقويم) 12.2.3

τὸ αὐθημερινὸν τοῦ ἀστέρος — تقويم الكوكب the true position of the planet

αὔξει (كثرة) 1.2

ἡ σελήνη αὔξει καὶ μειοῦται — كثرة روئتهم الاهلية multitude of their sightings of the lunar crescent

ἀφαιρεῖται (اخذ) 2.1

ἀφαιρεῖται — اخذ take

ἀφαιρεῖται (نقص) 2.2.2

ἀφαιροῦνται — نقصنا we subtract

ἀφαιρεῖται (طرح) 12.1.2

ἡ περιφορὰ ἀφαιρεῖται ἐξ ἐκείνου — طرحنا منها الادوار we cast off from it cycles

ἀφαίρεσις (ناقص) 2.1

ἔνευσε πρὸς ἀφαίρεσιν — هو ناقص (it is) decreasing

ἀφαίρεσις (النقصان) 4.2.1

τὴν ἀφαίρεσιν — النقصان subtraction

ἀφαίρεσις (القينا) 12.4.1

εἴ τι εὑρεθῇ ἐκεῖνο εἰς τὰ $\overline{\iota\beta}$ μερίζεται ἤγουν ἀνὰ $\overline{\iota\beta}$ γίνεται τούτων ἀφαίρεσις — القينا من المبلغ اثناى عشر we cast off twelve from the result

βαθμός (ستين) 4.2

παρ' ἕνα βαθμὸν κρατεῖται — ضربنا فى ستين multiply by 60 (see A p11. Line 17) first occurrence in 4.2

βαθμός (ستين) 4.2

παρ' ἕνα βαθμὸν κρατεῖται — قسمنا المبلغ على ستين we divide the results by 60 (second occurrence in 4.2)

βαθμός (ستين) 5.2.1

κρατεῖται ἔλαττον ἑνὸς βαθμοῦ — قسمنا على ستين we divide it by 60

βαθμός (ستين) 6.1.3;9.1.1

εἴ τι ἐξέλθῃ παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται — قسمنا المبلغ على ستين we divide the result by 60

βαθμός ( ) 6.7

εἴ τι εὑρεθῇ παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται — قسمناه على الجيب كلّه we divide the result by the total sine

βαθμός ( ) 10.3.2.3

καὶ εἴ τι ἐξέλθῃ παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. — قسمنا المبلغ على ستين we divide the result by 60

βαθμός ( ) 11.3.1

ἡ σελήνη νέα γενομένη εἰς ἐκεῖνόν ἐστι τὸν βαθμὸν τοῦ φανῆναι ἢ οὔ — الهلال فى حدّ الاشتباه وعلى طرفى وجوب الرؤية وامتناعها the crescent is within the limit of uncertainty and on the edge of necessity (of seeing it) or of abstention (from seeing it)

βόρειος (شمالية) 8.3.2

βόρειον — شمالية northern

βραδύνει (لا مكث) 10.3.2.2

ὁ ἥλιος τέλειον ἐκλείψει καὶ οὐ βραδύνει ἐν τῇ ἐκλείψει

— الكسوف الكلى ولا مكث له the eclipse is total and there is no duration to it

Γάφιρ (الغفر) 1.5.1

Γάφιρ — الغفر al-Ghafr

γενεθλιαλογικά (المواليد) 7.0.0

τῶν γενεθλιαλογικῶν — المواليد nativities

γενεθλιαλογικά (المواليد) 7.2.1

τὰ γενεθλιαλογικά — المواليد nativities

γενεθλιαλογικά (المواليد) 12.0.0

τῶν γενεθλιαλογικῶν — المواليد nativities

γενεθλιαλογικά (المواليد) 12.1

περὶ τῆς εἰσελεύσεως τῶν χρόνων ὅλων καὶ τῶν χρόνων τῶν γενεθλιαλογικῶν

— فى تحويل سنى العالم والمواليد on the revolution of the years of the world and of the nativities

γενεθλιαλογικός (الميلاد) 12.1.2

εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης εἰς τὸ πλάτος τῆς πόλεως ἐκείνης ἐν ᾗ γίνεται τηνικαῦτα ἡ ζήτησις τοῦ γενεθλιαλογικοῦ

— فى جدول مطالع البروج لعرض الميلاد in the table of rising times of the zodiacal signs for the latitude of the nativity

γενεθλιαλογικός ( ) 12.4.1

τὸ σημεῖον τοῦ ζῳδίου τῆς τύχης τοῦ θεμελίου τοῦ γενεθλιαλογικοῦ περισσεύεται εἰς τοὺς χρόνους ἐκείνους

— زدنا على صورة البرج الذى فيه الكوكب او صورة الطالع we add them (the completed years) to the image of the zodiacal sign in which the planet is or to the image of the ascendant

γενεθλιαλογικός (المولود) 12.4.1

οἱ τετελειωμένοι χρόνοι τοῦ ἡλίου οἱ παρελθόντες ἀπὸ τοῦ γενεθλιαλογικοῦ

— السنين التامة التى على المولود the complete years which have passed for the native

γέννησις (المواليد) 12.1

κατὰ τὸν καιρὸν ἡνίκα ἐγένετο ἡ γέννησις — المواليد nativities

γέννησις (الميلاد) 12.1.1

εἰς τὸ μῆκος τῆς πόλεως ἐκείνης ἔνθα καὶ ἡ γέννησις — على طول الميلاد for the longitude of the nativity

γῆ (ارضية) 1.2

μέγιστον ἔργον τῶν τῆς γῆς — حادثة عظيمة من علامات ارضية great occurrence of earthly signs

γῆ ( ) 4.1

ἀεὶ ὑπὸ γῆν ἐστιν — ابدى الخفاء always hidden

γῆ (الارض) 12.2.1

ὑπὸ γῆν — تحت الارض below the earth

γῆ (الارض) 12.2.1

ὑπὲρ γῆν — فوق الارض above the earth

γραμμή cf. εὐθεία γραμμή

γραμμή (خط) 6.6

τῆς γραμμῆς τοῦ μέσου τῆς ἡμέρας τῆς γῆς — خط نصف النهار line of half the day

γραμμή (خط) 6.6

ἡ γραμμὴ τοῦ μέσου τῆς ἡμέρας — خط نصف النهار line of half the day

γραμμή (الخط) 6.6

γραμμὴ τῆς ἀνατολῆς καὶ τῆς δύσεως — الخط الاعتدال line of the equinoctial points

γραμμή (خط) 6.7

τῆς γραμμῆς τοῦ μέσου τῆς ἡμέρας — خط الزوال line of noon

γωνία (الزواياء) 9.1.3

τῶν $\overline{\gamma}$ γωνιῶν — الزواياء الثالث three angles

γωνία (زاوية) 9.1.3

ἡ γωνία τοῦ μήκους τετελειωμένη εἰς τὰ $\overline{\varrho}$ — زاوية العرض وتمامها الى تسعين the angle of latitude and its complement to 90

γωνία (زاوية) 9.1.3

καὶ τοῦτο ἡ γωνία τοῦ πλάτους — زاوية الطول angle of longitude

γωνία (زاوية) 9.1.3

εἴ τι εὑρεθῇ γωνία τοῦ πλάτους ἐστὶν καὶ τὸ πλήρωμα ταύτης γωνία ἐστὶ τοῦ μήκους — زاوية العرض angle of latitude

γωνία (زاوية) 9.1.3

εἴ τι εὑρεθῇ γωνία ἐστὶ τοῦ πλάτους. καὶ τοῦτό ἐστιν ἡ τετελειωμένη γωνία τοῦ πλάτους — فيحصل جيب زاوية العرض وتمامها زاوية الطول the result is the sine of the angle of latitude and its complement is the angle of longitude

γωνία (زواياء) 10.3.2.1

ἡ γωνία τοῦ πλάτους καὶ τοῦ μήκους — زواياء الطول والعرض the angles of longitude and latitude

δάκτυλος (الاصابع) 2.2.3

τοὺς δακτύλους — الاصابع fingers

δάκτυλος (اصابع) 10.2.1.3

δάκτυλοι — اصابع fingers

δάκτυλος (اصابع) 10.2.2.1

τῶν δακτύλων τῆς ἐπιφανείας τῆς σελήνης — اصابع الخسوف من سطحه digits of the eclipse on its surface

δάκτυλος (اصابع) 10.2.2.1

ἐκλείπει μέρος τῆς σελήνης ὅσον ἀναφανῇ εἰς τοὺς δακτύλους τῆς διαμέτρου — يكون الخسوف بقدر من اصابع قطره the eclipse is in the measure of the digits of its diameter

δάκτυλος (اصابع) 10.2.2.1

οἱ δάκτυλοι τῆς ἐκλείψεως — اصابع الخسوف digits of the eclipse

δάκτυλος (الاصابع) 10.2.2.1

οἱ δάκτυλοι τῆς πεσούσης ὥρας — الاصابع وساعات السقوط the digits and the hours of half-duration

δάκτυλος (الاصابع) 10.3.2.3

οἱ δάκτυλοι καὶ ὄρθωσις ἐκείνων — الاصابع وتعديلها digits and their equa-

tion

δάκτυλος (البنان) 11.4

περὶ τοῦ ψήφου τούτου ἵνα δειχθῇ ἡ σελήνη διὰ δακτύλων

— فى الاشارة الى الهلال بالبنان on the pointing out of the crescent by fingers

δειχθῇ (الاشارة) 11.4

περὶ τοῦ ψήφου τούτου ἵνα δειχθῇ ἡ σελήνη διὰ δακτύλων

— فى الاشارة الى الهلال بالبنان on the pointing out of the crescent by fingers

δέκατον (العشر) 6.4

δέκατον — العشر the tenth

δεξιός (الايمن) 12.2.3

ἑξάγωνόν ἐστι δεξιόν — تسديسه الايمن its dexter sextile

δεξιός (الايمن) 12.2.3

ἡ διάμετρος τούτου τρίγωνόν ἐστι δέξιον — ويقابله التثليث الايمن and opposite to it (the sinister sextile) is the dexter trine

δεξιός (الايمن) 12.2.4

τὰς $\overline{\gamma}$ ἀκτινοβολίας τὰς ἐξ δεξιῶν — الايمن (الشعاع) dexter (rays)

δεξιός (الايمن) 12.2.4

τὸ δεξιὸν τρίγωνον — الايمن التثليث dexter trine

δεξιός (الايمن) 12.2.4

τὸ δεξιὸν τετράγωνον — الايمن التربيع dexter quartile

δεξιός (الايمن) 12.2.4

τὸ δεξιὸν ἑξάγωνον — الايمن التسديس dexter sextile

δῆλος (المشاهير) 1.2

δῆλαι καὶ μέγισται ἡμέραι — ايام المشاهير famous days

δῆλος (المشهورة) 1.2

αἱ δῆλαι ἡμέραι — وايامهم المشهورة their famous days

δῆλος (المشهورة) 1.2

τὰ ἔτη δῆλα — التواريخ المشهورة famous epochs

διάμετρος (قطر) 2.2

τὴν διάμετρον — قطر diameter

διάμετρος (نظير) 5.5

μέσον τοῦ ἡλίου καὶ τῆς διαμέτρου τούτου — فيما بين درجة الشمس الى نظيرها in what is between the degree of the sun up to its opposite point

διάμετρος (قطر) 8.4

τῆς διαμέτρου τούτων — قطريهما their diameters

διάμετρος (قطر) 8.4.1

τὴν διάμετρον τοῦ ἡλίου — قطرها its (the sun's) diameter

διάμετρος (قطر) 8.4.2

τῆς διαμέτρου τοῦ σκιάσματος — قطر الظلّ diameter of the shadow

διάμετρος (الاقطار) 8.4.3

τῆς διαμέτρου τούτων — الاقطار the diameters

διάμετρος (قطر) 8.4.3

διάμετρός ἐστι τοῦ σκιάσματος τελεία — قطر الظل المعدل the equated diameter of the shadow

διάμετρος (الاستقبالات) 10.1

τῆς συνόδου τοῦ ἡλίου καὶ τῆς σελήνης καὶ τῆς διαμέτρου τούτων καὶ τοῦ μήκους τῆς τούτων μεταβάσεως

— الاجتماعات والاستقبالات بالبعد والبهت conjunctions and oppositions in distance and daily velocity

διάμετρος (الاستقبال) 10.1.1

κατὰ σύνοδον ἢ κατὰ διάμετρον — الاستقبال opposition

διάμετρος (الاستقبال) 10.2.1.1

διάμετρος ἡλίου καὶ σελήνης — الاستقبال opposition

διάμετρος (قطر) 10.2.1.2

ἡ διάμετρος τοῦ ἡλίου καὶ τῆς σελήνης καὶ τὸ σκίασμα

— قطرى القمر والظل (وقت) الاستقبال the diameters of the moon and the shadow (at the time of) opposition

διάμετρος (قطر) 10.2.1.3

τῇ διαμέτρῳ τῆς σελήνης — قطر القمر diameter of the moon

διάμετρος (الاستقبال) 10.2.1.4

ὥρα τῆς διαμέτρου — ساعات الاستقبال hours of opposition

διάμετρος (الاستقبال) 10.2.1.5

ὧραί εἰσι τῆς στάσεως — ساعات الاستقبال hours of opposition

διάμετρος (الخسوف) 10.2.2.1

τὸ κανόνιον τῆς διαμέτρου τῆς σελήνης — جدول الخسوف القمرى table of the lunar eclipse

διάμετρος (قطر) 10.2.2.1

ἐκλείπει μέρος τῆς σελήνης ὅσον ἀναφανῇ εἰς τοὺς δακτύλους τῆς διαμέτρου — يكون الخسوف بقدر من اصابع قطره the eclipse is in the measure of the digits of its diameter

διάμετρος (الخسوف) 10.2.2.1

τὸν καιρὸν τῆς διαμέτρου ἡλίου καὶ σελήνης — وسط الخسوف middle of the eclipse

διάμετρος (قطر) 10.3.2

ἡ διάμετρος τῆς σελήνης — قطر القمر the moon's diameter

διάμετρος (قطر) 10.3.2

ἡ διάμετρος τοῦ ἡλίου — قطر الشمس diameter of the sun

διάμετρος (قطر) 10.3.2.2

ἥμισυ λέγεται τῶν $\overline{\beta}$ διαμέτρων — نصف القطرين half of the two diameters

διάμετρος (القطر) 10.3.2.2

ἡ διάμετρος τοῦ ἡλίου ἑνοῦται τῇ διαμέτρῳ τῆς σελήνης

— جمعنا قطرى الشمس والقمر we add the diameters of the sun and the moon

διάμετρος (قطر) 10.3.2.3

καὶ οὗτοι οἱ δάκτυλοι διάμετρος τοῦ ἡλίου γίνονται — قطر diameter

διάμετρος (نظير) 11.1.7

τὴν ἐσχάτην ἀνάβασιν τῆς διαμέτρου τῆς μοίρας τοῦ ἡλίου

— غاية ارتفاع نظير جزء الشمس limit of the altitude of the opposite point of the degree of the sun

διάμετρος ( ) 12.1.1

εἰς τὴν διάμετρον καὶ σύνοδον ἡλίου καὶ σελήνης — فى الاجتماعات in the case of conjunctions

διάμετρος (يقابله) 12.2.3

ἡ διάμετρος τούτου τρίγωνόν ἐστι δεξιόν — ويقابله التثليث الايمن and opposite to it (the sinister sextile) is the dexter trine

διάμετρος (مقابلات) 12.2.3

ἡ διάμετρος ἐκείνου αὖθις τετράγωνον — مقابلات opposites

διάμετρος ( ) 12.2.3

ἡ διάμετρος ἐκείνου τρίγωνον

— زدناه (التسديس) على تسعين فتجتمع قوس التثليث we add it (the sextile) to 90 and the sum is the arc of trine

διάμετρος (نظير) 12.2.4

ὁ τόπος τῆς διαμέτρου τῆς μοίρας τοῦ αὐθημερινοῦ τοῦ ἀστέρος — مطالع نظيره rising time of its opposite point

διάμετρος (نظائر) 12.2.4

διάμετρός ἐστι τοῦ φωτὸς τοῦ ἀστέρος — نظائر الشعاعات the opposite points of the rays (aspects)

διάμετρος (نظير) 12.2.4

τὸν τόπον τῆς τύχης τῆς διαμέτρου τοῦ ἀστέρος — مطالع نظير درجته the rising time of the opposite point of its degree

διάμετρος (نظير) 12.3.1

τῆς δαιμέτρου — نظير opposite point

διάμετρος (النظير) 12.3.1

ὁ τόπος τῆς τύχης τῆς διαμέτρου ἐκείνου — مطالع النظير rising time of the opposite point

διάμετρος (نظير) 12.3.2

διάμετρος — نظير opposite point

διαμετρῶν (الاستقبال) 10.1.1

διαμετρῶν — الاستقبال opposition

διάστασις (بعد) 4.1

ἡ διάστασις — بعد distance

διάστασις (بعد) 5.0.0

τῆς διαστάσεως ἐκείνων ἀπὸ τοῦ κύκλου τοῦ κατὰ τὸ νυχθήμερον κινουμένου — ابعاد عن معدل النهار distances from the equalizer of the day

διπλασιάζεται (اضعفنا) 1.2

διπλασιάζεται — اضعفنا we double (IV)

διπλασιασθῇ (ضعف) 4.2

διπλασιασθῇ — ضعفناها we double it

δύει (غروب) 4.1

δύει — غروب setting

δύῃ (مغيب) 11.4

ὅταν δύῃ ὁ ἥλιος — بعد مغيب الشمس after the setting of the sun

δῦναι (مغيب) 11.3.1

ἡ σελήνη ὑπεξέστη τοῦ φωτὸς τοῦ ἡλίου καὶ πρὸ τοῦ δῦναι τὸν ἥλιον φαίνεται αὕτη

— برز الهلال عن الشعاع فيمكن ان يرى نهارا قبل مغيب الشمس the crescent has come into view from under the (sun's) rays and it is possible to see it in daylight before

the setting of the sun

δύνει (اختفى) 11.5.2

ὁ ἀστὴρ κατὰ ποῖον καιρὸν δύνει καὶ κατὰ ποῖον ἀνίσχει — اختفى disappear

δύνῃ (مغيب) 11.3

εἰς τὸν καιρὸν ἐκεῖνον ἡνίκα δύνῃ ἡ σελήνη — عند مغيب القمر at the time of the setting of the moon

δύνῃ (مغيب) 11.5

τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου εἰς τὸν καιρὸν ἡνίκα δύνῃ ὁ ἀστὴρ ἢ ἀνίσχῃ

— قوسى انحطاط الشمس عند مغيب الكوكب او طلوعه التى يسمى قوس الرؤية الكلّية the arc of the declivity of the sun at the time of the setting of the planet or its rising which is called the complete arc of sighting

δύνῃ (للاختفاء) 11.5.1

εἰ δ' ἐστὶν οὗτος ὁ ψῆφος ἵνα δύνῃ ὁ ἀστήρ — فان كان العمل للاختفاء if the computation is for the disappearance

δύνῃ (الاختفاء) 11.5.1

ὅταν φανῇ ὁ ἀστὴρ καὶ ὅταν δύνῃ — الظهور والاختفاء appearance and disappearance

δύνῃ (مغيب) 11.6.2

ὅταν δύνῃ ἡ σελήνη — عند مغيب القمر at the setting of the moon

δύνουσα (مغيب) 11.1.1

Εἰς τὴν κατάληψιν τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ τῆς σελήνης εἰς ἐκεῖνον τὸ καιρὸν ὅτι ἡ μοῖρα τοῦ αὐθημερινοῦ τῆς σελήνης κατέρχεται δύνουσα

— تقويم النيرين عند مغيب جزء القمر the true position of the two luminaries at the setting of the degree of the moon

δύνουσα (يغرب) 11.5

ἐκείνη ἡ μοῖρα ἡ ἐξερχομένη μετὰ τοῦ ἀστέρος τηρεῖται ἢ ἐκείνη ἡ μοῖρα ἡ μετὰ τοῦ ἀστέρος δύνουσα — الدرجة التى يطلع معه الكوكب او يغرب the degree with which rises the planet or sets

δύσις (غروب) 1.1

δύσις τοῦ ἡλίου — غروب الشمس setting of the sun

δύσις (غربى) 10.3.2

τὸ μέρος τῆς δύσεως — غربى western

δύσις (غربيا) 10.3.2.1

εἰς τὸ μέρος τῆς δύσεως — غربيا western

δύσις (مغيب) 11.1.6

Περὶ τοῦ τόξου ἐκείνου καὶ τοῦ καιροῦ ὅτι ἐστὶν ὑπὲρ γῆν ἡ σελήνη μετὰ τὴν δύσιν τοῦ ἡλίου

— قوس المكث فوق الارض بعد مغيب الشمس arc of duration above the earth after the setting of the sun

δύσις (مغيب) 11.1.8

τῆς ἀναβάσεως τῆς σελήνης μετὰ τὴν δύσιν τοῦ ἡλίου

— ارتفاع القمر عند مغيب الشمس altitude of the moon at the setting of the sun

ἐγγύς ( ) 3.2.1

ὅταν ὑπάρχῃ ἐγγύς — انحطاط declivity

ἐγγύτερον (اقرب) 1.4.2

ψῆφος ἐγγύτερον — اقرب closest

ἔδυνεν (اختفى) 11.5.1

ὁ ἀστὴρ ἔδυνεν — قد اختفى it has already disappeared

ἐθήκαμεν (وضعنا) 11.5.1

Ἡμεῖς κανόνιον ἐθήκαμεν καὶ τὰ τόξα ἅπερ ἔδομεν τεθείκαμεν εἰς ἐκεῖνο τὸ κανόνιον μετὰ τοῦ ψήφου τῶν καταβάσεων εἰς τὸ δ΄ κλίμα εἰς τὰς ἀρχὰς τῶν ζῳδίων

— وضعنا اقدار حدود الرؤية من اجزاء البروج وللانحطاطات اضلية فى الاقليم الرابع على رؤس البروج

We have set out the values of the limits of sighting in degrees of the zodiacal signs and for the initial declivities in the fourth clime at the beginnings of the zodiacal signs

εἰσέλευσις ( ) 1.2

ἡ εἰσέλευσις τοῦ ἡλίου εἰς τὸν Κριόν

— الشمس فى اوّل دقيقة من الحمل the sun is in the first degree of Aries

εἰσέλευσις (تحل) 1.2

ἡ εἰσέλευσις τοῦ ἡλίου εἰς τὸν Κριόν

— ان تحل الشمس نقطة الاعتدال الربيعى when the sun enters the point of the Spring equinox

εἰσέλευσις ( ) 1.4.1

εἶτα κατ' ἐναντίον τῶν καταλειφθέντων γίνεται εἰσέλευσις εἰς τὰ κανόνια — طلبنا الباقية فى جدوله we seek the result in its table

εἰσέλευσις (دخل) 2.2.1

γίνεται εἰσέλευσις — دخلنا we enter

εἰσέλευσις (التحاويل) 7.0.0

τῆς εἰσελεύσεως — التحاويل revolution

εἰσέλευσις (دخول) 7.0.0

τῆς εἰσελεύσεως τῶν σουλτανικῶν χρόνων — دخول سنى الكبائس السلطلنية the beginning of the sultanic intercalary years

εἰσέλευσις (مدخل) 7.3

τῆς εἰσελεύσεως — مدخل entrance

εἰσέλευσις (تحويل) 12.0.0

τῆς εἰσέλευσεως τῶν χρόνων — تحويل سنى العالم revolution of the years of the world

εἰσέλευσις (تحويل) 12.1

περὶ τῆς εἰσελεύσεως τῶν χρόνων ὅλων καὶ τῶν χρόνων τῶν γενεθλιαλογικῶν — فى تحويل سنى العالم والمواليد on the revolution of the years of the world and

of the nativities

εἰσέλευσις (التحويل) 12.1.1

αἱ ὧραι τῆς εἰσελεύσεως ἀπὸ τῆς ἡμέρας ἢ τῆς νυκτὸς

— ساعات وقت التحويل من ليل او نهار hours of the time of turning of night or day

εἰσέλευσις (تحويل) 12.1.1

ὥρα ἐστὶ τῆς εἰσελεύσεως — ساعات تحويل hours of turning

εἰσέλευσις (تحويل) 12.1.1

περὶ τῆς ἐκβολῆς τῶν ὡρῶν τῆς εἰσελεύσεως τῶν χρόνων ὅλων —

فى استخرج اوقات تحويل سنى العالم on the extraction of the times of the revolutions of the years of the world

εἰσέλευσις (التحويل) 12.1.2

ἡ ὥρα τῆς εἰσελεύσεως — ساعات وقت التحويل hours of the time of the revolution

εἰσέλευσις (التحويل) 12.1.2

περὶ τῆς εἰσελεύσεως τοῦ τόπου τῆς τύχης — فى معرفة طالع التحويل on the knowledge of the ascendant of the revolution

εἰσέλευσις (تحويل) 12.4.2

ἡ μοῖρα τῆς τύχης τῆς εἰσελεύσεως — درجة الطالع تحويل السنة degree of the ascendant of the revolution of the year

εἰσέλευσις (تحويل) 12.4.2

περὶ τῆς κινήσεως τῶν ψήφων τῆς τύχης τῆς εἰσελεύσεως

— فى تسيير ادلاء تحويل السنة on the motion of the indicators of the revolution of the year

εἰσέλευσις ( ) 12.4.3

περὶ τῆς ἐλάσεως τῆς τύχης τῆς εἰσελεύσεως τοῦ μηνός

— فى تحويل الشهور وتسيير ادلايها on the revolution of the months and the motion of their indicators

εἰσέλευσις (تحويل) 12.4.4

ὁ τόπος τῆς τύχης τῆς εἰσελεύσεως — طالع تحويل السنة ascendant of the revolution of the year

εἰσέλευσις (تحويل) 12.4.4

περὶ τῆς ἐλάσεως τῆς εἰσελεύσεως τῆς τύχης

— فى تسيير طالع تحويل السنة on the motion of the ascendant of the revolution of the year

εἰσέρχονται (تغريب) 11.5

περὶ τῶν ε̄ πλανωμένων ἀστέρων ὅτι κατὰ ποῖον καιρὸν ἐξέρχονται ἤτοι ὑπεξίστανται τοῦ φωτὸς τοῦ ἡλίου καὶ κατὰ ποίαν ὥραν εἰσέρχονται ὑπὸ φῶς τοῦ ἡλίου κατὰ τὸ πρωΐ ἢ τὴν ἑσπέραν — فى تشريق الكواكب المتحيرة وتغريبها on the rising of the moveable stars (planets) and their settings

ἐκβάλλεται ( ) 11.3

ἐκβάλλεται τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης — قومنا النيرين we

find the true positions of the two luminaries

ἐκβολή (معرفة) 1.4

καὶ τῆς ἐκβολῆς τοῦ ἑνὸς ἔτους ἀπὸ τοῦ ἑτέρου διὰ τῶν κανονίων

— معرفة التواريخ بعضها من بعض بالجدول the knowledge of the calendars from each other via table

ἐκβολή (استخرج) 1.4.2

περὶ τῆς ἐκβολῆς — فى استخرج on the extraction

ἐκβολή (تحويل) 10.3.1.2

περὶ τῆς ἐκβολῆς τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως

— فى تحويل اختلاف المناظر on the conversion of parallax

ἐκβολή (استخرج) 12.1.1

περὶ τῆς ἐκβολῆς τῶν ὡρῶν τῆς εἰσελεύσεως τῶν χρόνων ὅλων —

فى استخرج اوقات تحويل سنى العالم on the extraction of the times of the revolutions of the years of the world

ἐκεῖνος ( ) 12.3.1

ἡ περισσεία ἡ μέση τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνου

— فضلة بين مطالعى درجة الهيلاج the excess of what is between the rising times of the degree of the *haylāj*

ἐκλείπει (الخسوف) 10.2.2.1

ἐκλείπει μέρος τῆς σελήνης ὅσον ἀναφανῇ εἰς τοὺς δακτύλους τῆς διαμέτρου

— يكون الخسوف بقدر من اصابع قطره the eclipse is in the measure of the digits of

its diameter

ἐκλείπει (ينخسف) 10.2.2.1

ἡ σελήνη πᾶσα ἐκλείπει ἀλλ᾽ οὐχ ἵσταται εἰς τὴν ἔκλειψιν

— ينخسف كلّه ولا يكون له مكث the eclipse is entire and it has no duration

ἐκλείπει (تنكسف) 10.3.2.2

μέρος ἐκλείπει τοῦ ἡλίου — تنكسف بعضها part of it (the sun) is eclipsed

ἐκλείψει ( ) 10.3.2.2

τὸ μέσον τοῦ ἡλίου ἐκλείψει ἡ δὲ περιφέρεια οὐκ ἐκλείψει

— حول القمر من جرم الشمس حلقة نور around the moon in the body of the sun is a ring of fire

ἐκλείψει (الكسوف) 10.3.2.2

ὅλος ἐκλείψει καὶ καιρὸν ἱκανὸν σταθήσεται ἐν τῇ ἐκλείψει. —

الكسوف كلى مع مكث the eclipse is total with duration

ἐκλείψει (الكسوف) 10.3.2.2

ὁ ἥλιος τέλειον ἐκλείψει καὶ οὐ βραδύνει ἐν τῇ ἐκλείψει

— الكسوف الكلى ولا مكث له the eclipse is total and there is no duration to it

ἐκλείψει (الكسوف) 10.3.2.3

ὁ ἥλιος ὅλος ἐκλείψει — الكسوف كلّى the eclipse is total

ἐκλείψει (الكسوف) 10.3.2.3

ἀπὸ τοῦ ἡλίου πόσον ἐκλείψει — مقدار الكسوف amount of the eclipse

ἔκλειψις (الكسوفات) 8.4.1

διὰ τὴν ἔκλειψιν — فى الكسوفات during eclipses

ἔκλειψις (الكسوفات) 9.1.4

τὴν ἔκλειψιν τοῦ ἡλίου — الكسوفات eclipses

ἔκλειψις (الخسوفات القمرية) 10.2

τῆς ἐκλείψεως τῆς σελήνης — الخسوفات القمرية lunar eclipses

ἔκλειψις (الخسوف) 10.2.2.1

τελεία γίνεται ἔκλειψις τῆς σελήνης καὶ πρὸς καιρὸν εἰς τὴν ἔκλειψιν ἵσταται — الخسوف كلّ وله مكث the eclipse is total and it has duration

ἔκλειψις (الكسوفات) 10.3

τῆς ἐκλείψεως τοῦ ἡλίου — الكسوفات الشمسية solar eclipses

ἔκλειψις ( ) 10.3.2

καὶ ἐν τούτῳ γίνεται ἡ ἔκλειψις — امكن رؤيته فى ذلك الاجتماع there is a possibility of its (an eclipse's) sighting in this conjunction

ἔκλειψις (الكسوفات) 10.3.2

τῆς ἐκλείψεως τοῦ ἡλίου — الكسوفات الشمسية solar eclipses

ἔκλειψις (تنكسف) 10.3.2.2

τελεία γίνεται ἔκλειψις τοῦ ἡλίου — فانها تنكسف كلّها all of it (the sun) is eclipsed

ἔκλειψις (الكسوف) 10.3.2.2

εἰ γένηται ἔκλειψις ἢ οὔ — امكان الكسوف possibility of the eclipse

ἐκτλῆφι (الاختلاف) 9.1.5

ἐκτλῆφι μανδὰρ ἤτοι τὸ πλέον καὶ ἔλαττον τῆς ὄψεως — الاختلاف المنظر difference in vision (parallax)

ἔλασις ( ) 12.4.3

περὶ τῆς ἐλάσεως τῆς τύχης τῆς εἰσελεύσεως τοῦ μηνός

— فى تحويل الشهور وتسيير ادلايها on the revolution of the months and the motion of their indicators

ἔλασις ( ) 12.4.4

περὶ τῆς ἐλάσεως τῆς εἰσελεύσεως τῆς τύχης

— فى تسيير طالع تحويل السنة on the motion of the ascendant of the revolution of the year

ἐλάττων (اقل) 1.4.2

ψῆφος ελάττων — اقل less

ἐλλάμψις (النور) 11.1.5

τὸ ἐξελθὸν τόξον ἐστὶ τοῦ φωτὸς ἤγουν τῆς ἐλλάμψεως τῆς σελήνης

— قوس النور arc of light

ἔλλειψις (الناقصة) 8.1.4

ἔλλειπψις — الناقصة decreasing

ἐμφάνεια (مبعث) 1.2

ἐμφάνεια προφήτου — مبعث نبى sending of a prophet

ἔναρξις (مفتتح) 7.0.0

τὴν ἔναρξιν — مفتتح beginning

ἐνοῦνται (زدنا) 1.2

ἐνοῦνται — زدنا we add

ἐνοῦται (جمع) 3.2.1

ἐνοῦνται — جمعناهما we add them

ἕνωσις (امتزاج) 12.2.4

τῆς ἑνώσεως τῶν $\overline{\beta}$ τόπων τῆς τύχης — امتزاج المطالعين a mixture of the two rising times

ἑξάγωνον (تسديس) 12.2.3

ἑξάγωνόν ἐστι δεξιόν — تسديسه الايمن its dexter sextile

ἑξάγωνον (تسديس) 12.2.3

ὁ τόπος ἐστὶ τοῦ φωτὸς τοῦ ἑξαγώνου τοῦ ἀστέρος ἐξ ἀριστερῶν

— موضع نور تسديسه الايسر the location of the illumination of its sinister sextile

ἑξάγωνον (التسديس) 12.2.3

τόξον ἐστὶ τοῦ ἑξαγώνου — قوس تسديس arc of the sextile

ἑξάγωνον (التسديس) 12.2.4

τὸ δεξιὸν ἑξάγωνον — الايمن التسديس dexter sextile

ἑξάγωνον (التسديس) 12.2.4

τὸ ἀριστερὸν ἑξάγωνον — التسديس الايسر sinister sextile

ἑξάγωνος (التسديس) 12.2.3

τὸ πλάτος τοῦ ἑξαγώνου — عرض التسديس latitude of the sextile

ἐξερχομένη (يطلع) 11.5

ἐκείνη ἡ μοῖρα ἡ ἐξερχομένη μετὰ τοῦ ἀστέρος τηρεῖται ἢ ἐκείνη ἡ μοῖρα ἡ μετὰ τοῦ ἀστέρος δύνουσα — الدرجة التى يطلع معه الكوكب او يغرب the degree with which rises the planet or sets

ἐξέρχονται (تشريق) 11.5

περὶ τῶν ε̄ πλανωμένων ἀστέρων ὅτι κατὰ ποῖον καιρὸν ἐξέρχονται ἤτοι ὑπεξίστανται τοῦ φωτὸς τοῦ ἡλίου καὶ κατὰ ποίαν ὥραν εἰσέρχονται ὑπὸ φῶς τοῦ ἡλίου κατὰ τὸ πρωΐ ἢ τὴν ἑσπέραν — فى تشريق الكواكب المتحيرة وتغريبها on the rising of the moveable stars (planets) and their settings

ἐξήρχεται (طلع) 1.5.1

ἐξήρχετο — طلع rise

ἐξισούμενον (مثل) 9.2.1

ἐξισούμενον — مثل equal

ἐξισοῦνται ( ) 1.2

οἱ μῆνες ἐξισοῦνται μετὰ τῶν δ̄ καιρῶν

— شهور مع فصول السنة the months (are fixed) with the seasons of the year

ἐξισώθησαν (حذى) 1.2

ἐξισώθησαν — حذى corresponds

ἐπανακυκλοῦνται (دورة بعد دورة) 1.2

ἐπανακυκλοῦνται — دورة بعد دورة cycle after cycle

ἐπιφάνεια (وجه) 6.6

τῆς ἐπιφανείας τῆς γῆς — وجه الاعرض area of earth

ἐπιφάνεια (سطح) 10.2.2.1

τῶν δακτύλων τῆς ἐπιφανείας τῆς σελήνης — اصابع الخسوف من سطحه digits of the eclipse in its surface

ἐπιφάνεια (سطح) 10.3.2.3

τῆς ἐπιφανείας — سطح surface

ἔργον (حادثة) 1.2

μέγιστον ἔργον τῶν τοῦ οὐρανοῦ — حادثة عظيمة من ايات هاوئة great occurrence of atmospheric marvels

ἔργον (حادثة) 1.2

μέγιστον ἔργον τῶν τῆς γῆς — حادثة عظيمة من علامات ارضية great occurrence of earthly signs

ἔσχατος (غاية) 11.1.7

τὴν ἐσχάτην ἀνάβασιν τῆς διαμέτρου τῆς μοίρας τοῦ ἡλίου — غاية ارتفاع نظير جزء الشمس limit of the altitude of the opposite point of the degree of the sun

ἔσχατος (غاية) 11.1.8

ἡ ἐσχάτη ἀνάβασις τῆς σελήνης — غاية ارتفاع limit of the altitude

ἔσχατος (غاية) 11.1.8

ἡ ἐσχάτη ἀνάβασις τῆς μοίρας τῆς σελήνης — غاية ارتفاع درجة limit of the altitude of the degree

ἐτέθησαν (نقلت) 1.2

ἐτέθησαν — نقلت are transferred

ἐτελειώθη (تم) 1.2

ἐτελειώθη — تم completed

ἔτος (التواريخ) 1.2

τὰ ἔτη δῆλα — التواريخ المشهورة famous epochs

ἔτος (سنة) 1.4.2

τὸ κανόνιον τῶν ἁπλῶν ἐτῶν — جدول سنى المبسوطة table of simple years

ἔτος (تاريخ) 1.4.2

τοῦ ἔτους τῶν Ἀράβων — تاريخ الهجرة epoch of the *hijra*

ἔτος (التاريخ) 7.2.1

ἀπὸ τοῦ ἔτους — التاريخ calendar

ἔτος (التاريخ) 7.2.1

καὶ ὀρθοῦται τὸ ἔτος ὄρθωσιν τελείαν — يصير التاريخ محقيقا the calendar becomes corrected

ἔτος (التواريخ) 7.4

τὰ ἔτη — التواريخ calendar (dates)

εὐθεία γραμμή ( ) 3.0.0

μετὰ τῆς εὐθείας γραμμῆς — الفلك المستقيم right sphere

εὐθεία γραμμή ( ) 11.1.1

τοῦ τόπου τῆς τύχης μετὰ εὐθείας γραμμῆς — مطالع الفلك المستقيم rising time of the right sphere

εὐθεία γραμμή (المستقيم) 12.1.3

τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς ἧς ἡ ἀρχὴ ἀπὸ τῆς ἀρχῆς τοῦ Κριοῦ

— مطالع الفلك المستقيم من اوّل الحمل rising time in the right sphere from the beginning of Aries

εὐθεία γραμμή (المستقيم) 12.3.1

τοῦ τόπου τῆς τύχης ἐκείνου μετὰ τῆς εὐθείας γραμμῆς

— مطالع الفلك المستقيم rising time in the right sphere

εὐθεία γραμμή (المستقيم) 12.3.2

τὸν τόπον τῆς τύχης τούτου μετὰ τῆς εὐθείας γραμμῆς — مطالعه المستقيم its rising time in the right (sphere)

εὐκαταληπτότερον ( ) 9.2

ὅπερ ἐστὶν εὐκαταληπτότερον — وفيه نوع من التقريب in it there is a kind of approximation

εὑρεθῇ (فيخرج) 1.2

εἴ τι εὑρεθῇ — فيخرج there results

εὑρεθῇ (المجموع) 1.2

εἴ τι εὑρεθῇ — المجموع the sum

ἐφάνη (ظهر) 11.5.1

ὁ ἀστὴρ ἐφάνη — ظهر it appears

Ζουμπρά (الزبرة) 1.5.1

Ζουμπρά — الزبرة al-Zubra

ζῳδιακός (فلك البروج) 1.1

ζῳδιακὸς κύκλος — فلك البروج sphere of the zodiacal signs

ζῴδιον (البروج) 1.2

ὅτε ὁ ἥλιος ἀπὸ ζῳδίου μεταβαίνει εἰς ζῴδιον — دخول الشمس اوايل البروج the entrance of the sun into the beginnings of the zodiacal signs

ζῴδιον (البروج) 4.4

εἰς τὰ νότια ζῴδια — فى البروج الجنوبية in the southern zodiacal signs

ζῴδιον (البرج) 11.5.1

καὶ μετὰ τοῦ ψήφου τῶν $\overline{\beta}$ ζῳδίων ὀρθοῦται

— عدلناه بفضل ما بين البرجين we equate it with the excess of what is between two zodiacal signs

ζῴδιον (البروج) 11.5.1

Ἡμεῖς κανόνιον ἐθήκαμεν καὶ τὰ τόξα ἅπερ ἔδομεν τεθείκαμεν εἰς ἐκεῖνο τὸ κανόνιον μετὰ τοῦ ψήφου τῶν καταβάσεων εἰς τὸ δ΄ κλίμα εἰς τὰς ἀρχὰς τῶν ζῳδίων — وضعنا اقدار حدود الرؤية من اجزاء البروج وللانحطاطات اضلية فى الاقليم الرابع على رؤس البروج

we have set out the values of the limits of sighting in degrees of the zodiacal signs and for the initial declivities in the fourth clime at the beginnings of the zodiacal signs

ζῴδιον (البروج) 12.1.1

εἰς ἐκεῖνον τὸν καιρὸν ὅτι ὁ ἡλίος γίνεται εἰς τὴν ἀρχὴν τῶν ζῳδίων — عند نزول الشمس اوائل البروج المنقلبة when the sun alights upon the beginnings of the coming zodiacal signs

ζῴδιον (البروج) 12.2.2

τοῦ τόπου τῆς τύχης τῶν ζῳδίων — مطالع البروج rising time of the zodiacal signs

ζῴδιον (البرج) 12.4.1

τὸ σημεῖον τοῦ ζῳδίου τῆς τύχης τοῦ θεμελίου τοῦ γενεθλιαλογικοῦ περισσεύεται εἰς τοὺς χρόνους ἐκείνους

— زدنا على صورة البرج الذى فيه الكوكب او صورة الطالع we add them (the completed years) to the image of the zodiacal sign in which the planet is or to the image of the ascendant

ζῴδιον (بيت) 12.4.1

περὶ τῆς ἐνθυμήσεως ἐκείνου τοῦ ψήφου ὅτι καθ ' ἕκαστον χρόνον $\overline{\alpha}$ ζῴδιον κινεῖται

— فى المنتهى فى كلّ بيت وكوكب وتسييراته on the *intihā'* in every house and star and its motions

ζώνη ( ) 3.1

τῆς τελείας τῆς ἡμέρας ζώνης — معدّل النهار equalizer of the day

ἥλιος (الشمس) 1.1

δύσις τοῦ ἡλίου — غروب الشمس setting of the sun

ἥλιος (الشمس) 1.2

ὅτε ὁ ἥλιος ἀπὸ ζῳδίου μεταβαίνει εἰς ζῴδιον — دخول الشمس اوايل البروج the entrance of the sun into the beginnings of the zodiacal signs

ἥλιος (الشمس) 1.2

ἀνέτειλεν ὁ ἥλιος — طلعت الشمس the sun rises

ἥλιος (الشمس) 1.2

ἥλιος ἐς τὴν ἀρχὴν τοῦ Κριοῦ — حلت الشمس نقطة الاعتدال الربيعى the sun

came to the point of the Spring equinox

ἥλιος (الشمس) 1.2

ἡ εἰσέλευσις τοῦ ἡλίου εἰς τὸν Κριόν

— الشمس فى اوّل دقيقة من الحمل the sun is in the first degree of Aries

ἥλιος (الشمس) 1.2

ἡ εἰσέλευσις τοῦ ἡλίου εἰς τὸν Κριόν

— ان تحل الشمس نقطة الاعتدال الربيعى when the sun enters the point of the Spring equinox

ἥλιος (الشمسية) 1.2

χρόνοι τοῦ ἡλίου — سنين الشمسية solar years

ἥλιος ( ) 8.0.0

ὁ ἥλιος καὶ ἡ σελήνη — النيران the two luminaries

ἥλιος (الشمس) 10.3.2.2

τὸ μέσον τοῦ ἡλίου ἐκλείψει ἡ δὲ περιφέρεια οὐκ ἐκλείψει

— حول القمر من جرم الشمس حلقة نور around the moon in the body of the sun is a ring of fire

ἥλιος ( ) 10.3.2.2

ὁ ἥλιος τέλειον ἐκλείψει καὶ οὐ βραδύνει ἐν τῇ ἐκλείψει

— الكسوف الكلى ولا مكث له the eclipse is total and there is no duration to it

ἥλιος (الشمس) 11.1.7

τόξον ἐστὶ τῆς καταβάσεως τῆς ἡλίου — قوس انحطاط الشمس arc of the declivity of the sun

ἥλιος (الشمس) 12.4.2

ἡ κίνησίς ἐστιν ἡ μέση τοῦ ἡλίου — حركة الشمس motion of the sun

ἡμέρα (النهار) 1.1

τὸ μέσον τῆς ἡμέρας — فلك نصف النهار sphere of half of the day

ἡμέρα (اليوم) 1.1

ἡμέρα και νύξ — اليوم بليلته day with its night

ἡμέρα (ايام) 1.2

δῆλαι καὶ μέγισται ἡμέραι — ايام المشاهير famous days

ἡμέρα (ايام) 1.2

αἱ δῆλαι ἡμέραι — وايامهم المشهورة its famous days

ἡμέρα ( ) 1.2

κλοπιμαῖαι ἡμέραι — ملحقة (الخمسة) (five days) are added

ἡμέρα ( ) 1.2

κλοπιμαῖαι ἡμέραι — الزايدة additional (days)

ἡμέρα ( ) 1.2

κλοπιμαῖαι ἡμέραι — مسترقة stolen (days)

ἡμέρα (يوم) 1.2

μέσον τῆς ἡμέρας — نصف يوم half of the day

ἡμέρα (اليوم) 1.4.2

τῶν παρελθουσῶν ἡμερῶν — اليوم الذى نحن فيه the day which we are in

ἡμέρα (ايام) 1.5

τῶν δήλων καὶ μεγίστων ἡμερῶν — ايامها المشهورة their famous days

ἡμέρα ( ) 6.1

πρὸ τοῦ μέσου τῆς ἡμέρας — بعد الزوال after noon

ἡμέρα (ايام) 7.3

τῶν ἡμερῶν τῆς ἑβδομάδος — ايام الجمعات days of the week

ἡμέρα (النهار) 10.2.2.3

ἀπὸ τῆς ἡμέρας — هى من النهار المقبل it is in the next day

ἡμέρα (نهار) 11.1.1

τῷ ἡμίσει τόξῳ τῆς ἡμέρας — نصف قوس نهار جزء الشمس half the arc of day of the degree of the sun

ἡμέρα (نهار) 12.2.2

τὸ ἥμισυ τόξον τῆς ἡμέρας — نصف قوس نهار الكوكب half the arc of the day of the star

ἡμέρα (نهار) 12.2.4

τὸ ἥμισυ τόξον τῆς ἡμέρας τοῦ ἀστέρος — نصف قوس نهاره the half arc of its day

ἡμῖν (نا) 2.2.2

ἐν ἡμῖν — معنا with us

ἥμισυ (النصف) 8.0.0

ἥμισυ ὕψωμα τῆς σφαίρας — النصف الاعلى upper half

ἥμισυ (النصف) 8.0.0

ἥμισυ τῆς κατὼ σφαίρας — النصف الاسفل lower half

ἥμισυ (نصف) 10.2.1.2

ἥμισυ λέγεται τῶν $\overline{\beta}$ διαμέτρων — نصف القطرين half of the two diameters

ἥμισυ (نصف) 10.3.2.2

ἥμισυ λέγεται τῶν $\overline{\beta}$ διαμέτρων — نصف القطرين half of the two diameters

ἥμισυ (نصف) 11.1.1

τῷ ἡμίσει τόξῳ τῆς ἡμέρας — نصف قوس نهار جزء الشمس half the arc of day of the degree of the sun

ἥμισυ (النصف) 12.2

μέχρι καὶ τοῦ ί τὸ ἥμισύ ἐστι τῆς ἀναβάσεως

— النصف الهابط the descending half (C mistranslates)

ἥμισυ (النصف) 12.2

μέχρι καὶ τοῦ τετάρτου ἥμισύ ἐστι τῆς ἀναβάσεως — النصف الصاعد the ascending half

ἥμισυ (نصف) 12.2.2

τὸ ἥμισυ τόξον τῆς νυκτός — نصف قوس ليلة half the arc of night

ἥμισυ (نصف) 12.2.2

τὸ ἥμισυ τόξον τῆς ἡμέρας — نصف قوس نهار الكوكب half the arc of the day of the star

ἥμισυ (النصف) 12.2.4

τὸ ἥμισυ τῆς ἀναβάσεως τῆς σφαίρας — النصف الصاعد the rising half

ἥμισυ (نصف) 12.2.4

ὁ ἀστὴρ εἰς τὸ ἥμισυ τῆς καταβάσεώς ἐστι τῆς σφαίρας — نصف الهابط the half of descent

ἥμισυ (نصف) 12.2.4

τὸ ἥμισυ τόξον τῆς ἡμέρας τοῦ ἀστέρος — نصف قوس نهاره the half arc of its day

ἡμισφαίριον (النصف) 8.3.3; 8.3.4

τὸ ἄνω ἡμισφαίριον — النصف الاعلى upper half (of the sphere)

ἡμισφαίριον (النصف) 8.3.3; 8.3.4

τὸ κάτω ἡμισφαίριον — النصف الاسفل lower half (of the sphere)

ἡνωμέναι (مجملا) 1.2

ἡνωμέναι — مجملا summarily

Θαβάν (ثون) 9.2

ὁ Θαβὰν ἐκεῖνος ὁ Ἀλεξανδρηνός — ثون الاسكندرانى Theon of Alexandria

θάλασσα (بحر) 7.0.0

τῆς ἄκρας δυτικῆς θαλάττης — ساحل بحر المغرب shore of the western ocean

θεμέλιον (الاصلتة) 1.2

οἱ μῆνες τοῦ θεμελίου — الشهور الاصلتة months of the base-horoscope

θεμέλιον (الاصل) 4.2

θεμέλιον — الاصل base-horoscope

θεμέλιον (المعيار) 6.7

θεμέλιον — المعيار measure

θεμέλιον (دستور) 7.4

περὶ τοῦ θεμελίου τοῦ αὐθημερινοῦ τοῦ ἡλίου εἰς ἕνα χρόνον τοῦ ἡλίου — فى تركيب دستور المقوم لسنة شمسية on the computation of the rule of the rectifier for the solar year

θεμέλιον (اصول) 7.4

θεμέλιον τῆς ἀρχῆς τοῦ χρόνου — اصول مفتتح bases of the beginning

θεμέλιον (القانون) 11.3

τοῦ θεμελίου τῆς θεωρίας τῆς σελήνης ὅλου —
القانون الكلّى فى معرفة رؤية الاهلة the entire rule on the knowledge of the sighting of the crescent

θεμέλιον (مقدّمة) 12.2

τοσαῦτά εἰσι θεμέλια ἃ χρὴ εἰδέναι — مقدّمة premises

θεμέλιον ( ) 12.4.1

τὸ σημεῖον τοῦ ζῳδίου τῆς τύχης τοῦ θεμελίου τοῦ γενεθλιαλογικοῦ περισσεύεται εἰς τοὺς χρόνους ἐκείνους
— زدنا على صورة البرج الذى فيه الكوكب او صورة الطالع we add them (the completed years) to the image of the zodiacal sign in which the planet is or to the image of the ascendant

θεωρία (المرى) 10.3.2; 10.3.2.1

ὁ τόπος ἐστὶ τῆς θεωρίας τῆς σελήνης — موضع القمر المرى place of the visible moon

θεωρία (الرؤية) 11.2.1

τρυτάνη τῆς θεωρίας τῆς σελήνης — معيار الرؤية measurement of sighting

θεωρία (الرؤية) 11.3

τὰ κανόνια τῆς θεωρίας τῆς σελήνης ἀπὸ τῆς ὄψεως — جدول حدود الرؤية table of the limits of vision

θεωρία (الرؤية) 11.3

ἡ θεωρία τῆς σελήνης νέας φανείσης — مدارّ حدود الرؤية measure of the

limits of sighting

θεωρία (رؤية) 11.3

τοῦ θεμελίου τῆς θεωρίας τῆς σελήνης ὅλου —

القانون الكلّى فى معرفة رؤية الاهلة the entire rule on the knowledge of the sighting of the crescent

θεωρία (رؤية) 11.3.1

θεωρία οὐκ ἔστι τῆς σελήνης — لا نطع فى رؤية الهلال we do not aspire to sighting of the crescent

θεωρία (الاعتبار) 11.3.1

εἰς τὴν πρώτην θεωρίαν — فى الاعتبار اولا on consideration first

θεωρία (الاعتبار) 11.3.2

περὶ τῆς δευτέρας θεωρίας — فى الاعتبار ثانيا on consideration secondly

θεωρία (الرؤية) 11.5.1

τόξον τῆς θεωρίας τοῦ ἀστέρος — وسمينا قوس الرؤية we call it the arc of vision

θεωρία (الرؤية) 11.6.1

ἐκεῖνο τόξον λέγεται τῆς θεωρίας οὐχὶ τέλειον — قوس الرؤية المطلقة arc of general sighting

θεωρία (الرؤية) 11.6.2

τοῦ τόξου τῆς θεωρίας τοῦ τελείου — قوس الرؤية المطلقة arc of general

sighting

θεωρία (الرؤية) 11.6.2

τὸ τόξον τῆς θεωρίας — قوس الرؤية المطلقة arc of general sighting

θύρα (باب) 2.1

θύρα τις — بابا door

ι´ (وسط السماء) 12.2

ἀπὸ τοῦ ι´ τοῦ πρώτου μέχρι καὶ τοῦ τετάρτου

— من وسط السماء الى الطالع الى الرابع from the mid-heaven to the ascendant to the fourth

᾽Ιασδακέρδη (يزدجرد) 1.2

κρατοῦνται οἱ χρόνοι τετελειωμένοι τοῦ ἔτους τοῦ ᾽Ιασδακέρδη

— اخدنا سنى يزدجرد التامة we take the completed years of Yazdijird

ἰδία (خاصته) 8.1.2

ἡ ἰδία — خاصته its anomaly

ἰδία (خاصة) 8.1.4

ἡ ἰδία — خاصة anomaly

ἰδία (لخاصة) 8.1.4

ἡ ἰδία τελεία — لخاصة المعدلة for the equated anomaly

ἴδιον (الخاصة) 8.1.4; 8.3.3; 8.3.4

τοῦ ἰδίου τελείου — الخاصة المعدلة equated anomaly

ἴδιον (الخاصة) 8.3.3; 8.3.4

τὸ ἴδιον — الخاصة anomaly

ἴδιον (الخاصة) 9.1.4

τοῦ ἰδίου τῆς σελήνης — الخاصة anomaly

ἴδιον (الخاصة) 9.2.5

κατ' ἐναντίον τοῦ ἰδίου τῆς σελήνης ἢτῆς ἀναβάσεως ταύτης — الخاصة المعدلة equated anomaly

ἴδιον (مسير) 9.2.5

τὰ κανόνια ἢ τοῦ ἰδίου ἢ τῆς ἀναβάσεως τῆς σελήνης — جدول مسير النيرين table of the motion of the two luminaries

ἴδιον (الخاصة) 10.3.2.3

τοῦ ἰδίου τῆς σελήνης — الخاصة anomaly

ἴδιον (خاصة) 11.3

τοῦ ἰδίου ἢ τῆς μεταβάσεως τῆς σελήνης — خاصة القمر او بهته anomaly of the moon or its daily velocity

ἰντεέ (المنتهى) 12.4.1

εἴ τι καταλειφθῇ ἐκεῖνο ζῴδιον ὀφείλει εἶναι ἐφ' ᾧ ἡ κίνησις τῆς τύχης κατ' ἐκεῖνον τὸν χρόνον ἔφθασεν. ἐκεῖνο τὸ ζῴδιον ἰντεὲ καλεῖται. —

ما بقى دون اثنى عشر فهو صورة البرج المنتهى فى تلك السنة what remains less than 12

is the image of the zodiacal sign of the *muntahā* in that year

ἴσος (متساوية) 2.2

μετὰ τοῦ ἄλλου ἴσον — متساوية equal

ἱστάμενος (الثابيت) 1.2

ἱστάμενος — الثابيت fixed

ἱστᾶται (قائمة) 6.4

ἱστᾶται — قائمة standing

ἵσταται (مقيم) 8.2

ὁ ἀστὴρ ἵσταται ἤγουν στηρίζει — مقيم للرجوع standing for the retrogression

ἵσταται (مكث) 10.2.2.1

ἡ σελήνη πᾶσα ἐκλείπει ἀλλ' οὐχ ἵσταται εἰς τὴν ἔκλειψιν

— ينخسف كلّه ولا يكون له مكث the eclipse is entire and it has no duration

ἵσταται (مكث) 10.2.2.1

τελεία γίνεται ἔκλειψις τῆς σελήνης καὶ πρὸς καιρὸν εἰς τὴν ἔκλειψιν ἵσταται

— الخسوف كلّ وله مكث the eclipse is total and it has duration

ἰχνόποδα (الادّام) 2.2.3

τὰ ἰχνόποδα — الادّام feet

κάθετος (الشقول) 6.6

κάθετος — الشقول plumbline

καιρός (فصول) 1.2

οἱ μῆνες ἐξισοῦνται μετὰ τῶν δ̄ καιρῶν

— شهور مع فصول السنة the months (are fixed) with the seasons of the year

καιρός (مدة) 8.2.1

καιρὸς ὅτι ἄρχει ὑποποδίζειν ὁ ἀστήρ — مدة الاستقامة الى الرجوع the period of time from direct to retrograde motion

καιρός (الوقت) 9.1.1

τῆς ἀναβάσεως τοῦ ι΄ οἰκήματος τῆς τύχης τοῦ καιροῦ — ارتفاع عاشر الوقت altitude of the tenth of time

καιρός ( ) 9.1.1

τὴν τραχηλαῖαν τοῦ τόξου ἐκείνου ἥτις ἐστὶν μεταξὺ τοῦ ι΄ οἰκήματος καὶ τῆς τύχης τοῦ καιροῦ — القوس التى بين العاشر وطالعه the arc which is between the tenth and its ascendant

καιρός ( ) 10.2.2.1

τὸν καιρὸν τῆς διαμέτρου ἡλίου καὶ σελήνης — وسط الخسوف middle of the eclipse

καιρός (ازمان) 10.2.2.2

τὸν καιρὸν τῆς ἐκλείψεως τῆς σελήνης — ازمان الخسوف time-degrees of the eclipse

καιρός ( ) 10.3.2

ἡ τύχη τοῦ καιροῦ — الطالع ascendant

καιρός ( ) 10.3.2.2

ὅλος ἐκλείψει καὶ καιρὸν ἱκανὸν σταθήσεται ἐν τῇ ἐκλείψει. — الكسوف كلى مع مكث the eclipse is total with duration

καιρός (ازمان) 10.3.2.3

οἱ καιροί — ازمان time-degrees

καιρός (المكث) 11.1.6

Περὶ τοῦ τόξου ἐκείνου καὶ τοῦ καιροῦ ὅτι ἐστὶν ὑπὲρ γῆν ἡ σελήνη μετὰ τὴν δύσιν τοῦ ἡλίου

— قوس المكث فوق الارض بعد مغيب الشمس arc of duration above the earth after the setting of the sun

καιρός (المكث) 11.2

α΄ τόξον τοῦ καιροῦ ἕτερον τῶν ἀκτίνων ἄλλο τῆς ἀναβάσεως καὶ ἕτερον τόξον τῆς καταβάσεως

— قوس النور والمكث والارتفاع والانحطاط the arc of light; of duration; of altitude and of declivity

καιρός (المكث) 11.2.1

τὸ τόξον τοῦ καιροῦ — قوس المكث arc of duration

καιρός ( ) 11.3

εἰς τὸν καιρὸν ἐκεῖνον ἡνίκα δύνῃ ἡ σελήνη — عند مغيب القمر at the time

of the setting of the moon

καιρός (المكث) 11.5

τὸ τόξον τοῦ καιροῦ τῆς καταβάσεως τοῦ ἡλίου — قوس المكث وانحطاط the arc of duration and declivity

καιρός (المكث) 11.6.1

τὸ τόξον τοῦ καιροῦ — قوس المكث arc of duration

καιρός (المكث) 11.6.1

τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόξου τοῦ καιροῦ — تعديل قوس المكث equation of the arc of duration

καιρός ( ) 12.1

κατὰ τὸν καιρὸν ἡνίκα ἐγένετο ἡ γέννησις — المواليد nativities

καιρός (المدّة) 12.3.2

ὁ καιρός — المدّة period of time

κακός (النحوس) 12.3

τῶν ὡρῶν τῶν καλῶν καὶ κακῶν — موضع السعود والنحوس place of benefic and malefic (planets)

καλός (السعود) 12.3

τῶν ὡρῶν τῶν καλῶν καὶ κακῶν — موضع السعود والنحوس place of benefic and malefic (planets)

κανόνιον (الجدول) 1.2

κανόνιον — الجدول table

κανόνιον (الجدول) 1.2

εἰς τὸ κανόνιον — فى الجدول in the table

κανόνιον (جدول) 4.2

κανόνιον ἐτέθη — وضعنا جدولا we have made a table

κανόνιον (جدول) 6.2.1

τοῦ κανονίου τοῦ τόπου τῆς τύχης τοῦ πλάτους τῶν πόλεων —
جدول مطالع البروج فى البلد table of the rising times of the zodiacal signs in the city

κανόνιον (جدولى) 7.3.1

τὸ κανόνιον τῶν εἰκοσαετηρίδων καὶ τῶν ἁπλῶν ἐτῶν
— جدولى المجموعة والمبسوطة two tables of collected and simple (years)

κανόνιον (جدولا) 7.4

Κανόνιον ἐποιήθη — وضعنا جدولا we have made a table

κανόνιον (جدول) 8.4

διὰ τῶν κανονίων — جدولا by table

κανόνιον (جدول) 9.2.5

τὰ κανόνια ἢ τοῦ ἰδίου ἢ τῆς ἀναβάσεως τῆς σελήνης — جدول مسير النيرين
table of the motion of the two luminaries

κανόνιον (الجدول) 10.3.2

τοῦ κανονίου τούτου — الجدول اللطيف easy table

κανόνιον ( ) 11.1.3

γίνεται εἰσέλευσις εἰς τὸ ὑπὸ τοὺς μῆνας κανόνιον τῶν ὡρῶν

— اخذنا بقدره من حركة القمر فى ساعة we take the its measure from the motion of the moon in an hour

κανόνιον (جدول) 11.1.4

τὸ κανόνιον τοῦ πλείονος καὶ ἐλάττονος τοῦ τόπου τῆς τύχης εἰς το γ΄ κλίμα

— جدول اختلاف الغروب table of western difference (in vision)

κανόνιον (جدول) 11.3

τὰ κανόνια τῆς θεωρίας τῆς σελήνης ἀπὸ τῆς ὄψεως — جدول حدود الرؤية table of the limits of vision

κανόνιον (جدول) 12.1.2

εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης εἰς τὸ πλάτος τῆς πόλεως ἐκείνης ἐν ᾗ γίνεται τηνικαῦτα ἡ ζήτησις τοῦ γενεθλιαλογικοῦ

— فى جدول مطالع البروج لعرض الميلاد in the table of rising times of the zodiacal signs for the latitude of the nativity

καπισά (الكبايس) 1.2

καπισά — الكبايس intercalary

καπισά (المكبوسة) 1.2

καπισά — المكبوسة intercalary

καπισά (الكبائس) 7.3

καπισά — الكبائس intercalary

καπισά (الكبيسة) 7.3.2

καπισά — الكبيسة intercalary

τὸ 0 τοῦ Καρκίνου (نقطتى الانقبلاتين) 5.2

ἐὰν ὁ ἀστὴρ εἰς τὸ 0 ἐστὶ τοῦ Καρκίνου ἢ εἰς τὸ 0 τοῦ Αἰγοκέρωτος — كان بالاتفاق فى احدى نقطتى الانقبلاتين in agreement with one of the two solstitial points

κατάβασις (الهبوط) 3.1

κατάβασις — الهبوط descending

κατάβασις (هابط) 8.3.1

κατάβασις — هابط descending

κατάβασις (الهبوط) 8.3.4

ἐπεὶ δὲ χρεία εἰδέναι τὴν ἀνάβασιν καὶ κατάβασιν — الهبوط descending

κατάβασις (هابط) 8.3.4

εἴ δ' ἔλαττον κατάβασις — هابط فيه it is descending in it

κατάβασις (هابط) 8.3.4

ἐὰν ᾖ πλέον κατάβασίς ἐστιν — الكوكب هابط فيه the star is descending in it

κατάβασις (مغيب) 11.1.1

ὥρα ἐστὶ μέσον τῆς ἡμέρας ἐκείνης καὶ μέσον τῆς καταβάσεως τῆς μοίρας τῆς σελήνης

— ساعات ما بين نصف النهار الى مغيب جزء القمر the hours between the half of the day up to the setting of the degree of the sun

κατάβασις (انحطاط) 11.1.7

τόξον ἐστὶ τῆς καταβάσεως τῆς ἡλίου — قوس انحطاط الشمس arc of the declivity of the sun

κατάβασις (الانحطاط) 11.1.7

τῆς καταβάσεως τοῦ ἡλίου ὑπὸ γῆν — الانحطاط declivity (of the sun)

κατάβασις (والانحطاط) 11.2

α΄ τόξον τοῦ καιροῦ ἕτερον τῶν ἀκτίνων ἄλλο τῆς ἀναβάσεως καὶ ἕτερον τόξον τῆς καταβάσεως

— قوس النور والمكث والارتفاع والانحطاط the arc of light; of duration; of altitude and of declivity

κατάβασις (انحطاط) 11.3

τῆς καταβάσεως τοῦ ἡλίου — انحطاط الشمس declivity of the sun

κατάβασις (انحطاط) 11.3.2

ἡ κατάβασις τοῦ ἡλίου — انحطاط الشمس declivity of the sun

κατάβασις (انحطاط) 11.5

τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου εἰς τὸν καιρὸν ἡνίκα δύνῃ ὁ ἀστὴρ ἢ ἀνίσχῃ

قوسى انحطاط الشمس عند مغيب الكوكب او طلوعه التى يسمى قوس الرؤية الكلّية — the two arcs of the declivity of the sun at the time of the setting of the planet or its rising which is called the complete arc of sighting

κατάβασις (انحطاط) 11.5

τὸ τόξον τοῦ καιροῦ τῆς καταβάσεως τοῦ ἡλίου — قوس المكث وانحطاط the arc of duration and declivity

κατάβασις (الانحطاط) 11.5.1

Ἡμεῖς κανόνιον ἐθήκαμεν καὶ τὰ τόξα ἅπερ ἔδομεν τεθείκαμεν εἰς ἐκεῖνο τὸ κανόνιον μετὰ τοῦ ψήφου τῶν καταβάσεων εἰς τὸ δ΄ κλίμα εἰς τὰς ἀρχὰς τῶν ζῳδίων — وضعنا اقدار حدود الرؤية من اجزاء البروج وللانحطاطات اضلية فى الاقليم الرابع على رؤس البروج

We have set out the values of the limits of sighting in degrees of the zodiacal signs and for the initial declivities in the fourth clime at the beginnings of the zodiacal signs

κατάβασις (انحطاط) 11.6.2

κατάβασις τοῦ ἡλίου — انحطاط الشمس declivity of the sun

κατάβασις (انحطاط) 11.6.2

Περὶ τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου — تعديل قوس انحطاط الشمس equation of the arc of the declivity of the sun

κατάβασις (الهابط) 12.2.4

ὁ ἀστὴρ εἰς τὸ ἥμισυ τῆς καταβάσεώς ἐστι τῆς σφαίρας — نصف الهابط the half of descent

καταβιβάζων (الجوزهر) 7.4

τὸ αὐθημερινὸν τοῦ καταβιβάζοντος — تقويم الجوزهر true position of the node

καταβιβάζων (الرأس) 8.0.0

τοῦ αὐθημερινοῦ τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

καταβιβάζων (الرأس) 8.1.2

τὸ αὐθημερινὸν τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

καταβιβάζων (الرأس) 8.1.3

τοῦ καταβιβάζοντος — الرأس head (node)

καταβιβάζων (الرأس) 8.3.1

Τὸ αὐθημερινὸν τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

καταβιβάζων (الرأس) 10.3.2.2

τὸ αὐθημερινὸν τοῦ καταβιβάζοντος — تقويم الرأس true position of the head (node)

καταβιβάζων (الجوزهر) 11.1.1

τοῦ καταβιβάζοντος — الجوزهر node

καταλειφθέντες (المهملة) 1.2

καταλειφθέντες μῆνες — الشهور المهملة neglected months

καταλειφθῇ (يخرج) 1.1

καταλειφθῇ — يخرج (there) results

καταλειφθῇ (الباقى) 2.2.2

εἴ τι οὖν καταλειφθῇ — الباقى the remainder

κατάληψις (لمعرفة) 3.1

τὴν κατάληψιν — لمعرفة for knowing

κατάληψις (مقدار) 8.0.0

τὴν κατάληψιν τῆς διαμέτρου τούτων — مقدار قطريهما measure of their diameters

καταλιμπάνεται (القينا) 1.2

καταλιμπάνεται — القينا we cast out

κατέρχεται (يغيب) 11.1.4

Περὶ τῆς μοίρας ἐκείνης ἥτις κατέρχεται μετὰ τῆς σελήνης — الجزء الذى يغيب معه القمر the degree with which the moon sets

κέντρον (الاوتاد) 6.4

κέντρον τοῦ ἱ οἰκήματος — الاوتاد the cardines

κέντρον (مركز) 6.6; 8.3.3

τὸ κέντρον — مركز center

κέντρον (المركز) 7.4

τοῦτο κέντρον καλεῖται — المركز المطلق general center

κέντρον (حصة) 7.4

τὸ κέντρον καὶ τὸ αὐθημερινὸν τοῦ ἡλίου — حصة الشمس وتقويمه argument of the sun and its correction

κέντρον (مركز) 7.4

τὸ κέντρον — مركز center

κέντρον (الحصة) 8.1.1

κέντρον τοῦ ἡλίου — الحصة المطلقت general argument

κέντρον (الحصة) 8.1.1

τὸ κέντρον — الحصة argument

κέντρον (بعد) 8.1.2

τὸ κέντρον τῆς σελήνης — بعده المضعف its doubled distance

κέντρον (المركز) 8.1.4

τὸ κέντρον — المركز المطلق الكاكب general center of the planets

κέντρον (المركز) 8.1.4

τὸ κέντρον — المركز المطلق general center

κέντρον (المركز) 8.1.4; 8.3.3; 8.3.4

τοῦ τελείου κέντρου — المركز المعدل equated center

κέντρον (المركز) 8.1.4

τῷ τελείῳ κέντρῳ — المركز المعدل equated center

κέντρον (المركز) 8.2

τοῦ τελείου κέντρου τοῦ ἀστέρος ἐκείνου — المركز المعدل للكوكب equated center for the planet

κέντρον (المركز) 8.3.2

τὸ κέντρον τὸ τέλειον — المركز المعدل equated center

κέντρον (المركز) 8.3.2

κέντρον — المركز center

κέντρον (المركز) 8.3.3

τοῦ τελείου κέντρου — المركز center

κέντρον (علامة) 8.3.4

εἰς τὸ κάτω ἡμισφαίριον τὸ κέντρον $\overline{\beta}$ — علامة mark

κέντρον (حصة) 8.4.3

κατ' ἐναντίον τοῦ κέντρου ἐκείνου — حصة argument

κέντρον (وتد) 12.2.1

τοῦ κέντρου τοῦ δ΄ καὶ τοῦ ι΄ — وتدى العاشر والرابع the tenth and the fourth cardines

κέντρον (وتد) 12.2.2

τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ κέντρου τοῦ ι΄ ἢ τοῦ δ΄

— بعد الكوكب عن وتدى العاشر او الرابع the distance of the star from the tenth or fourth cardine

κέντρον (وتد) 12.3.1

τὸ μῆκος τοῦ αἰλὰτζ ἀπὸ τοῦ κέντρου

— بعد الهيلاج عن الوتد distance of the *haylāj* from the cardine

κέντρον (الاوتاد) 12.3.1

εἰ δὲ τὸ αἰλὰτζ μέσον ἐστὶ τῶν δύο κέντρων — اذا كان بين الاوتد if it is between the cardines

κινεῖται ( ) 8.2

ὁ ἀστὴρ κατ' ὀρθὸν κινεῖται — الكوكب مستقيم the planet in direct (motion)

κινεῖται ( ) 8.2.1

ἡνίκα κινεῖται κατ' ὀρθὸν ὁ ἀστὴρ καὶ ὅταν ὑποποδίζῃ

— مدة الرجوع والاستقامة the time of retrogression and of direct (motion)

κινεῖται ( ) 8.2.1

ἐὰν ὁ ἀστὴρ κινῆται κατ' ὀρθόν — اذا كان الكوكب مستقيما if the planet is in direct motion

κινεῖται (استقام) 8.2.1

κινεῖται κατ' ὀρθὸν ὁ ἀστήρ — استقام direct motion

κινεῖται (الاستقام) 8.2.1

κινεῖται κατ' ὀρθὸν ὁ ἀστήρ — الاستقام direct motion

κινεῖται (يستقيم) 8.2.2

κινηθήσεται κατ' ὀρθόν — يستقيم it (the planet) is in direct motion

κινεῖται ( ) 12.3.2

ἡ μοῖρα εἰς ἣν κινεῖται τὸ αἰλάτζ — موضع القسمة location of the division

κινεῖται ( ) 12.4.1

περὶ τῆς ἐνθυμήσεως ἐκείνου τοῦ ψήφου ὅτι καθ ' ἕκαστον χρόνον α̅ ζῴδιον κινεῖται

— فى المنتهى فى كلّ بيت وكوكب وتسييراته on the *intihā'* in every house and star and its progrogations

κίνησις (حركة) 1.1

μέση κίνησις τοῦ ἡλίου — حركة وسطة الشمس mean motion of the sun

κίνησις (حركة) 1.1

μέση κίνησις τῆς σελήνης — حركة وسطة القمر mean motion of moon

κίνησις (حركات) 1.2

μέσαι κινήσεις τῶν ἀστέρων — اوساط حركات الكواكب mean motions of the

planets

κίνησις (حركات) 7.0.0

τῶν μέσων κινήσεων τῶν ἀστέρων κατὰ τρεῖς μεθόδους — اوساط حركات الكواكب mean motions of the planets

κίνησις (الاوسط) 7.0.0

μέση κίνησις τῆς πόλεως — الاوسط البلدى mean (motion) for the city

κίνησις (الاوسط) 7.0.0

ἡ μέση κίνησις μετὰ τῆς ὀρθώσεως τῆς ἡμέρας ὀρθοῦνται — الاوسط المحقق بتعديل الايام بليالتها the mean (motion) corrected by the equation of the day with its night

κίνησις (الاوساط) 7.0.0

τῶν μέσων κινήσεων τῶν ἀστέρων — الاوساط الكواكب mean (motions) of the planets

κίνησις (حركات) 7.1

τῶν μέσων κινήσεων τῶν ἀστέρων — اوساط حركات الكواكب mean motions of the planets

κίνησις (حركة) 7.1

ἡ κίνησις — حركة motion

κίνησις (وسط) 7.1

τῇ μέσῃ κινήσει — وسط mean (motion)

κίνησις (حركة) 7.1.1

τῆς μέσης κινήσεως — حركة الاوجات motion of the apogees

κίνησις (حركة) 7.2

ἡ μέση κίνησις τοῦ ἀστέρος ἐκείνου — حركة الكوكب motion of the planet

κίνησις (الاوسط الكتابى) 7.2

τῇ ἀπὸ τῆς συντάξεως μέσῃ κινήσει — الاوسط الكتابى mean in the text

κίνησις (الاوسط) 7.2

εὑρίσκεται ἡ μέση κίνησις τῆς πόλεως ἐκείνης

— الاوسط المصحح بفضل ما بين الطولين the mean corrected by the difference of what is between the two longitudes

κίνησις (اوسط) 7.2

τῆς μέσης κινήσεως τοῦ ἡλίου — اوسط الشمس mean (motion) of the sun

κίνησις (الاوسط) 7.2

τῆς μέσης κινήσεως τῆς πόλεως — اوسط البلدى mean (motion) of our city

κίνησις (الاوسط) 7.2

ἡ τελεία ὄρθωσις τῆς μέσης κινήσεως τῆς πόλεως ἐκείνης — الاوسط المحقق the corrected mean

κίνησις (حركة) 7.4

τὴν κίνησιν τῶν ἀστέρων — حركة الكوكب motion of the planets

κίνησις (اوسط) 7.4

αἱ μέσαι κινήσεις τῶν ἀστέρων — اوسط الكوكب mean motions of the planet

κίνησις (خاصّة) 7.4

τὴν ἰδίαν κίνησιν — خاصّة proper (motion)

κίνησις (استقامتها) 8.0.0

τῆς κατ' ὀρθὸν κινήσεως τῶν ἀστέρων — استقامتها their (the planets') direct (motion)

κίνησις (حركة) 8.0.0

ἡ κίνησις τούτων εἰς τὸ πλέον καὶ ἔλαττον — حركتهما المختلفة their differing motion

κίνησις (اوسط) 8.1.1

ἡ μέση κίνησις τοῦ ἡλίου — اوسطها its (the sun's) mean (motion)

κίνησις (اوسط) 8.1.2

ἡ μέση κίνησις — اوسط القمر mean (motion) of the moon

κίνησις (وسط) 8.1.2

ἡ μέση κίνησις τοῦ ἀναβιβάζοντος — وسط الجوزهر mean (motion) of the node

κίνησις (الخاصة) 8.1.2

ἡ ἰδία τελεία κίνησις — الخاصة معدلة equated anomaly

κίνησις (الخاصة) 8.1.2

ἰδία τελεία κίνησις — الخاصة المعدلة equated anomaly

κίνησις (اوسط) 8.1.2

ἡ μέση κίνησις τοῦ ἀναβιβάζοντος — اوسط الجوزهر mean (motion) of the node

κίνησις (اوسط) 8.1.4

ἡ μέση κίνησις — اوسط mean (motion)

κίνησις (الخاصة) 8.1.4

τῇ ἰδίᾳ κινήσει — الخاصة anomaly

κίνησις (الخاصة) 8.1.4

τῆς ἰδίας τελείας κινήσεως — الخاصة anomaly

κίνησις (استقامة) 8.2

τῆς κατ' ὀρθῆς κινήσεως τῶν ἀστέρων — استقامة المتحيرة direct (motion) of the planets

κίνησις (خاصة) 8.2

ἡ ἰδία τελεία κίνησις — خاصة المعدلة equated anomaly

κίνησις (الخاصة) 8.2.1

ἡ ἰδία τελεία κίνησις — الخاصة anomaly

κίνησις (حركة) 8.2.1

τὴν κατὰ τὸ νυχθήμερον ἰδίαν κίνησιν τοῦ ἀστέρος —

حركة الخاصة له فى يوم وليلة the motion of its (the planet's) anomaly in a day and night

κίνησις (الخاصة) 8.2.1

τῆς ἰδίας τελείας κινήσεως. — الخاصة المعدلة equated anomaly

κίνησις (حركة) 8.2.1

τὴν ἰδίαν κίνησιν τοῦ ἀστέρος ἐκείνου ἣν κινεῖται καθ' ἓν νυχθήμερον

— حركة الخاصة فى يوم وليلة motion of the anomaly in a day and a night

κίνησις (الخاصة) 8.2.2

ἡ ἰδία τελεία κίνησις — الخاصة anomaly

κίνησις (حركة الخاصة) 8.2.2

τὴν ἰδίαν κίνησιν ἣν κινεῖται ὁ ἀστὴρ κατὰ τὸ νυχθήμερον — حركة الخاصة motion of the anomaly

κίνησις (الخاصة) 8.2.2

τῆς ἰδίας τελείας κινήσεως — الخاصة المعدلة equated anomaly

κίνησις (الحركة) 8.2.2

ἡ ἰδία κίνησις τοῦ κατὰ νυχθήμερον κινουμένου ἀστέρος — الحركة الخاصة motion of the anomaly

κίνησις (وسط) 8.3.1

ἡ μέση κίνησις τοῦ ἀναβιβάζοντος — وسط الجوزهر mean (motion) of the node

κίνησις (مسير) 8.4

ἡ κίνησις τῶν ἀστέρων εἰς τὸ αὐθημερινὸν — مسير الكوكب فى التقويم motion of the planet in true position

κίνησις (خاصة) 8.4.3

τῆς ἰδίας κινήσεως τῆς σελήνης — خاصة anomaly

κίνησις ( ) 10.3.1.3

τῆς ἐν τῷ μικρῷ κύκλῳ ἰδίᾳ καὶ ἰδίᾳ ταύτης κινήσεως

— كون القمر فى فلك التدوير the being of the moon in the sphere of (its) epicycle

κίνησις (تسيير) 12.0.0

τῆς κινήσεως τῶν μοιρῶν — الانتهات وتسييرها *intihā'* and their prorogations

κίνησις (التسيير) 12.2.2

πλάτος ἐστὶ τοῦ κύκλου τῆς κινήσεως — عرض دائرة التسيير latitude of the circle of the prorogation

κίνησις (التسيير) 12.2.2

περὶ τοῦ πλάτους τῆς κινήσεως τοῦ κύκλου

— فى معرفة عرض دائرة التسيير بالتقريب on the knowledge of the latitude of the circle of prorogation approximately

κίνησις (التسيير) 12.2.4

τὸ πλάτος τῆς κινήσεως τοῦ κύκλου — عرض دائرة التسيير latitude of the circle of prorogation

κίνησις (تسيير) 12.3

περὶ τῆς κινήσεως τοῦ αἰλὰτζ — فى تسيير الهيلاج on the prorogation of the *haylāj*

κίνησις (تسييراته) 12.4.1

καὶ ἡ κίνησις ἐκείνη εἰς τρία τινά ἐστιν — تسوييراته على ثلثة اوجه its prorogations are in three types

κίνησις (تسيير) 12.4.2

δεύτερον εἰς τὴν κίνησιν τῶν μηνῶν

— الثانى فى منتهى التحويل وهو تسيير ادلاء الشهور second: on the *muntahā'* of the revolution which is the prorogation of the indicators of the month

κίνησις (حركة) 12.4.2

ἡ κίνησίς ἐστιν ἡ μέση τοῦ ἡλίου — حركة الشمس motion of the sun

κίνησις (تسيير) 12.4.2

περὶ τῆς κινήσεως τῶν ψήφων τῆς τύχης τῆς εἰσελεύσεως

— فى تسيير ادلاء تحويل السنة on the prorogation of the indicators of the revolution of the years

κλῆρος ( ) 6.2

ὁ κλῆρος τῆς τύχης — الطالع ascendant

κλίμα (الاقليم) 9.2

κανόνιον τέθεικεν εἰς τὰ ζ̄ κλίματα — الاقليم region

κλίμα (الاقليم) 11.5.1

Ἡμεῖς κανόνιον ἐθήκαμεν καὶ τὰ τόξα ἅπερ ἔδομεν τεθείκαμεν εἰς ἐκεῖνο τὸ κανόνιον μετὰ τοῦ ψήφου τῶν καταβάσεων εἰς τὸ δ΄ κλίμα εἰς τὰς ἀρχὰς τῶν ζῳδίων — وضعنا اقدار حدود الرؤية من اجزاء البروج وللانحطاطات اضلية فى الاقليم الرابع على رؤس البروج

We have set out the values of the limits of sighting in degrees of the zodiacal signs and for the initial declivities in the fourth clime at the beginnings of the zodiacal signs

κλοπιμαῖος (ملحقة) 1.2

κλοπιμαῖαι ἡμέραι — الخمسة ملحقة five days are added

κλοπιμαῖος (الزايدة) 1.2

κλοπιμαῖαι ἡμέραι — الزايدة additional (days)

κλοπιμαῖος (مسترقة) 1.2

κλοπιμαῖαι ἡμέραι — مسترقة stolen (days)

κόκκινος (حمراء) 8.3.2

διὰ κοκκίνου — حمراء red

κόμπος (عقده) 10.2.1.1

τῶν κόμπων — عقده its (the moon's) node

κόσμος (امة) 1.2

ἀπώλεια κόσμου — هلاك امة destruction of the world

κρατεῖται ( ) 11.1.4

τὸ τόξον ταύτης κρατεῖται — نقوسه we take its arc

κρατοῦνται (اخذنا) 1.2

κρατοῦνται οἱ χρόνοι τετελειωμένοι τοῦ ἔτους τοῦ Ἰασδακέρδη

— اخدنا سنى يزدجرد التامة we take the completed years of Yazdijird

κρατοῦσιν (استعمل) 1.1

κρατοῦσιν — استعمل employ

κρεμᾶται (علقنا) 11.4.1

ὁ ἀστρολάβος εἰς τὴν κάθετον ἐκείνην κρεμᾶται — علقنا الاسطرلاب we hang the astrolabe

ἡ ἀρχὴ τοῦ Κριοῦ (نقطة الاعتدال الربيعى) 1.2

ἥλιος ἐς τὴν ἀρχὴν τοῦ Κριοῦ — حلت الشمس نقطة الاعتدال الربيعى the sun came to the point of the Spring equinox

Κριός (نقطة الاعتدال الربيعى) 1.2

ἡ εἰσέλευσις τοῦ ἡλίου εἰς τὸν Κριόν

— ان تحل الشمس نقطة الاعتدال الربيعى when the sun enters the point of the Spring equinox

κρύψις (الخسوف) 10.2.2.1

τὸ κανόνιον τῆς κρύψεως τῆς σελήνης — جدول الخسوف القمرى table of the lunar eclipse

κύκλος (فلك) 1.1

ζῳδιακὸς κύκλος — فلك البروج sphere of the zodiacal signs

κύκλος (الدائرة) 2.2

κύκλος — الدائرة circle

κύκλος (دائرة) 3.0.0

τὸν κύκλον τοῦ μέσου τῆς ἡμέρας — دائرة نصف النهار circle of half the day

κύκλος (فلك) 3.1

τοῦ ζῳδιακοῦ κύκλου — فلك البروج sphere of the zodiacal signs

ὁ τέλειος κύκλος τῆς ἡμέρας (معدل النهار) 3.3

τοῦ τελείου κύκλου τῆς ἡμέρας — معدل النهار equalizer of the day (equator)

ὁ τέλειος κύκλος τῆς ἡμέρας ( ) 4.1

εἰς τὸν τέλειον κύκλον εἰσὶ τῆς ἡμέρας καὶ πλάτος ἀνατολῆς οὐκ ἔχουσιν — يطلع على نسف نقطة الاعتدال it rises on the point of the equinox itself

κύκλος τῆς ὀρθώσεως τῆς ἡμέρας (معدل النهار) 5.2

τοῦ κύκλου τῆς ὀρθώσεως τῆς ἡμέρας — معدل النهار the equalizer of the day (equator)

κύκλος (دائرة) 6.6

κύκλος — دائرة circle

κύκλος (الدور) 8.0.0

ὁ ψῆφος τοῦ κύκλου (ἤτοι τῆς σφαίρας) τετελειωμένου — تمام الدور completion of the rotation

κύκλος (دائرة) 9.1.3

εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας — على دائرة نصف النهار on the circle of half the day

κύκλος (دائرة) 9.1.4

τὸν κύκλον τῆς ἀναβάσεως — دائرة الارتفاع circle of altitude

κύκλος (التدوير) 9.2.4

τὸ ὕψωμα τοῦ μικροῦ κύκλου — ذروة التدوير apogee of the epicycle

κύκλος (فلك التدوير) 10.3.1.3

τῆς ἐν τῷ μικρῷ κύκλῳ ἰδίᾳ καὶ ἰδίᾳ ταύτης κινήσεως

— كون القمر فى فلك التدوير the being of the moon in the sphere of its epicycle

κύκλος (دائرة) 12.2.2

πλάτος ἐστὶ τοῦ κύκλου τῆς κινήσεως — عرض دائرة التسيير latitude of the circle of the prorogation

κύκλος (دائرة) 12.2.2

περὶ τοῦ πλάτους τῆς κινήσεως τοῦ κύκλου

— فى معرفة عرض دائرة التسيير بالتقريب on the knowledge of the latitude of the

circle of the prorogation approximately

κύκλος (دائرة) 12.2.4

τὸ πλάτος τῆς κινήσεως τοῦ κύκλου — عرض دائرة التسيير latitude of the circle of the prorogation

λατρεύοντες τῷ πυρί ( ) 1.2

οἱ λατρεύοντες τῷ πυρί — دين المجوسية Mazdaism

λεπτά (دقائق) 2.1

λεπτά — دقائق minutes

λεπτά (دقيقة) 4.2; 8.3.2; 8.3.3; 8.3.4

λεπτά γενικά — دقيقة النسب minutes of proportion

λεπτά (كسر) 7.3.1

ἔπειτα τηρεῖται εἰς τὰ λεπτὰ τῶν ἡμερῶν τῆς ἑβδομάδος — نظرنا الى كسر الجمعات we look at the fractions of weeks

λεπτά (الكسر) 7.3.2

τὰ λεπτὰ τῶν ἡμερῶν τῆς ἑβδομάδος — الكسر الذى مع ايام الجمعات fractions which are with the days of the week

λεπτά (دقائق) 8.1.2; 8.3.4

τὰ γενικὰ λεπτά — دقائق النسب minutes of proportion

λεπτά (دقائق) 8.3.3

τὰ γενικὰ λεπτά — دقائق نسب الميل minutes of proportion of declination

λεπτά (دقائق) 9.1.4

τὰ λεπτὰ τοῦ αὐθημερινοῦ — دقائق التقويم minutes of true position

λεπτά (دقائق) 9.2.1

λεπτά — دقائق minutes

λεπτά (دقائق) 9.2.5

τὰ λεπτὰ τὰ εὑρεθέντα ἐν τῷ κανονίῳ τοῦ πλείονος καὶ ἐλάττονος τοῦ ἰδίου τῆς σελήνης — دقائق اختلاف التدوير minutes of difference of the epicycle

λεπτά (دقائق) 10.2.1.3

λεπτὰ τῆς ἐκλείψεως — دقائق الخسوف minutes of the eclipse

λεπτά (دقائق) 10.2.1.4

ἐκεῖνα λεπτὰ λέγονται τῆς ἐκλείψεως τῆς σελήνης — دقائق المسقوط minutes of half duration

λεπτά (دقائق) 10.2.1.5

τὰ λεπτὰ τῆς στάσεως — دقائق المكث minutes of duration

λεπτά (دقائق) 10.2.2.1

τὰ λεπτὰ τοῦ αὐθημερινοῦ — دقائق التقويم minutes of the true position

λεπτά (دقائق) 10.3.2.2

λεπτὰ λέγονται τῆς ἐκλείψεως — دقائق الكسوف minutes of the eclipse

λεπτά (دقائق) 10.3.2.3

τὰ λεπτὰ τοῦ αὐθημερινοῦ — دقائق التقويم minutes of the true position

λεπτά (الدقائق) 11.1.4

ἀπὸ μοιρῶν καὶ λεπτῶν — من الدرج والدقائق in degrees and minutes

λεπτά (دقائق) 11.2.1

τὰ λεπτὰ τοῦ αὐθημερινοῦ — دقائق التقويم minutes of true position

λεπτά (كسر) 12.1.1

τὰ πρῶτα καὶ β′ λεπτά — كسر fractions

λεπτόν (الثوانى) 2.2

δεύτερον λεπτόν — الثوانى seconds

μακράν (غاية) 3.2.1

ὅταν διίστατι τῆς γῆς μακράν — غاية ارتفاع limit of the altitude

μέγιστος ( ) 1.2

δῆλαι καὶ μέγισται ἡμέραι — ايام المشاهير famous days

μέγιστος (عظيمة) 1.2

μέγιστον ἔργον τῶν τοῦ οὐρανοῦ — حادثة عظيمة من ايات هاوئة great occurrence of atmospheric marvels

μέγιστος (عظيمة) 1.2

μέγιστον ἔργον τῶν τῆς γῆς — حادثة عظيمة من علامات ارضية great occurrence of earthly signs

μέθοδος (المقدمات) 10.3.2

δεῖ εἰπεῖν τίσι μεθόδοις χρήσασθαι χρή — المقدمات premises

μειοῦται ( ) 1.2

ἡ σελήνη αὔξει καὶ μειοῦται — كثرة روئتهم الاهلية multitude of their sightings of lunar crescents

μέλας (سوداء) 8.3.2

διὰ μέλανος — سوداء black

μερίζεται ( ) 12.4.1

εἴ τι εὑρεθῇ ἐκεῖνο εἰς τὰ $\overline{\text{ιβ}}$ μερίζεται ἤγουν ἀνὰ ιβ γίνεται τούτων ἀφαίρεσις — القينا من المبلغ اثناى عشر we cast off twelve from the result

μερίζονται (قسمنا) 1.1

μερίζονται — قسمنا we divide

μερισμός (القسمة) 12.3.2

τοῦ μερισμοῦ τῆς μοίρας τοῦ αἰλάτζ — القسمة من الهيلاج the division of the *haylāj*

μέρος (جرم) 10.2.1.4

ἡνίκα ἐκλείπει μέρος τῆς σελήνης — اذا كان الخسوف فى بعض الجرم when the eclipse is in part of (its) body

μέρος ( ) 10.3.2

τὸ μέρος τῆς δύσεως — غربى western

μέρος ( ) 10.3.2

τὸ μέρος τῆς ἀνατολῆς — شرقى eastern

μέρος ( ) 10.3.2.1

εἰς τὸ μέρος τῆς δύσεως — غربيا western

μέρος ( ) 10.3.2.1

εἰς τὸ μέρος τῆς ἀνατολῆς — شرقيا eastern

μέρος (بعض) 10.3.2.2

μέρος ἐκλείπει τοῦ ἡλίου — تنكسف بعضها part of it (the sun) is eclipsed

μέρος (جهة) 12.2.3

τὸ μέρος — جهة direction

μέρος ( ) 12.3.2

ἡ μοῖρα τοῦ μέρους τοῦ αἰλάτζ — موضع القسمة location of the division

μέσον (فلك نصف النهار) 1.1

τὸ μέσον τῆς ἡμέρας — فلك نصف النهار sphere of half of the day

μέσον (نصف) 1.2

μέσον τῆς ἡμέρας — نصف يوم half of the day

μέσον ( ) 8.4

ἀπὸ τοῦ μέσου τῆς ἡμέρας μέχρι καὶ τοῦ ἑτέρου μέσου τῆς ἡμέρας — من يوم الى يوم from day to day

μέσον (وسط) 10.3.2.1

τὸ μέσον τῆς ἐκλείψεως — ساعات وسط الكسوف hours of the middle of the eclipse

μέσον (الزوال) 10.3.2.1

κατ' ἐναντίον τοῦ μέσου τῆς ἡμέρας γίνεται εἰσέλευσις

— فناخذ ما بازاء الزوال we take whatever is opposite noon

μέσον ( ) 10.3.2.2

τὸ μέσον τοῦ ἡλίου ἐκλείψει ἡ δὲ περιφέρεια οὐκ ἐκλείψει

— حول القمر من جرم الشمس حلقة نور around the moon from the body of the sun is a ring of light

μέσον (نصف) 12.1.1

ἡ ὥρα τοῦ μέσου τῆς ἡμέρας — ساعات نصف النهار hours of half the day

μέσον (وسط) 12.1.3

τῆς τύχης τοῦ μέσου τῆς οἰκουμένης — طالع القبة وطالع وسط المعمورة ascendant of the cupola and the ascendant of the middle of the inhabited world

μέσον (فيما بين) 12.2.1

εἰ δὲ ὁ ἀστὴρ μέσον τοῦ δ' καὶ τοῦ ζ'

ان كان الكوكب فيما بين الرابع والسابع — if the star is in what is between between the fourth and the seventh

μέσον (فيما بين) 12.2.1

ἐὰν μέσον τῆς τύχης καὶ τοῦ δ΄ — كان فيما بين الطالع والرابع it (the planet) is in what is between the ascendant and the fourth

μέσον (فيما بين) 12.2.1

ὁ ἀστὴρ μέσον τοῦ ι΄ καὶ τοῦ α΄ οἰκήματος τοῦ τόπου τῆς τύχης

الكوكب ـ ان كان فيما بين العاشر والطالع — if the star is in what is between the tenth and the ascendant

μέσον (بين) 12.3.1

εἰ δὲ τὸ αἰλὰτζ μέσον ἐστὶ τῶν δύο κέντρων — اذا كان بين الاوتد if it is between the cardines

μέσος (وسطة) 1.1

μέση κίνησις τοῦ ἡλίου — حركة وسطة الشمس mean motion of the sun

μέσος (وسطة) 1.1

μέση κίνησις τῆς σελήνης — حركة وسطة القمر mean motion of the moon

μέσος (اوساط) 1.2

μέσαι κινήσεις τῶν ἀστέρων — اوساط حركات الكواكب mean motions of the planets

μέσος (الاوسط) 1.2

ὁ μέσος ψῆφος — مقدار الاوسط measure of the mean

μέσος (الاوسط) 11.3

ὁ μέσος ψῆφος — الحد الاوسط المعتدل قوسى الاوّلى والثانية the mean equated limit of the first and second arcs

μέσος (بين) 12.3.1

ἡ περισσεία ἡ μέση τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνου

— فضلة بين مطالعى درجة الهيلاج the excess (of what is) between the rising times of the degree of the *haylāj*

μέσος ( ) 12.4.2

ἡ κίνησίς ἐστιν ἡ μέση τοῦ ἡλίου — حركة الشمس motion of the sun

μεσουράνημα (يتوسط) 5.3

ὁ ἀστὴρ οὗτος πρότερον τῆς ἰδίας μοίρας φθάνει εἰς τὸ μεσουράνημα — فانه يتوسط السماء قبل if it reaches the midheaven beforehand

μεταβαίνει (دخول) 1.2

ὅτε ὁ ἥλιος ἀπὸ ζῳδίου μεταβαίνει εἰς ζῴδιον — دخول الشمس اوايل البروج the entrance of the sun into the beginnings of the zodiacal signs

μετάβασις (بهت) 8.4

τῆς μεταβάσεως ἡλίου καὶ σελήνης — بهت النيرين the daily velocity of the sun and moon

μετάβασις (بهت الكوكب) 8.4

ἡ κίνησις τῶν ἀστέρων εἰς τὸ αὐθημερινὸν ἀπὸ τοῦ μέσου τῆς ἡμέρας μέχρι καὶ τοῦ ἑτέρου μέσου τῆς ἡμέρας μετάβασις λέγεται — بهت الكوكب daily velocity of the planet

μετάβασις (مسير) 8.4

τὴν μετάβασιν τοῦ ἀστέρος εἰς τὴν μίαν ὥραν

— مسيره المختلف فى ساعة its varying motion in an hour

μετάβασις (بهت) 8.4.1

ἡ μετάβασις ἐκείνου — بهت daily velocity

μετάβασις (مسير) 8.4.1

ἡ μετάβασις τοῦ ἡλίου τηρεῖται εἰς τὴν μίαν ὥραν εἰς τὰ νγ΄ λεπτά — مسيرها فى ساعة its motion in an hour

μετάβασις (مسير) 8.4.3

τῆς μεταβάσεως τοῦ ἡλίου καὶ τῆς σελήνης — مسري النيرين motions of the two luminaries

μετάβασις (مسير / بهت) 8.4.3

ἡ μετάβασις τοῦ ἡλίου εἰς τὸ ἓν νυχθήμερον καὶ εἰς τὴν μίαν ὥραν — بهت الشمس ومسيرها فى ساعة the daily velocity of the sun and its motion in an hour

μετάβασις (مسير / بهت) 8.4.3

ἡ μετάβασις τῆς σελήνης εἰς τὸ ἓν νυχθήμερον καὶ εἰς τὴν μίαν ὥραν — بهت القمر ومسيره فى ساعة the daily velocity of the moon and its motion in an hour

μετάβασις (بهت) 9.1.4

τῆς μεταβάσεως σελήνης — بهته its (the moon's) daily velocity

μετάβασις (مسير) 9.1.4

τῆς μεταβάσεως ἡλίου καὶ σελήνης — مسير النيرين motion of the two luminaries

μετάβασις (البهت) 10.1

τῆς συνόδου τοῦ ἡλίου καὶ τῆς σελήνης καὶ τῆς διαμέτρου τούτων καὶ τοῦ μήκους τῆς τούτων μεταβάσεως

— الاجتماعات والاستقبالات بالبعد والبهت conjunctions and oppositions in distance and daily velocity

μετάβασις (سبق) 10.1.1

τὴν τελείαν ἐκείνην μετάβασιν — مبسوطة سبق القمر extension of the precedence of the moon

μετάβασις (سبق) 10.1.1

ἐκεῖνο μετάβασις λέγεται τελεία — سبق القمر precedence of the moon

μετάβασις (بهت) 10.1.1

ἔπειτα ἡ μετάβασις τοῦ ἡλίου ἀφαιρεῖται ἀπὸ τῆς μεταβάσεως τῆς σελήνης — نقصنا بهت الشمس من بهت القمر we subtract the daily velocity of the sun from the daily velocity of the moon

μετάβασις (بهت) 10.1.1

ἡ μετάβασις ἡλίου καὶ σελήνης — بهت daily velocity

μετάβασις (سبق) 10.2.1.4

τὴν τελείαν μετάβασιν τῆς σελήνης τὴν κατὰ τὸ νυχθήμερον — سبق القمر فى يوم وليله precedence of the moon in a day and its night

μετάβασις (سبق) 10.2.1.5

τὴν τελείαν μετάβασιν τοῦ νυχθημέρου — سبق القمر فى يوم وليله precedence of the moon in a day and its night

μετάβασις (مسير / بهت) 10.2.2.1

τὸ κανόνιον τῆς μεταβάσεως ἡλίου καὶ σελήνης — جدول مسير النيرين ببهت القمر table of the motion of the two luminaries with the daily velocity of the moon

μετάβασις (سبق) 10.3.2

ἡ τελεία μετάβασις τῆς σελήνης εἰς μίαν ὥραν — سبق القمر فى ساعة the precedence of the moon in an hour

μετάβασις (حركة) 10.3.2

ἡ μετάβασις αὐτῆς εἰς τὴν μίαν ὥραν — حركته فى ساعة its (the moon's) motion in an hour

μετάβασις (حركة) 10.3.2

ἡ μετάβασις τοῦ ἡλίου ὡσαύτως εἰς μίαν ὥραν — حركتها فى ساعة its (the sun's) motion in an hour

μετάβασις (سبق) 10.3.2.1

τὴν τελείαν μετάβασιν τῆς σελήνης εἰς μίαν ὥραν — سبق القمر فى ساعة precedence of the moon in an hour

μετάβασις (بهت) 10.3.2.3

τῆς μεταβάσεως ἐκείνης — بهت القمر daily velocity of the moon

μετάβασις (بهت) 11.1.1

τὴν μετάβασιν τῆς σελήνης εἰς τὴν μίαν ὥραν — بهت القمر daily velocity of the moon

μετάβασις (سبق) 11.1.1

ἡ μετάβασις τῆς σελήνης εἰς μίαν ὥραν — سبق القمر فى ساعات precedence of the moon in hours

μετάβασις (خاصة / بهت) 11.3

τοῦ ἰδίου ἢ τῆς μεταβάσεως τῆς σελήνης — خاصة القمر او بهته anomaly of the moon or its daily velocity

μετάβασις (بهت) 11.5.2

τὴν τελείαν μετάβασιν — فضل البهت بين الشمس والكوكب excess of the daily velocity between the sun and the planet

μετάβασις (البهت) 11.5.2

Ἡ μετάβασις τοῦ ἡλίου καὶ ἐκείνου τοῦ ἀστέρος

— البهت بين الشمس والكوكب the daily velocity between the sun and the planet

μετάβασις (بهت) 11.6.1

ἡ μετάβασις τῆς σελῆνης — بهت القمر the daily velocity of the moon

μετάβασις (بهت) 11.6.2

ἡ μετάβασις τῆς σελῆνης — بهت القمر the daily velocity of the moon

μετάβασις (بهت) 12.1.1

τὴν μετάβασιν τοῦ ἡλίου — بهت الشمس the daily velocity of the sun

μετάκλισις (ميل) 3.0.0

μετάκλισις — ميل declination

μετάκλισις (الميل) 3.1

ἡ μεγάλη μετάκλισις — الميل الاعظيم the greatest declination

μετάκλισις (الميل) 3.4

τῆς τετελειωμένης μετακλίσεως — تمام الميل complement of the declination

μετάκλισις (ميل) 6.5

ἡ μετάκλισις τοῦ ἡλίου — ميل الشمس declination of the sun

μετάκλισις (ميل) 7.4

τὴν μετάκλισιν τοῦ ἡλίου — ميل الشمس declination of the sun

μετάκλισις (الميل) 9.1.3

εἰς τὴν μετάκλισιν τοῦ ὅλου τοῦ μήκους τῆς γωνίας τετελειωμένης τοῦ πλάτους ⟨...⟩ τῆς γωνίας

— فمقدار تمام الميل كلّه زاوية العرض وتمامها الى تسعين زاوية الطول the measure of

the complement of the declination is the angle of latitude and its complement to 90 is the angle of longitude

μέτρον ( ) 8.0.0

μέτρον — سطرى العدد two columns of numbers

μέτρον ( ) 8.1.4

τοῦ μέτρου — سطرى العدد two columns of numbers

μῆκος (طول) 1.2

τὸ μῆκος τῶν ϙ̅ — طول القبة longitude of the Cupola

μῆκος (عرض) 3.0.0

τοῦ μήκους τῆς πόλεως — عرض البلد latitude of the city

μῆκος (بعد) 3.1

τοῦ μήκους τοῦ ἀστέρος ἤγουν τῆς τῶν ἀστέρων διαστάσεως ἀπὸ τῆς τελείας ζώνης τῆς ἡμέρας — بعد الكوكب عن معدل النهار distance of the star from the equalizer of the day

μῆκος (البعد) 3.3

τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ τελείου κύκλου τῆς ἡμέρας

— بعد الكوكب عن معدل النهار distance of the star from the equalizer of the day

μῆκος (البعد) 3.3

τὸ μῆκος — البعد distance

μῆκος (بعد) 5.2

τοῦ μήκους ἤτοι τῆς διαστάσεως τῶν ἀστέρων ἀπὸ τοῦ κύκλου τοῦ κατὰ τὸ νυχθήμερον κινουμένου — بعد عن معدل النهار its distance from the equalizer of the day

μῆκος (بعد) 5.2

τὸ μῆκος τοῦ ἀστέρος ἀπὸ τῆς ὀρθώσεως τοῦ κύκλου — بعده عن معدل النهار distance from the equalizer of the day

μῆκος (بعد) 6.5.2

τὸ μῆκος τοῦ ἀστέρος — بعد الكوكب distance of the star

μῆκος (عرض) 6.5.2

τὸ μήκους τῆς πόλεως — عرض latitude

μῆκος (طول) 6.7

τοῦ μήκους τοῦ Μακκᾶ — طول مكة longitude of Mecca

μῆκος (طول) 7.0.0

μῆκος — طول longitude

μῆκος (البعد) 8.1.4

τὸ ἐγγύτερον μῆκος — البعد الاقرب closest distance

μῆκος (البعد) 8.1.4

τὸ πόρρω μῆκος — البعد الابعد the furthest distance

μῆκος (الطول) 9.1.5;9.2.1

τὸ μῆκος καὶ πλάτος — الطول longitude

μῆκος (بعد) 9.3

τὸ μῆκος τῆς σελήνης ἀπὸ τῆς τύχης — بعد القمر من الطالع distance of the moon from the ascendant

μῆκος (الطول) 9.3

τὸ πλέον καὶ ἔλαττον τῆς ὄψεως ἐκείνης εἰς τὸ μῆκος

— اختلاف منظر فى الطول difference in vision in longitude

μῆκος (البعد) 10.1

τῆς συνόδου τοῦ ἡλίου καὶ τῆς σελήνης καὶ τῆς διαμέτρου τούτων καὶ τοῦ μήκους τῆς τούτων μεταβάσεως

— الاجتماعات والاستقبالات بالبعد والبهت conjunctions and oppositions in distance and daily velocity

μῆκος (البعد) 10.1.1

τὸ μῆκος τὸ μέσον ἡλίου καὶ σελήνης — مبسوطة البعد extension of the distance

μῆκος (البعد) 10.1.2

τὸ μέσον τούτων μῆκος — البعد بينهما the distance between the two

μῆκος (البعد) 10.1.3

τὸ μῆκος ὅπερ ἐκρατήθη μέσον τοῦ ἡλίου καὶ σελήνης — البعد بين النيرين distance between the two luminaries

μῆκος (بعد) 10.3.2

ἐκεῖνο οὖν τὸ μῆκος εἴπερ ἐστὶ ἔλαττον τῶν ϙ̅ μοιρῶν

— بعد الجزء من الطالع اقل من تسعين the distance of the degree from the ascendant is less than 90

μῆκος (بعد) 10.3.2

μῆκός ἐστι τῶν μοιρῶν τῆς συνόδου — بعد جزء الاجتماع distance of the degree of the conjunction

μῆκος (قوس) 11.5

τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ ἡλίου πόσον ἔνι

— قوس المكث الماخوذ او الانحطاط الماخوذ the taken arc of duration or the taken (arc) of declivity

μῆκος (طول) 12.1.1

εἰς τὸ μῆκος τῆς πόλεως ἐκείνης ἔνθα καὶ ἡ γέννησις — على طول الميلاد for the longitude of the nativity

μῆκος (بعد) 12.2.1

μῆκός ἐστι τοῦ ἀστέρος ἀπὸ τοῦ δ΄ — بعده من الرابع its (the star's) distance from the fourth

μῆκος (البعد) 12.2.1

μῆκός ἐστι ἀπὸ τοῦ ι΄ — البعد الكوكب عن العاشر the distance of the star from the tenth

μῆκος (بعد) 12.2.1

τοῦ μήκους τῶν ἀστέρων — بعد الكوكب distance of the star

μῆκος (بعد) 12.2.2

τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ κέντρου τοῦ ι΄ ἢ τοῦ δ΄

— بعد الكوكب عن وتدى العاشر او الرابع the distance of the star from the tenth or fourth cardine

μῆκος (بعد) 12.3.1

τὸ μῆκος τοῦ αἰλὰτζ ἀπὸ τοῦ κέντρου

— بعد الهيلاج عن الوتد distance of the *haylāj* from the cardine

μήν ( ) 1.1

μὴν προστίθεται — كبس intercalate

μήν (الشهور) 1.1

μήν — الشهور months

μήν (الشهور) 1.2

καταλειφθέντες μῆνες — الشهور المهملة neglected months

μήν (الشهور) 1.2

οἱ μῆνες τοῦ θεμελίου — الشهور الاصلية months of the base

μήν (شهور) 1.2

οἱ μῆνες ἐξισοῦνται μετὰ τῶν $\overline{\delta}$ καιρῶν

— شهور مع فصول السنة the months (are fixed) with the seasons of the year

μήν (الشهور) 12.4.2

δεύτερον εἰς τὴν κίνησιν τῶν μηνῶν

— الثانى فى منتهى التحويل وهو تسيير ادلاء الشهور second: on the *muntahā'* of the revolution which is the prorogation of the indicators of the month

μήν (الشهور) 12.4.3

περὶ τῆς ἐλάσεως τῆς τύχης τῆς εἰσελεύσεως τοῦ μηνός

— فى تحويل الشهور وتسيير ادلايها on the revolution of the months and the prorogation of their indicators

μία ( ) 7.3

μία ἡμέρα γίνεται τετελειωμένη — يصير يوما كاملا it becomes one full day

μοῖρα (جزا) 2.2

μοίρας — جزا degree

μοῖρα (درجة) 5.0.0

τῆς μοίρας ἐκείνης ἥτις ἀπὸ τοῦ ζῳδίου ἐκείνου μετὰ τοῦ ἀστέρος ὁμοῦ εἰς τὸν κύκλον γίνεται τοῦ μέσου τῆς ἡμέρας — درجتها التى تتوسط السماء معها its degree with which it reaches the middle of the sky

μοῖρα ( ) 5.0.0

τῆς μοίρας ἥτις μετὰ τοῦ ἀστέρος ἀνίσχει καὶ τῆς μοίρας ἥτις μετὰ τοῦ ἀστέρος δύει — [درجتها] التى تطلع وتغيب [its degree] with which it rises and sets

μοῖρα (حصة) 5.2

ἡ μοῖρα τοῦ μήκους — حصة البعد portion of distance

μοῖρα (درجة) 5.3

μετὰ τῆς μοίρας τοῦ ἰδίου αὐθημερινοῦ — مع درجة التى هو فيها with the degree in which it is

μοῖρα (درجة) 5.3

μοῖρά ἐστιν ὅτι μετὰ τοῦ ἀστέρος ὁμοῦ φθάνει εἰς τὸ μεσουράνημα — درجة ممره التى يتوسط الكوكب السماء معها the degree of its transit with which the star reaches midheaven

μοῖρα (درجته) 5.3

τῆς ἰδίας μοίρας — درجته its degree

μοῖρα (درجة) 5.4

τῆς μοίρας ἐκείνης ἥτις ἀνίσχει μετὰ τοῦ ἀστέρος

— درجتى طلوع الكوكب وغروبه the degrees of the star's rising and setting

μοῖρα (درجة) 5.4.1

τῆς μετὰ ἀστέρος δυνούσης μοίρας — درجة التى يغيب معها الكوكب the degree with which the star sets

μοῖρα (جزء) 6.2.1

τῶν μοιρῶν τοῦ ι΄ οἰκήματος — جزء العاشر the degree of the tenth

μοῖρα (جزء) 6.4

αἱ μοῖραι τῶν ὡρῶν καὶ αἱ μοῖραι τῆς τύχης — اجزاء ساعات جزء الطالع the

degrees of the hours of the degree of the ascendant

μοῖρα (حصة) 8.1.2

μοῖρα τοῦ πλάτους τῆς σελήνης — حصة عرضه argument of its (the moon's) latitude

μοῖρα (حصة) 8.3.1

ἡ μοῖρα τοῦ πλάτους — حصة العرض argument of latitude

μοῖρα ( ) 9.1.3

μοῖραν τοῦ ι΄ οἰκήματος — فى العاشر in the tenth

μοῖρα (جزء) 10.1.3

τῆς μοίρας ἐκείνης ἐν ᾗ συνέρχονται ὁ ἥλιος καὶ ἡ σελήνη ἢ κατὰ σύνοδον ἢ κατὰ διάμετρον — جزء الاتصال degree of approach

μοῖρα ( ) 10.2.1.5

ἡ πεσοῦσα ὥρα ἀπὸ τῆς α΄ μοίρας ἀφαιρεῖται

— نقصنا ساعات السقوط المذكورة من الاوّل we subtract the mentioned hours of cadence from the first (place)

μοῖρα (درجة) 10.3.1.2

τὴν μοῖραν τοῦ ἡλίου καὶ τῆς σελήνης ἡνίκα γίνωνται κατὰ σύνοδον — درجة الاجتماع degree of conjunction

μοῖρα (حصة) 10.3.2.2

ἡ μοῖρα τοῦ πλάτους τῆς σελήνης. — حصة العرض argument of the latitude

μοῖρα (جزء) 11.1.1

Εἰς τὴν κατάληψιν τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ τῆς σελήνης εἰς ἐκεῖνον τὸν καιρὸν ὅτι ἡ μοῖρα τοῦ αὐθημερινοῦ τῆς σελήνης κατέρχεται δύνουσα

— تقويم النيرين عند مغيب جزء القمر the true position of the two luminaries at the setting of the degree of the moon

μοῖρα (جزء) 11.1.3

τῆς μοίρας τοῦ ἡλίου — جزء الشمس degree of the sun

μοῖρα (الدرج) 11.1.4

ἀπὸ μοιρῶν καὶ λεπτῶν — من الدرج والدقائق in degrees and minutes

μοῖρα (جزء) 11.1.4

Περὶ τῆς μοίρας ἐκείνης ἥτις κατέρχεται μετὰ τῆς σελήνης

— الجزء الذى يغيب معه القمر the degree with which the moon sets

μοῖρα (جزء) 11.1.7

τὴν ἐσχάτην ἀνάβασιν τῆς διαμέτρου τῆς μοίρας τοῦ ἡλίου

— غاية ارتفاع نظير جزء الشمس limit of the altitude of the opposite point of the degree of the sun

μοῖρα (درجة) 11.1.8

ἡ ἐσχάτη ἀνάβασις τῆς μοίρας τῆς σελήνης — غاية ارتفاع درجة limit of the altitude of the degree

μοῖρα (الدرجة) 11.5

ἐκείνη ἡ μοῖρα ἡ ἐξερχομένη μετὰ τοῦ ἀστέρος τηρεῖται ἢ ἐκείνη ἡ μοῖρα ἡ μετὰ τοῦ ἀστέρος δύνουσα — الدرجة التى يطلع معه الكوكب او يغرب the degree with which rises the planet or sets

μοῖρα ( ) 12.0.0

τοῦ τόπου τῶν μοιρῶν — مواضع القسمة locations of the divisions

μοῖρα ( ) 12.0.0

τῆς κινήσεως τῶν μοιρῶν — الانتهات وتسييرها *intihāś* and their prorogations

μοῖρα (النقطة) 12.1.1

ἡνίκα φθάνει ὁ ἥλιος εἰς τὴν μοῖραν ἐκείνην —
عند نزول الشمس النقطة المفروضة at the alighting of the sun at the determined point

μοῖρα ( ) 12.2.4

ὁ τόπος τῆς τύχης τῆς μοίρας — مطالع الهيلاج rising time of the *haylāj*

μοῖρα (درجة) 12.3

μία μοῖρα τοῦ τόπου τῆς τύχης — درجة مطالعيّة degree of rising time

μοῖρα ( ) 12.3

τοῦ τόπου τῆς μοίρας ἐκείνης — موضع القسمة location of the division

μοῖρα ( ) 12.3.1

τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνης — مطالع المسيير اليه المحصل the resulting rising time of the motion towards it

μοῖρα (درجة) 12.3.1

ἡ περισσεία ἡ μέση τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνου

— فضلة بين مطالعى درجة الهيلاج the excess (of what is) between the rising times of the degree of the *haylāj*

μοῖρα (موضع) 12.3.2

ἡ μοῖρα τοῦ μέρους τοῦ αἰλάτζ — موضع القسمة location of the division

μοῖρα (موضع) 12.3.2

ἡ μοῖρα εἰς ἣν κινεῖται τὸ αἰλάτζ — موضع القسمة location of the division

μοῖρα ( ) 12.3.2

τοῦ μερισμοῦ τῆς μοίρας τοῦ αἰλάτζ — القسمة من الهيلاج the division from the *haylāj*

μοῖρα (درجة) 12.4.2

ἡ μοῖρα τῆς τύχης τῆς εἰσελεύσεως — درجة الطالع تحويل السنة degree of the ascendant of the revolution of the year

μοναί (منازل) 1.5.1

τῶν μονῶν τῆς σελήνης — منازل القمر mansions of the moon

νέος ( ) 1.1

σελήνης νέας φανείσης — روئة الهلال sighting of the crescent

νέος ( ) 11.0.0

ὅτι ἡ σελήνη πότε ἵνα φανῇ νέα — رؤية الاهلة the sighting of the crescents

νέος ( ) 11.6

τῆς σελήνης νέας φανείσης — رؤية الاهلة sighting of the crescents

νεύει (مائلة) 6.4

νεύει — مائلة inclining

Νινευΐ (نينو) 1.5.3

Νινευΐ — نينو Nineveh

νότιος (جنوب) 3.2

πρὸς τὸ νότιον — جنوب south

νότιος (جنوبية) 8.3.2

νότιον — جنوبية southern

νύξ (بليلته) 1.1

ἡμέρα και νύξ — اليوم بليلته day with its night

νύξ (الليل) 10.2.2.3

ἀπὸ τῆς νυκτός ἐστιν — زمانه من الليل المقبل its time is in the next night

νύξ ( ) 11.6.1

εἰς τὴν ἀρχὴν τῆς νυκτὸς — عند مغيب الشمس at the setting of the sun

νύξ (ليلة) 12.2.2

τὸ ἥμισυ τόξον τῆς νυκτός — نصف قوس ليلة half the arc of night

οἴκημα ( ) 6.3

τοῦ ι΄ οἰκήματός — الطالع ascendant

οἴκημα (البيوت) 6.4

τῶν ιβ οἰκήματων — البيوت houses

οἴκημα ( ) 9.1.2

μεταξὺ τῆς τύχης καὶ τοῦ ι΄ οἰκήματος — العاشر tenth

οἴκημα ( ) 10.3.2.1

τὸ ι΄ οἴκημα — العاشر the tenth

οἴκημα ( ) 12.2.1

ὁ ἀστὴρ μέσον τοῦ ι΄ καὶ τοῦ α΄ οἰκήματος τοῦ τόπου τῆς τύχης — الكوكب ان كان فيما بين العاشر والطالع if the star is in what is between the tenth and the ascendant

οἴκημα ( ) 12.2.1

τοῦ τόπου τῆς τύχης τοῦ ι΄ οἰκήματος — مطالع العاشر المستقيم rising time of the tenth in right ascension

οἴκημα (بيت) 12.4.2

τὰ οἰκήματα ταύτης — بيوتها its houses

οἰκουμένη (المعمورة) 12.1.3

τῆς τύχης τοῦ μέσου τῆς οἰκουμένης — طالع القبة وطالع وسط المعمورة as-

cendant of the cupola and the ascendant of the middle of the inhabited world

ὅλος (كلى) 10.3.2.2

ὅλος ἐκλείψει καὶ καιρὸν ἱκανὸν σταθήσεται ἐν τῇ ἐκλείψει. — الكسوف كلى مع مكث the eclipse is total with duration

ὅλος (كلّى) 10.3.2.3

ὁ ἥλιος ὅλος ἐκλείψει — الكسوف كلّى the eclipse is total

ὅλος ( ) 12.1

περὶ τῆς εἰσελεύσεως τῶν χρόνων ὅλων καὶ τῶν χρόνων τῶν γενεθλιαλογικῶν — فى تحويل سنى العالم والمواليد on the revolution of the years of the world and of nativities

ὅλος ( ) 12.1.1

περὶ τῆς ἐκβολῆς τῶν ὡρῶν τῆς εἰσελεύσεως τῶν χρόνων ὅλων — فى استخرج اوقات تحويل سنى العالم on the extraction of the times of the revolution of the years of the world

ὅλος (جميع) 12.4.2

τοῦ φωτὸς τῶν ἀστέρων ὅλων — بجميع الكواكب والشعاعات التحويلية with all the planets and the aspects of a revolution

ὄπισθεν (على التوالى) 5.3

ὄπισθεν τοῦ Καρκίνου ἢ τοῦ Αἰγοκέροτος — عن نقطة الانقلاب على التوالى from the solstitial point in the direction of the following signs

ὀρθόν (مستقيما) 11.5.2

εἰ δὲ κινεῖται ὁ ἀστὴρ ἐξ ὀρθοῦ — اذا كان مستقيما if (the planet) has direct motion

ὀρθοῦται (عدلنا) 8.1.1

ὀρθοῦται — عدلنا we equate

ὀρθοῦται (عدلنا) 11.5.1

καὶ μετὰ τοῦ ψήφου τῶν $\overline{\beta}$ ζῳδίων ὀρθοῦται

— عدلناه بفضل ما بين البرجين we equate it with the excess of what is between two zodiacal signs

ὄρθωσις (تعديل) 2.1

τῆς ὀρθώσεως τοῦ μέσου ψήφου τῶν β κανονίων — تعديل ما بين السطرين equation of what is between 2 columns

ὄρθωσις (تعديل) 3.1

τῆς ὀρθώσεως τῆς ἡμέρας — تعديل نهارها equation of its day

ὄρθωσις (تعديل) 4.0.0

τῆς ὀρθώσεως τῆς ἡμέρας — تعديل النهار equation of day

ὄρθωσις (تعديل) 4.2

τὴν ὄρθωσιν τὴν τετελειωμένην τῆς ἡμέρας — تعديل النهار الكلّى equation of the entire day

ὄρθωσις (معدل) 5.2

τῆς ὀρθώσεως τοῦ κύκλου — معدل النهار the equalizer of the day

ὄρθωσις (معدل) 5.4

τῆς ὀρθώσεως τοῦ κύκλου τῆς ἡμέρας — معدل النهار equalizer of the day

ὄρθωσις (تسوية) 6.0.0

τῆς ὀρθώσεως τῶν ιβ οἰκημάτων — تسوية البيوت equalization of the houses

ὄρθωσις (تسوية) 6.4

τῆς ὀρθώσεως — تسوية equalization

ὄρθωσις (تعديل) 6.4

ὄρθωσις πρώτη — التعديل الاوّل first equation

ὄρθωσις (تعديل) 6.4

ὄρθωσις δευτέρα — التعديل الثانى second equation

ὄρθωσις (تعديل) 6.5

ὄρθωσις τοῦ σημείου — تعديل السمت equation of the azimuth

ὄρθωσις (تعديل) 6.5.1

Ἡ ὄρθωσις τοῦ σημείου — تعديل السمت equation of the azimuth

ὄρθωσις (معدل) 7.0.0

τῆς ὀρθώσεως τῶν β μηκῶν — معدل بفضل ما بين الطولين equated by the difference of what is between the two longitudes

ὄρθωσις (تصحيح) 7.1.1

τῆς ὀρθώσεως τοῦ ὑψώματος — تصحيح اوجات الكوكب correction of the apogees of the planets

ὄρθωσις (تعديل) 7.2

τῆς ὀρθώσεως τῶν μέσων κινήσεων τῶν ἀστέρων — تصحيح الاوسط وتحقيق the correction and rectification of the mean

ὄρθωσις (تحقيق) 7.2

τῆς ὀρθώσεως τῆς ἡμέρας γίνεται τελεία — تحقيق بتعديل الايام بلياليها correction with the equation of the days with their nights

ὄρθωσις (تحقيق) 7.2

τὴν ὄρθωσιν τῆς μέσης κινήσεως τῆς πόλεως ἐκείνης

— تحقيق اوسط البلدى the correction of the mean of our city

ὄρθωσις (تعديل) 8.1.1

τῆς ὀρθώσεως τοῦ ἡλίου — تعديل الشمس equation of the sun

ὄρθωσις (التعديل) 8.1.1

ἡ ὄρθωσις ἀπὸ τῆς μέσης κινήσεως — التعديل المعدل equated equation

ὄρθωσις (تعديل) 8.1.2

τῶν ὀρθώσεων τῆς σελήνης — تعديل القمر equation of the moon

ὄρθωσις (معدل) 8.1.2

οὐχὶ τελεία ὄρθωσις — غير معدل not equated

ὄρθωσις (تعديل) 8.1.4

τῶν ὀρθώσεων τῶν ἀστέρων — تعديل الكوكب equation of the planets

ὄρθωσις (معدل) 8.1.4

οὐχὶ τελεία λέγεται ὄρθωσις — غير معدل not equated

ὄρθωσις (التعديل) 8.1.4

τῇ β′ ὀρθώσει — التعديل الثانى second equation

ὄρθωσις (التعديل) 8.1.4

ἡ β′ ὄρθωσις τελεία — التعديل الثانى المعدل the second equated equation

ὄρθωσις (تعديل) 8.3.1

τῆς ὀρθώσεως τῆς σελήνης — تعديل القمر equation of the moon

ὄρθωσις (تعديل) 8.3.2

τῶν ὀρθώσεων τῶν ἀστέρων — تعديل الكواكب equation of the planets

ὄρθωσις (تعديل) 8.4.3

τῆς ὀρθώσεως τοῦ σκιάσματος — تعديل الظل equation of the shadow

ὄρθωσις (تعديل) 9.2.3

τῆς ὀρθώσεως τῶν μοιρῶν τῶν ζῳδίων — تعديل درجات البروج equation of the degrees of the zodiacal signs

ὄρθωσις (تعديل) 9.2.4

τῆς ὀρθώσεως τῶν $\overline{\beta}$ πλατῶν — تعديل ما بين العرضين the equation of what is between the two latitudes

ὄρθωσις (تعديل) 10.2.2.1

ἡ ὄρθωσις ἑκάστου — تعديلها their equation

ὄρθωσις (تعديل) 10.3.2.3

ἡ πεσοῦσα ὥρα μετὰ τῆς ὀρθώσεως ταύτης — ساعات السقوط وتعديلها hours of the half duration and their equation

ὄρθωσις (تعديل) 10.3.2.3

οἱ δάκτυλοι καὶ ὄρθωσις ἐκείνων — الاصابع وتعديلها digits and their equation

ὄρθωσις (تصحيح) 11.1.2

τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόπου τῆς σελήνης — تصحيح موضع القمر correction of the place of the moon

ὄρθωσις (تعديل / تصحيح) 11.1.3

τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόπου τῆς σελήνης μετὰ τῆς ὀρθώσεως τῆς ἡμέρας — تصحيح موضع القمر بتعديل الايام بلياها correction of the place of the moon with the equation of days with their nights

ὄρθωσις (تعديل) 11.3

ἐκεῖνο ὄρθωσις λέγεται. — قوسى التعديل the arcs of the equation

ὄρθωσις (تعديل) 11.6.1

τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόξου τοῦ καιροῦ — تعديل قوس المكث equation of the arc of duration

ὄρθωσις (تعديل) 11.6.2

Περὶ τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου — تعديل قوس انحطاط الشمس equation of the arc of declivity of the sun

ὄρθωσις (تعديل) 12.1

τέλειον ἐγένετο μετὰ τῆς ὀρθώσεως τῆς ἡμέρας

— يجب ان يكون محققا بتعديل الايام بلياليها it (the position of the sun) should be corrected with the equation of the days with their nights

οὐρανός (هاوئة) 1.2

μέγιστον ἔργον τῶν τοῦ οὐρανοῦ — حادثة عظيمة من ايات هاوئة great occurrence of atmospheric marvels

οὐρανός (السماء) 11.4.1

ἐν τῷ οὐρανῷ — السماء sky

ὄψ (ثقب) 11.4.1

διὰ τῶν ὀπῶν τοῦ πήχεος — ثقبى اللبنة two holes of the block

ὄψις cf. πλέον καὶ ἔλαττον τῆς ὄψεως

ὄψις (الرؤية) 11.3

τὰ κανονία τῆς θεωρίας τῆς σελήνης ἀπὸ τῆς ὄψεως — جدول حدود الرؤية table of the limits of vision

ὄψις (الرؤية) 11.3.1

τόξον ἐστὶ τῆς τελείας ὄψεως — قوس الرؤية الكلّية arc of complete sighting

ὄψις (الرؤية) 11.3.2

τῷ τόξῳ τῆς τελείας ὄψεως — قوس الرؤية الكلّية arc of complete sighting

παραμονή ( ) 1.2

παραμονή — شهر النوبة month of shift

παρέλθοντες (اتت) 12.4.1

οἱ τετελειωμένοι χρόνοι τοῦ ἡλίου οἱ παρελθόντες ἀπὸ τοῦ γενεθλιαλογικοῦ — السنين التامة التى اتت على المولود the complete years which have passed for the native

παρῆλθον (مضى) 6.0.0

παρῆλθον — مضى pass by

πᾶς (كلّ) 10.2.2.1

ἡ σελήνη πᾶσα ἐκλείπει ἀλλ' οὐχ ἵσταται εἰς τὴν ἔκλειψιν — ينخسف كلّه ولا يكون له مكث all of it is eclipsed and it has no duration

πασιτά (بسيطة) 1.2

πασιτά — بسيطة ordinary

πασιτά (البسيطة) 7.3.2

πασιτά — السنة البسيطة ordinary year

πάσχα (اعيد) 1.5

τοῦ πάσχα ἑκάστου ἔθνους — اعيد الامم festivals of the nations

πάσχα (فطر) 1.5.3

πάσχα — فطر breaking of a fast

πέπτωκεν (زائلة) 6.4

πέπτωκεν — زائلة falling

περισσεία (تعديل) 2.0.0

τῆς περισσείας — تعديل ما بين السطرين the equation of what is between two columns

περισσεία (التفاضل) 2.1

ἡ περισσεία — التفاضل difference

περισσεία (فضلة) 4.2

περισσεία τῆς ἡμέρας — فضلة النهار remainder of the day

περισσεία (فضل الدائرة) 6.1

περισσεία τῆς περιφορᾶς — فضل الدائرة excess of the circle

περισσεία (فضل) 6.1.1

περισσεία τῆς σαγίταας — سهم فضل الدائرة versine of the excess of the circle

περισσεία (فضل) 7.2

περισσεία — فضل excess

περισσεία (فضل) 7.2

τῆς περισσείας τῶν $\overline{\beta}$ μηκῶν — فضل ما بين الطولين difference of what is between the two longitudes

περισσεία (ما بين) 7.2

ἡ περισσεία ἡ μέση τῶν $\overline{\beta}$ τῆς πόλεως ἧς βουλόμεθα καὶ τοῦ μήκους τῶν $\overline{\varrho}$ — ما بين طول بلدنا وتسعين what is between the longitude of our city and 90

περισσεία (التفاضل) 8.1.1

περισσεία — التفاضل excess

περισσεία (تفاضل) 9.2

εἰς τὴν περισσείαν τῆς ἡμισείας ὥρας — على تفاضل نصف ساعة in accordance with a difference of half an hour

περισσεία (فضل) 9.2.4

τὴν περισσείαν τῶν $\overline{\beta}$ πλατῶν — فضل ما بين العرضين excess of what is between the two latitudes

περισσεία (الحدود) 11.2.1

ἡ περισσεία ἑκάστου — الحدود limits

περισσεία (الفضلة) 11.3.1

περισσεία — الفضلة excess

περισσεία (البعد) 11.5.1

ἐκείνη ἡ περισσεία ἐὰν πλείων τοῦ φανέντος τόξου

— وكان البعد اكثر من قوس الرؤية the distance is greater than the arc of vision

περισσεία (البعد) 11.5.1

ἡ μέση τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ τοῦ ἀστέρος περισσεία

— ما بين تقويم الشمس والكوكب من البعد whatever distance is between the true position of the sun and the planet

περισσεία (الفضلة) 12.1.2

ἡ περισσεία ἐκείνη μετὰ τῆς ὀρθώσεως τοῦ ὑψώματος τελεία γίνεται — الفضلة المعدلة بالاوج excess equated by the apogee

περισσεία (فضلة) 12.1.2

τῆς περισσείας τῶν χρόνων — فضلة السنين excess of the years

περισσεία (الفضلة) 12.3.1

ἡ περισσεία ἡ μέση τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνου

— فضلة بين مطالعى درجة الهيلاج the excess (of what is) between the rising times of the degree of the *haylāj*

περισσεύεται ( ) 1.4.1

ἓν περισσεύεται — زدنا واحد we add one

περισσεύεται ( ) 4.2.1

εἰς τὰ ξ περισσεύεται — زدنا على ستين we add (it) to 60

περισσεύεται ( ) 12.4.1

τὸ σημεῖον τοῦ ζῳδίου τῆς τύχης τοῦ θεμελίου τοῦ γενεθλιαλογικοῦ περισσεύεται εἰς τοὺς χρόνους ἐκείνους

— زدنا على صورة البرج الذى فيه الكوكب او صورة الطالع we add them (the completed years) to the image of the zodiacal sign in which the planet is or to the image of the ascendant

περισσός (زايد) 2.1

περισσός — زايد increasing

περιφέρεια (محيط) 6.6

τὴν περιφέρειαν — محيط circumference

περιφέρεια (حلقة) 10.3.2.2

τὸ μέσον τοῦ ἡλίου ἐκλείψει ἡ δὲ περιφέρεια οὐκ ἐκλείψει

— حول القمر من جرم الشمس حلقة نور around the moon from the body of the sun is a ring of light

περιφορά (الدور) 1.2

περιφορά — الدور cycle

περιφορά (الدورا) 1.4.1

περιφοραί — الدورا cycle

περιφορά (الدائرة) 5.5

περιφορά ἐστιν ἀπὸ τῆς ἀρχῆς τῆς ἡμέρας ἐκείνης ὅταν ἀνίσχει ὁ ἀστήρ — الدائرة من الفلك من لدن طولع الشمس the arc on the zodiacal circle since sunrise

περιφορά (الدائرة) 5.5

περιφορά ἐστιν ἀπὸ τῆς ἀρχῆς τῆς νυκτὸς μέχρι τῆς ὥρας καθ' ἣν ἀνίσχει ὁ ἀστήρ — الدائر من لدن مغيبها الى طلوع الكوكب the arc since the setting of it (the sun) till the rising of the star

περιφορά (الدائرة) 6.1

τῆς περιφορᾶς τοῦ ἡλίου ὅταν ἀνίσχῃ

— الدائرة من الفلك من لدن طلوع الشمس arc on the zodiacal circle since sunrise

περιφορά (الدائرة) 6.1

περφορά — الدائرة من الفلك arc on the (zodiacal) circle

περιφορά (الدائر) 6.3

τῆς περιφορᾶς τῶν ὡρῶν — الدائر والساعات arc and hours

περιφορά (الادوار) 12.1.2

ἡ περιφορὰ ἀφαιρεῖται ἐξ ἐκείνου — طرحنا منها الادوار we cast off from it cycles

περιφορά (الدائر) 12.1.3

εἴ τι εὑρεθῇ περιφορά ἐστιν — وسمينا الدائر we call it an arc

περιφορά (الدور) 12.4.2

τῆς σφαίρας πληρωθείσης τῆς περιφορᾶς — تم الدور the cycle is completed

πῆχυς (اللبنة) 11.4.1

διὰ τῶν ὀπῶν τοῦ πήχεος — ثقبى اللبنة two holes of the block

πῆχυς (اللبنة) 11.4.1

τοῦ πήχεος — اللبنة block

πλανώμενος (المتحيرة) 11.5

περὶ τῶν ε̄ πλανωμένων ἀστέρων ὅτι κατὰ ποῖον καιρὸν ἐξέρχονται ἤτοι ὑπεξίστανται τοῦ φωτὸς τοῦ ἡλίου καὶ κατὰ ποίαν ὥραν εἰσέρχονται ὑπὸ φῶς τοῦ ἡλίου κατὰ τὸ πρωϊ ἢ τὴν ἑσπέραν — فى تشريق الكواكب المتحيرة وتغريبها on the rising of the moveable stars (planets) and their setting

πλάτος (عرض) 3.2

τοῦ πλάτος ἑκάστης πόλεως — عرض البلد the latitude of the city

πλάτος (عرض) 3.3

τῷ τετελειωμένῳ πλάτει — تمام عرض البلد complement of the latitude of the city

πλάτος (سعة) 4.1

τοῦ πλάτους τῆς ἀνατολῆς — سعة المشرق rising amplitude

πλάτος (عرض) 4.1

τοῦ τελείου πλάτους τῆς πόλεως — تمام عرض البعد complement of the latitude of the city

πλάτος (عرض) 5.2

πλάτος — عرض latitude

πλάτος (عرض) 6.7

τὸ τετελειωμένον τῆς πόλεως τῆς ζητουμένης πλάτος — تمام عرض بلد complement of the latitude of the city

πλάτος (عرض) 7.4

τὸ πλάτος τῆς σελήνης — عرض القمر latitude of the moon

πλάτος (عرض) 7.4

τὰ πλάτη τῶν ἀστέρων — عرض المتحيرة latitude of the planets

πλάτος (عرض) 8.3

τοῦ πλάτους τῶν ἀστέρων — عرض الكواكب latitude of the planets

πλάτος (عرض) 8.3.1

τοῦ πλάτους τῆς σελήνης — عرض القمر latitude of the moon

πλάτος (الميل) 8.3.3

καὶ κρατεῖται τὸ πλάτος — الميل declination

πλάτος (الميل) 8.3.3

ἔπειτα τὸ πλάτος τοῦτο τηρεῖται εἰς τὰ γενικὰ λεπτά

— الميل declination

πλάτος (مبسوطة) 8.3.3

εἶτα τούτου τὸ πλάτος εἰς τὰ γενικὰ λεπτὰ τούτου κρατεῖται

— ضربنا مبسوطة فى دقائق نسب الانحراف we multiply the extension by the min-

utes of proportion of the inclination

πλάτος (عرض) 8.3.3

εἰ δὲ ἄλλο μὲν πλάτος εἰς νότιον — عرض latitude

πλάτος (عرضه) 8.3.4

τὸ τέλειον πλάτος — عرضه الثانى its second latitude

πλάτος (الانحراف) 8.3.4

τὸ γ′ πλάτος — الانحراف inclination

πλάτος (الانحراف) 8.3.4

τοῦτο πλάτος οὐχὶ τέλειον — الانحراف غير معدل unequated inclination

πλάτος (عرض) 8.3.4

καὶ εὑρίσκεται τὸ πλάτος τὸ τέλειον — عرضه الثالث its third latitude

πλάτος (عرضه) 8.3.4

ἐὰν ὦσι καὶ τὰ $\overline{\beta}$ σημεῖα ἐξισούμενα τὸ πλάτος βόρειον

— فالحاصل عرضه الثالث وجهته شمالى The result is the third latitude. Its (the latitude's) direction is northerly.

πλάτος (عرض) 8.3.4

τὰ $\overline{\gamma}$ πλάτη — عرض الثالثة three latitudes

πλάτος (العرض) 9.1.5; 9.2.1

τὸ μῆκος καὶ πλάτος — العرض latitude

πλάτος (عرض) 9.2.4

τῷ πλάτει τῆς πόλεως ἧς βουλόμεθα — عرض بلدنا latitude of our city

πλάτος (عرض) 9.3.1

ἐκεῖνο πλάτος τῆς ὄψεως τῆς σελήνης λέγεται ἢ καὶ πλάτος στερεόν — عرض القمر المحكم او عرضه المرى the precise latitude of the moon or its visible latitude

πλάτος (عرضه) 10.2.1.1

τὸ πλάτος τῆς σελήνης — عرضه its (the moon's) latitude

πλάτος (عرض) 10.2.1.3

τὸ πλάτος τῆς σελήνης — عرض القمر latitude of the moon

πλάτος (عرض) 10.3.2

τὸ πλάτος τῆς σελήνης — عرض القمر latitude of the moon

πλάτος (العرض) 10.3.2.2

τὸ στερεὸν πλάτος τῆς σελήνης — العرض المحكم the exact latitude

πλάτος (عرض) 10.3.2.2

πλάτος ἐστὶ τῆς σελήνης στερεόν — عرض القمر المرى او عرضه المحكم the visible latitude of the moon or its exact latitude

πλάτος (عرض) 10.3.2.3

τοῦ στερεοῦ πλάτους — عرض القمر المرى visible latitude of the moon

πλάτος (عرض) 11.1.4

τὸ στερεὸν πλάτος τῆς σελήνης — عرض القمر المرئ the visible latitude of the moon

πλάτος (عرض) 11.1.4

πλάτος ἀσφαλές — عرض مرئ visible latitude

πλάτος (عرض) 11.1.4

ἐὰν ἡ τραχηλαῖα πλάτος οὐκ ἔχῃ — القمر ان لم يكن له عرض if the moon does not have a latitude

πλάτος (عرض) 11.1.5

τὸ στερεὸν πλάτος τῆς σελήνης γίνεται τετράγωνον — مربّع عرض القمر المرئ the square of the visible latitude of the moon

πλάτος (عرض) 11.1.8

τὸ πλάτος τῆς σελήνης — عرض القمر latitude of the moon

πλάτος (عرض) 12.1.2

εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης εἰς τὸ πλάτος τῆς πόλεως ἐκείνης ἐν ᾗ γίνεται τηνικαῦτα ἡ ζήτησις τοῦ γενεθλιαλογικοῦ

— فى جدول مطالع البروج لعرض الميلاد in the table of rising times of the zodiacal signs for the latitude of the nativity

πλάτος (عرض) 12.2.2

πλάτος ἐστὶ τοῦ κύκλου τῆς κινήσεως — عرض دائرة التسيير latitude of the

circle of prorogation

πλάτος (عرض) 12.2.2

τὸ πλάτος τῆς πόλεως — عرض البلد latitude of the city

πλάτος (عرض) 12.2.2

περὶ τοῦ πλάτους τῆς κινήσεως τοῦ κύκλου

— فى معرفة عرض دائرة التسيير بالتقريب on the knowledge of the latitude of the circle of prorogation approximately

πλάτος (عرض) 12.2.3

τὸ πλάτος ἐστὶ τοῦ τριγώνου — عرض التثليث latitude of the trine

πλάτος (عرض) 12.2.3

τὸ πλάτος τοῦ ἀστέρος — عرض الكوكب latitude of the planet

πλάτος (عرض) 12.2.3

τὸ πλάτος τοῦ ἑξαγώνου — عرض التسديس latitude of the sextile

πλάτος (عرض) 12.2.3

τὴν τετελειωμένην τραχηλαῖαν τοῦ πλάτους τοῦ ἀστέρος

— جيب تمام عرض الكوكب sine of the complement of the latitude of the planet

πλάτος (عرض) 12.2.4

τὸ πλάτος τῆς κινήσεως τοῦ κύκλου — عرض دائرة التسيير latitude of the circle of prorogation

πλέον (اكثر) 2.2.2

πλέον — اكثر greater

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 9.0.0

τοῦ πλείονος καὶ ἐλάττονος ἀπὸ τῆς ὄψεως — اختلاف منظر difference in vision (parallax)

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 9.1.3

τοῦ πλείονος καὶ ἐλάττονος καὶ τῆς ὄψεως — اختلاف المناظر difference in vision

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 9.1.4

τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως — اختلاف منظر النيرين difference in vision of the two luminaries

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 9.1.4

τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τῆς σελήνης ἐστὶν εἰς τὸν κύκλον τῆς ἀναβάσεως — اختلاف منظر القمر فى دائرة الارتفاع difference in vision of the moon on the circle of altitude

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 9.1.4

τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ ἡλίου — اختلاف منظر الشمس difference in vision of the sun

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 9.1.4; 9.1.5

τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως τῆς σελήνης — اختلاف منظر القمر difference in vision of the moon

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 9.1.5

τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τῆς σελήνης τετελειωμένον ἐστὶν οὗ χρεία διὰ τὴν ἔκλειψιν τοῦ ἡλίου — اختلافه المعدل وقت الكسوف الشمسية its (the moon's) equated difference at the time of a solar eclipse

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 9.2.2

τὸ πλέον καὶ ἔλαττον τῆς ὄψεως — اختلاف منظر difference in vision

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 10.3.2.1

τὸ πλέον καὶ ἔλαττον τῆς ὄψεως εἰς τὸ μῆκος — اختلاف المظر فى الطول difference in vision in longitude

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 10.3.2.1

πλέον καὶ ἔλαττον τῆς ὄψεως α΄ — الاختلاف الاول the first difference (in vision)

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 10.3.2.1

τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως τῆς σελήνης εἰς τὸ μῆκος καὶ πλάτος — اختلاف منظر القمر فى الطول والعرض difference in vision of the moon in longitude and latitude

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 10.3.2.1

τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ ἡλίου — اختلاف منظر الشمس difference in vision of the sun

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 10.3.2.1

τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ ἡλίου καὶ τῆς σελήνης εἰς τὸν κύκλον τῆς ἀναβάσεως — اختلاف منظر النيرين فى دائرة الارتفاع difference in vision of the two luminaries on the circle of altitude

πλέον καὶ ἔλαττον τῆς ὄψεως (اختلاف منظر) 11.1.4

τὸ κανόνιον τοῦ πλείονος καὶ ἐλάττονος τοῦ τόπου τῆς τύχης εἰς τὸ γ΄ κλίμα — جدول اختلاف الغروب table of difference (in vision) in the west

πλεονασμός (الزيدة) 4.2.1

τὸν πλεονασμόν — الزيدة addition

πλεονασμός (الزايدة) 8.1.4

πλεονασμός — الزايدة increasing

πληρωθείσης (تم) 12.4.2

τῆς σφαίρας πληρωθείσης τῆς περιφορᾶς — تم الدور the cycle is completed

πλήρωμα (تمام) 9.1.3

τὸ πλήρωμα ταύτης γωνία ἐστὶ τοῦ μήκους — تمامها زاوية الطول its complement is the angle of longitude

ποιεῖ (حول) 8.1.1

βουλομένων ἡμῶν ποιῆσαι αὐθημερινὸν του ἡλίου

— اذا اردنا ان نحول حساب مركز الشمس if we wish to accomplish the calculation of the center of the sun

ποιήσις (تصحيح) 9.3

περὶ τῆς ἀσφαλοῦς ποιήσεως τοῦ τόπου τῆς σελήνης εἰς τὸ μῆκος καὶ πλάτος — فى تصحيح موضع القمر فى الطول والعرض on the correction of the location of the moon in longitude and latitude

ποιήσις (تصحيح) 9.3.1

περὶ τῆς στερεᾶς ποιήσεως τοῦ τόπου τῆς σελήνης εἰς τὸ πλάτος — تصحيح موضعه فى العرض the correction of its (the moon's) location in latitude

ποίησις (صنعته) 10.3.1

ποίησις — صنعته (its) making

πόλις (بلد) 12.2.2

τὸ πλάτος τῆς πόλεως — عرض البلد latitude of the city

πολυπλασιασμός ( ) 10.2.1.4

εἴ τι καταλειφθῇ ὁ πολυπλασιασμὸς τούτου κρατεῖται — جذر الباقى the root of the result

πολυπλασιασμός ( ) 10.2.1.5

τοῦ καταλειφθέντος ὁ πολυπλασιασμός — جذر الباقى the root of the remainder

πολυπλασιασμός ( ) 11.1.5

εἴ τι εὑρεθῇ ὁ πολυπλασιασμὸς ἐκείνου ζητεῖται — جذر المبلغ the square of the remainder

πόσος (مقدار) 10.2.2.1

πόσον ἐστὶν ἀπὸ τῆς σελήνης — مقداره من اصابع سطحه its measure is in digits of its surface

πόσος (مقدار) 10.3.2.2

πόσον ἐκλείψει τοῦ ἡλίου — مقدار الكسوف measure of the eclipse

πόσος (مقداره) 10.3.2.2

καὶ εἰ γένηται πόση μέλλει εἶναι — مقداره its measure (that of an eclipse)

πόσος (مقدار) 10.3.2.3

ἀπὸ τοῦ ἡλίου πόσον ἐκλείψει — مقدار الكسوف amount of the eclipse

προσευχή ( ) 6.0.0

προσευχή — قبلة qibla

προσευχή ( ) 6.7

ἡ μιαρὰ προσευχὴ τῶν ἀσεβῶν — انحراف القبلة inclination of the qibla

προστίθενται (الحقنا) 1.2

προστίθενται — الحقنا we add

προστίθεται (كبس) 1.1

μὴν προστίθεται — كبس intercalate

πρόσωπα (صور) 1.5.1

τὰ πρόσωπα — صور forms

προφήτης (نبى) 1.2

ἐμφανεία προφήτου — مبعث نبى sending of a prophet

πρῶτος ( ) 12.2

ἀπὸ τοῦ ἱ τοῦ πρώτου μέχρι καὶ τοῦ τετάρτου

— من وسط السماء الى الطالع الى الرابع from the mid-heaven to the ascendant to the fourth

Πτολεμαῖος (بطلميوس) 11.5

τὸν Πτολεμαῖον — بطلميوس Ptolemy

πῦρ ( ) 1.2

οἱ λατρεύοντες τῷ πυρί — دين المجوسية Mazdaism

σαγίτα (السهام) 2.0.0

τῆς σαγίτας — السهام arrow (versine)

σαγίτα (السهم) 2.2

σαγίτα μεγάλη — واما السهم as for the arrow

σαγίτα (سهم) 4.2.1

σαγίτα τῆς ἡμέρας — سهم النهار arrow of the day

σαγίτα (سهم) 6.1.1

τῆς σαγίτας τῆς ἡμέρας — سهم النهار arrow of the day

σελήνη (القمر) 1.0.0

ἡ σελήνη — القمر moon

σελήνη ( ) 1.1

σελήνης νέας φανείσης — زوئة الهلال sighting of the crescent

σελήνη (القمرية) 1.2

οἱ χρόνοι τῆς σελήνης — السنون القمرية lunar years

σελήνη ( ) 1.2

ἡ σελήνη αὔξει καὶ μειοῦται — كثرة روئتهم الاهلية multitude of their sightings of the lunar crescents

σελήνη ( ) 10.2.1

ὅτι ἡ σελήνη μέλλει ἐκλιπεῖν ἢ οὔ — امكانه وازمانه position and duration (of a lunar eclipse)

σελήνη ( ) 10.2.1.1

Ἡ σελήνη ὅτι ἐκλείψει ἢ οὔ — امكانه the possibility of it (a lunar eclipse)

σελήνη ( ) 10.2.1.2

ἡ σελήνη μέλλει ἐκλείψειν ἢ οὐ — وجوب وقوع الخسوف the preconditions for the occurrence of an eclipse

σελήνη ( ) 10.2.1.3

πόσον τῆς σελήνης ἐκλείψει — اصابع الخسوف digits of the eclipse

σελήνη ( ) 10.2.1.3

ὀλίγον τῆς σελήνης ἐκλείπει — ينخسف بعضه a part of it (the moon) is eclipsed

σελήνη ( ) 10.2.1.3

ἡ σελήνη πᾶσα ἐκλείπει καὶ ὀλίγην ὥραν ἵσταται εἰς τὴν ἔκλειψιν — (القمر) ينخسف كله ويكون له مكث all of it (the moon) is eclipsed and there is a duration to it

σελήνη (القمر) 10.2.1.3

ἡ σελήνη τελεία ἐκλείπει καὶ εὐθὺς ἐπαναστρέφεται — القمر ينخسف كله ولا يكون مكث فى خسفه the entire moon is eclipsed and there is no duration in its eclipse

σελήνη ( ) 11.0.0

ὅτι ἡ σελήνη πότε ἵνα φανῇ νέα — رؤية الاهلة the sighting of the lunar crescent

σελήνη (القمر) 11.1.1

αὐθημερινὸν τῆς σελήνης — موضع القمر place of the moon

σελήνη ( ) 11.2

περὶ τῆς σελήνης νέας φαινομένης μετὰ σύνοδον — فى اعمال رؤية الاهلة on the computations for the sighting of the crescent

σελήνη ( ) 11.3

τοῦ θεμελίου τῆς θεωρίας τῆς σελήνης ὅλου — القانون الكلّى فى معرفة رؤية الاهلة the complete rule for the knowledge of the sight-

ing of the crescent

σελήνη ( ) 11.4

περὶ τοῦ ψήφου τούτου ἵνα δειχθῇ ἡ σελήνη διὰ δακτύλων

— فى الاشارة الى الهلال بالبنان on the pointing out of the crescents by fingers

σελήνη ( ) 11.6

τῆς σελήνης νέας φανείσης — رؤية الاهلة sighting of the crescent

σελήνη ( ) 11.6.2

ἡ σελήνη φαίνεται — الهلال يرى the crescents are visible

σελήνης ( ) 10.3.2.3

τοῦ ἰδίου τῆς σελήνης — الخاصة anomaly

σημεῖον (سمت) 6.0.0

σημεῖον — سمت azimuth

σημεῖον (سمت) 6.0.0

τοῦ σημείου ἑκάστης ἀναβάσεως — سمت كلّ ارتفاع azimuth of every altitude

σημεῖον (سمت) 6.0.0

τοῦ σημείου τῆς προσευχῆς — سمت القبلة azimuth of the qibla

σημεῖον (سمت) 6.5

τῶν σημείων τῆς ἀναβάσεως — سمت كلّ ارتفاع azimuth of every altitude

σημεῖον (السمت) 6.5

τὸ σημεῖόν ἐστι τῆς μοίρας τῆς ἀναβάσεως — حصة السمت portion of the azimuth

σημεῖον (سمت) 6.7

τὸ σημεῖον τῆς μιαρᾶς εὐχῆς αὐτῶν — سمت القبلة azimuth of the qibla

σημεῖον (سمت) 6.7

τὸ σημεῖον τῆς θεοστυγοῦς εὐχῆς — سمت القبلة azimuth of the qibla

σημεῖον (علامة) 8.3.3

τὸ σημεῖον — علامة mark

σημεῖον (سمت) 11.4

τὸ σημεῖον τῆς ἀναβάσεως — سمته فى دائرة الافق its (the altitude's) azimuth on the circle of the horizon

σημεῖον (صورة) 12.4.1

τὸ σημεῖον τοῦ ζῳδίου τῆς τύχης τοῦ θεμελίου τοῦ γενεθλιαλογικοῦ περισσεύεται εἰς τοὺς χρόνους ἐκείνους

— زدنا على صورة البرج الذى فيه الكوكب او صورة الطالع we add them (the completed years) to the image of the zodiacal sign in which the planet is or to the image of the ascendant

σκιάσμα (الظل) 2.0.0; 8.4.2

τοῦ σκιάσματος — الظل shadow (tangent)

Σουμπάτ (شباط) 1.5.2

Σουμπάτ — شباط Shubāṭ

σταθήσεται (مكث) 10.3.2.2

ὅλος ἐκλείψει καὶ καιρὸν ἱκανὸν σταθήσεται ἐν τῇ ἐκλείψει. — الكسوف كلى مع مكث the eclipse is total with duration

στάσις (المكث) 10.2.1.5

τὰ λεπτὰ τῆς στάσεως — دقائق المكث minutes of duration

στάσις (المكث) 10.2.2.1

ἡ ὥρα τῆς στάσεως — ساعات المكث hours of duration

σταύρωσις (الصلبوت) 1.5.3

σταύρωσις — الصلبوت crucifixion

στερεός (المحكم) 10.3.2.2

τὸ στερεὸν πλάτος τῆς σελήνης — العرض المحكم the exact latitude

στερεός (المحكم) 10.3.2.2

πλάτος ἐστὶ τῆς σελήνης στερεόν — عرض القمر المرى او عرضه المحكم the visible latitude of the moon or its exact latitude

στερεός (المرى) 10.3.2.3

τοῦ στερεοῦ πλάτους — عرض القمر المرى visible latitude of the moon

στερεός (المرئ) 11.1.4

τὸ στερεὸν πλάτος τῆς σελήνης — عرض القمر المرئ the visible latitude of the moon

στερεός (المرئ) 11.1.5

τὸ στερεὸν πλάτος τῆς σελήνης γίνεται τετράγωνον — مربّع عرض القمر المرئ the square of the visible latitude of the moon

στηριγμός (القام) 8.2

ὁ α΄ στηριγμὸς — القام الاول first station

στηριγμός (مقامة) 8.2

ὁ β΄ στηριγμός — مقامة الثانى second station

στηριγμός (المقام) 8.2

κατ' ἐναντίον τοῦ β΄ στηριγμοῦ — المقام الثانى second station

στηρίζει (مقيم) 8.2

ὁ ἀστὴρ στηρίζει καὶ μέλλει κινηθῆναι κατ' ὀρθόν — مقيم لاستقامة stationary for direct motion

στρέφεται (يرجع) 8.2.1

στρέφεται — يرجع returns

συνοδεύσῃ (اجتماع) 1.1

συνοδεύσῃ — اجتماع conjunction

συνοδεύων (الاجتماع) 10.1.1

συνοδεύων — الاجتماع conjunction

σύνοδος (اجتماع) 1.1

σύνοδος — اجتماع conjunction

σύνοδος (الجتماع) 1.5.2

τῆς συνόδου τοῦ ἡλίου — الجتماع conjunction

σύνοδος (الاجتماع) 9.2

ὥρα τῆς συνόδου — الاجتماع conjunction

σύνοδος (اتصالات) 10.0.0

τῆς συνόδου τοῦ ἡλίου καὶ τῆς σελήνης — اتصالات النيرين approach of the two luminaries

σύνοδος (الاجتماعات) 10.1

τῆς συνόδου τοῦ ἡλίου καὶ τῆς σελήνης καὶ τῆς διαμέτρου τούτων καὶ τοῦ μήκους τῆς τούτων μεταβάσεως

— الاجتماعات والاستقبالات بالبعد والبهت conjunctions and oppositions in distance and daily velocity

σύνοδος (الاجتماع) 10.1.1

κατὰ σύνοδον ἢ κατὰ διάμετρον — الاجتماع conjunction

σύνοδος (الاجتماع) 10.3.1.2

τὴν μοῖραν τοῦ ἡλίου καὶ τῆς σελήνης ἡνίκα γίνωνται κατὰ σύνοδον —

درجة الاجتماع degree of conjunction

σύνοδος (اجتماع) 10.3.2

αἱ σύνοδοι — اجتماع conjunction

σύνοδος (الاجتماع) 10.3.2.1

ἡ ὥρα τῆς συνόδου — ساعات الاجتماع hours of conjunction

σύνοδος (الاجتماعات) 12.1.1

εἰς τὴν διάμετρον καὶ σύνοδον ἡλίου καὶ σελήνης — فى الاجتماعات in the case of conjunctions

σφαῖρα (فلك) 8.1.2

τῆς β´ σφαίρας τῆς σελήνης — الفلك المائل the inclined sphere

σφαῖρα (فلك) 8.1.2

τὴν α´ σφαῖραν — فلك البروج sphere of the zodiacal signs

σφαῖρα (فلك) 8.1.2

τῆς σφαίρας τῶν ιβ̅ ζῳδίων — فلك البروج sphere of the zodiacal signs

σφαῖρα (فلك) 9.1.1

τῆς σφαίρας τῶν ζῳδίων — فلك البروج the zodiacal sphere

σφαῖρα (الدور) 12.4.2

τῆς σφαίρας πληρωθείσης τῆς περιφορᾶς — تم الدور the cycle is completed

σχηματισμός ( ) 12.2

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων ἤτοι τοῦ πρὸς ἄλληλα τούτων σχηματισμοῦ — مطرح الشاعات casting of rays

σχηματισμός ( ) 12.2.3

κανόνιον τόδε τῶν σχηματισμῶν τῶν ἀστέρων — جدول مطرح الشعاع بحسب العرض the table of the casting of the rays by the calculation of latitude

σχηματισμός ( ) 12.2.4

τὰς $\overline{\gamma}$ ἀκτινοβολίας τοῦ ἀστέρος ἤγουν τοὺς τρεῖς σχηματισμούς — الشعاع الايسر sinister rays (aspects)

ταχεία κίνησις (سبق) 11.1.1

τὴν ταχεῖαν κίνησιν — سبق ساعة precedence of an hour

ταχεία κίνησις (سبق) 11.1.1

ἐκεῖνο ταχεῖα κίνησίς ἐστι τῆς ὥρας ἐκείνης — سبق ساعة precedence of an hour

τεθείκασιν (نقلت) 1.1

τεθείκασιν — نقلت are transferred

τέλειος (المعدل) 2.1

τέλειος — المعدل equated

τέλειος (معدل) 8.1.2;

τελεία — معدل equated

τέλειος (معدل) 8.1.4

τοῦ τελείου κέντρου — المركز المعدل equated center

τέλειος (معدلين) 8.1.4

γίνονται αἱ $\overline{\beta}$ τέλειοι — فيصير معدلين they become equated

τέλειος (المعدل) 8.3.4

τὸ πλάτος γίνεται τέλειον — المعدل equated

τέλειος (عدلناها) 9.2.1

γίνεται τέλειον — عدلناها we equate them (minutes)

τέλειος (كلّ) 10.2.2.1

τελεία γίνεται ἔκλειψις τῆς σελήνης καὶ πρὸς καιρὸν εἰς τὴν ἔκλειψιν ἵσταται — الخسوف كلّ وله مكث the eclipse is total and it has duration

τέλειος (الكلى) 10.3.2.2

ὁ ἥλιος τέλειον ἐκλείψει καὶ οὐ βραδύνει ἐν τῇ ἐκλείψει — الكسوف الكلى ولا مكث له the eclipse is total and there is no duration to it

τέλειος (كلّ) 10.3.2.2

τελεία γίνεται ἔκλειψις τοῦ ἡλίου — فانها تنكسف كلّها all of it (the sun) is eclipsed

τέλειος (الحقيقى) 10.3.2.2

ἐκεῖνο πλάτος λέγεται τέλειον — عرض القمر الحقيقى وجهته the corrected latitude of the moon and its direction

τέλειος (معدلين) 10.3.2.3

καὶ γίνονται οἱ δάκτυλοι τέλειοι καὶ ἡ πεσοῦσα ὥρα τελεία — ليصير معدلين so they become equated

τέλειος (المعدل) 11.1.3

καὶ γίνεται τοῦτο τέλειον — المعدل equated

τέλειος (الكلّية) 11.3.1

τόξον ἐστὶ τῆς τελείας ὄψεως — قوس الرؤية الكلّية arc of complete sighting

τέλειος (الكلّية) 11.3.2

τῷ τόξῳ τῆς τελείας ὄψεως — قوس الرؤية الكلّية arc of complete sighting

τέλειος (فضل) 11.5.2

τὴν τελείαν μετάβασιν — فضل البهت بين الشمس والكوكب excess (understood as "superiority") of the daily velocity between the sun and the planet

τέλειος (معدلة) 11.6.1

ἐκεῖνο τόξον λέγεται τῆς θεωρίας[οὐχὶ] τέλειον — قوس الرؤية المطلقة معدلة equated arc of general sighting

τέλειος (محققا) 12.1

τέλειον ἐγένετο μετὰ τῆς ὀρθώσεως τῆς ἡμέρας

— يجب ان يكون محققا بتعديل الايام بلياليها it (the position of the sun) should be

corrected by the equation of days with their nights

τέλειος (المعدلة) 12.1.2

ἡ περισσεία ἐκείνη μετὰ τῆς ὀρθώσεως τοῦ ὑψώματος τελεία γίνεται — الفضلة المعدلة بالاوج excess equated with the apogee

τέλειος (المحصل) 12.3.1

ὁ τόπος τῆς τύχης ὁ τέλειος τοῦ αἰλὰτζ — مطالع الهيلاج المحصل the resulting rising time of the *haylāj*

τελείωσις (مختتم) 7.0.0

τελείωσιν — مختتم ending

τέλος (اخر) 1.2

τὸ τέλος — اخر the end

τέλος (اخر) 1.4.2

εἰς τὸ τέλος — فى اخر at the end

τεμμάχιον (الارقام) 1.4.1

τεμμάχια — الارقام numerals

τεμμάχιον (قسم) 2.2

τεμμάχια — اقساما divisions

τεμμάχιον (اجزاء) 4.3.1

τὰ τεμμάχια τῆς μὴ ὀρθῆς ὥρας τῆς ἡμέρας — اجزاء ساعات النهار الزمانية المعوجة

parts of the seasonal (and) crooked hours of the day

τεμμάχιον (اجزاء) 4.3.1

τὰ τεμμάχια τῆς μὴ ὀρθῆς ὥρας τῆς νυκτός — اجزاء ساعات الليل parts of the hours of night

τεμμάχιον (كسور) 7.2

τεμμάχιον τῆς ὥρας — كسور fractions

τεμμάχιον (الكسور) 7.3

τεμμάχια — الكسور fractions

τεταρτημόριον (ربع) 6.6

ἕκαστον οὖν τοῦ κύκλου τεταρτημόριον — اى ربع منها each quarter of it

τέταρτος (الرابع) 12.2

ἀπὸ τοῦ ι΄ τοῦ πρώτου μέχρι καὶ τοῦ τετάρτου

— من وسط السماء الى الطالع الى الرابع from the mid-heaven to the ascendant to the fourth

τετελειωμένος (تمام) 1.0.0

τετελειωμένος — تمام the complement

τετελειωμένος (التامة) 1.2

κρατοῦνται οἱ χρόνοι τετελειωμένοι τοῦ ἔτους τοῦ Ἰασδακέρδη

— اخدنا سنى يزدجرد التامة we take the completed years of Yazdijird

τετελειωμένος (مقومين) 9.2.5

εὑρεθὲν τὸ πλέον καὶ ἔλαττον τῆς ὄψεώς ἐστιν τετελειωμένον — مقومين fundamental (elements)

τετελειωμένος (التامة) 12.0.0

χρόνοι εἰσὶ τοῦ ἡλίου τετελειωμένοι — السنون التامة الشمسية complete solar years

τετελειωμένος (تمام) 12.2.3

τὴν τετελειωμένην τραχηλαῖαν τοῦ πλάτους τοῦ ἀστέρος — جيب تمام عرض الكوكب sine of the complement of the latitude of the planet

τετελειωμένος (التامة) 12.4.1

οἱ τετελειωμένοι χρόνοι τοῦ ἡλίου οἱ παρελθόντες ἀπὸ τοῦ γενεθλιαλογικοῦ — السنين التامة التى اتت على المولود the complete years which have passed for the native

τετράγωνον (مربّع) 11.1.5

τοῦ τετραγώνου τοῦ μήκους μέσον ἡλίου καὶ σελήνης — مربّع ما بين النيرين the square of what is between the two luminaries

τετράγωνον (مربّع) 11.1.5

τὸ στερεὸν πλάτος τῆς σελήνης γίνεται τετράγωνον — مربّع عرض القمر المرئ the square of the visible latitude of the moon

τετράγωνον (التربيع) 12.2.3

ἡ διάμετρος ἐκείνου αὖθις τετράγωνον — التربيع quartile

τετράγωνον (التربيع) 12.2.4

τὸ δέξιον τετράγωνον — الايمن التربيع dexter quartile

τετράγωνον (التربيع) 12.2.4

τὸ ἀριστερὸν τετράγωνον — التربيع الايسر sinister quartile

τηρεῖται (ضرب) 1.3.4

τηρεῖται — ضرب multiply

τόξον (القسى) 2.0.0

τοῦ τόξου — القسى arcs

τόξον (قوسناه) 3.4

τὸ τόξον τῆς τραχηλαίας ἐκείνης κρατεῖται — قوسناه we take its arc

τόξον (قوس) 4.2

τὸ ἥμισυ τόξον τῆς ἡμέρας — نصف قوس النهار half of the arc of day

τόξον ( ) 4.3

τετελειωμένον τὸ τόξον τῆς ἡμέρας — قضاء النهار determination of the day

τόξον (قوس) 4.3

τοῦ τόξου τοῦ νυχθημέρου — قوس النهار وقوس الليل arc of day and arc of night

τόξον (قوس) 4.3

τὸ ἥμισυ τόξον τῆς ἡμέρας — نصف قوس النهار half of the arc of day

τόξον (قوس) 4.3

τὸ τόξον τῆς ἡμέρας — قوس النهار arc of day

τόξον (القوس) 9.1.1

τὴν τραχηλαῖαν τοῦ τόξου ἐκείνου ἥτις ἐστὶν μεταξὺ τοῦ ι΄ οἰκήματος καὶ τῆς τύχης τοῦ καιροῦ — القوس الذى بين العاشر وطالعه the arc which is between the tenth and its ascendant

τόξον (قوس) 11.1.1

τῷ ἡμίσει τόξῳ τῆς ἡμέρας — نصف قوس نهار جزء الشمس half of the arc of day of the degree of the sun

τόξον (نقوسه) 11.1.4

τὸ τόξον ταύτης κρατεῖται — نقوسه we take its arc

τόξον (قوس) 11.1.5

τὸ ἐξελθὸν τόξον ἐστὶ τοῦ φωτὸς ἤγουν τῆς ἐλλάμψεως τῆς σελήνης — قوس النور arc of light

τόξον (قوس) 11.1.5

τοῦ τόξου τοῦ φωτός — قوس النور arc of light

τόξον (قوس) 11.1.6

Περὶ τοῦ τόξου ἐκείνου καὶ τοῦ καιροῦ ὅτι ἐστὶν ὑπὲρ γῆν ἡ σελήνη μετὰ τὴν δύσιν τοῦ ἡλίου

— قوس المكث فوق الارض بعد مغيب الشمس arc of duration above the earth after the setting of the sun

τόξον (قوس) 11.1.7

τόξον ἐστὶ τῆς καταβάσεως τῆς ἡλίου — قوس انحطاط الشمس arc of the declivity of the sun

τόξον (قوس) 11.2

α΄ τόξον τοῦ καιροῦ ἕτερον τῶν ἀκτίνων ἄλλο τῆς ἀναβάσεως καὶ ἕτερον τόξον τῆς καταβάσεως

— قوس النور والمكث والارتفاع والانحطاط the arc of light; of duration; of altitude and of declivity

τόξον (قوس) 11.2.1

τὸ τόξον τῆς ἀναβάσεως τοῦ ἡλίου — قوس انحطاط الشمس arc of the declivity of the sun

τόξον (قوس) 11.2.1

τὸ τόξον τῆς ἀναβάσεως τῆς σελήνης — قوس ارتفاع القمر arc of the altitude of the moon

τόξον (قوس) 11.2.1

τὸ τόξον τοῦ καιροῦ — قوس المكث arc of duration

τόξον (قوس) 11.3

τὸ τόξον τοῦ φωτὸς — قوس النور arc of light

τόξον (قوس) 11.3.1

τόξον ἐστὶ τῆς τελείας ὄψεως — قوس الرؤية الكلّية arc of complete sighting

τόξον (قوس) 11.3.1

τοῦ τόξου τοῦ φωτὸς — قوس النور arc of light

τοξόν (قوس) 11.3.1

τὸ πρῶτον τόξον — القوس الاوّلى the first arc

τόξον (قوس) 11.3.2

τῷ τόξῳ τῆς τελείας ὄψεως — قوس الرؤية الكلّية arc of complete sighting

τόξον (قوس) 11.5

τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου εἰς τὸν καιρὸν ἡνίκα δύνῃ ὁ ἀστὴρ ἢ ἀνίσχῃ

— قوسى انحطاط الشمس عند مغيب الكوكب او طلوعه التى يسمى قوس الرؤية الكلّية the arcs of the declivity of the sun at the time of the setting of the planet or of its rising which is called the arc of complete sighting

τόξον ( ) 11.5

τὸ τόξον εἰς τὴν θεωρίαν τῶν ἀστέρων

— حدود الرؤية الاصلية من جهة قوس المكث limits of the initial sighting from the direction of the arc of duration

τόξον (قوس) 11.5

τὸ τόξον τοῦ καιροῦ τῆς καταβάσεως τοῦ ἡλίου — قوس المكث وانحطاط the arc of duration and declivity

τόξον (قوس) 11.5.1

ἐκείνη ἡ περισσεία ἐὰν πλείων τοῦ φανέντος τόξου

— وكان البعد اكثر من قوس الرؤية the distance is greater than the arc of vision

τόξον (قوس) 11.5.1

τόξον τῆς θεωρίας τοῦ ἀστέρος — وسمينا قوس الرؤية we call it the arc of vision

τόξον ( ) 11.5.1

Ἡμεῖς κανόνιον ἐθήκαμεν καὶ τὰ τόξα ἅπερ ἔδομεν τεθείκαμεν εἰς ἐκεῖνο τὸ κανόνιον μετὰ τοῦ ψήφου τῶν καταβάσεων εἰς τὸ δ΄ κλίμα εἰς τὰς ἀρχὰς τῶν ζῳδίων

— وضعنا اقدار حدود الرؤية من اجزاء البروج وللانحطاطات اصلية فى الاقليم الرابع على رؤس البروج

We have set out the values of the limits of sighting in degrees of the zodiacal signs and for the initial declivities in the fourth clime at the beginnings of the zodiacal signs

τόξον (قوس) 11.5.2

τὸ τόξον τὸ φανὲν — قوس الرؤية arc of vision

τόξον (قوس) 11.6.1

ἐκεῖνο τόξον λέγεται τῆς θεωρίας οὐχὶ τέλειον — قوس الرؤية المطلقة arc of general sighting

τόξον (قوس) 11.6.1

τὸ τόξον τοῦ φωτός — قوس النور arc of light

τόξον (قوس) 11.6.1

τὸ τόξον τοῦ καιροῦ — قوس المكث arc of duration

τόξον (قوس) 11.6.1

τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόξου τοῦ καιροῦ — تعديل قوس المكث equation of the arc of duration

τόξον (قوس) 11.6.2

τοῦ τόξου τῆς θεωρίας τοῦ τελείου — قوس الرؤية المطلقة arc of general sighting

τόξον (قوس) 11.6.2

τὸ τόξον τῆς θεωρίας — قوس الرؤية المطلقة arc of general sighting

τόξον (قوس) 11.6.2

τὸ τόξον τοῦ φωτός — قوس النور arc of light

τόξον (قوس) 11.6.2

Περὶ τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου — تعديل قوس انحطاط الشمس equation of the arc of declivity of the sun

τόξον (قوس) 12.2.2

τὸ ἥμισυ τόξον τῆς νυκτός — نصف قوس ليلة half of the arc of night

τόξον (قوس) 12.2.2

τὸ ἥμισυ τόξον τῆς ἡμέρας — نصف قوس نهار الكوكب half of the arc of the

day of the star

τόξον (قوس) 12.2.3

τόξον ἐστὶ τοῦ ἑξαγώνου — قوس تسديس arc of the sextile

τόξον (قوس) 12.2.4

τὸ ἥμισυ τόξον τῆς ἡμέρας τοῦ ἀστέρος — نصف قوس نهاره the half of the arc of its day

τόπος cf. τόπος τῆς τύχης ( ) 4.1

τῶν τόπων τῶν ζῳδίων εἰς πάντα τὰ κλίματα — مطالع البروج فى الافاق rising times of the zodiacal signs in the horizons

τόπος cf. τόπος τῆς τύχης (مطالع) 4.4

τῶν τόπων τῶν ζῳδίων εἰς τὰ πλάτη τῶν κλιμάτων πάντων

— مطالع البروج فى الافاق rising times of the zodiacal signs in the horizons

τόπος ( ) 9.1.1;9.1.3

τοῦ τόπου τῶν ἄκρων — قتب فلك البروج poles of the sphere of the zodiacal signs

τόπος (موضع) 9.2

ὁ τόπος τῆς σελήνης ἤγουν τὸ αὐθημερινόν — موضع القمر location of the moon

τόπος (موضع) 9.3

ὁ τόπος ἐστὶ τῆς ὄψεως τῆς σελήνης — موضع القمر المرى position of the

visible moon

τόπος (موضع) 10.3.2; 10.3.2.1

ὁ τόπος ἐστὶ τῆς θεωρίας τῆς σελήνης — موضع القمت المرى position of the visible moon

τόπος (موضع) 11.1.4

τῷ τόπῳ τῆς σελήνης — موضع القمر place of the moon

τόπος (موضع) 11.4

τὸν τόπον τῆς σελήνης — موضع القمر place of the moon

τόπος (مواضع) 12.0.0

τοῦ τόπου τῶν μοιρῶν — مواضع القسمة places of the division

τόπος ( ) 12.0.0

τοῦ τόπου τῶν ἀστέρων — مطرح الشعاعات casting of the rays

τόπος ( ) 12.2

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων ἤτοι τοῦ πρὸς ἄλληλα τούτων σχηματισμοῦ — مطرح الشاعات casting of rays

τόπος (موضع) 12.2.3

ὁ τόπος ἐστὶ τοῦ φωτὸς τοῦ ἑξαγώνου τοῦ ἀστέρος ἐξ ἀριστερῶν — موضع نور تسديسه الايسر the location of the light of its sinister sextile

τόπος ( ) 12.2.3

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων — مطرح شاعات الكوكب casting of rays of the planet

τόπος cf. τόπος τῆς τύχης ( ) 12.2.4

ὁ τόπος τῆς διαμέτρου τῆς μοίρας τοῦ αὐθημερινοῦ τοῦ ἀστέρος — مطالع نظيره rising time of its opposite point

τόπος ( ) 12.2.4

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων — مطرح الشعاع casting of the rays

τόπος (موضع) 12.3

τοῦ τόπου τῆς μοίρας ἐκείνης — موضع القسمة location of the division

τόπος τῆς τύχης (مطالع) 3.0.0

τοῦ τόπου τῆς τύχης — مطالع rising time

τόπος τῆς τύχης (مطالع) 3.4

τοῦ τόπου τῆς τύχης τῶν ζῷδίων — مطالع البروج rising time of the zodiacal signs

τόπος τῆς τύχης ( ) 4.4

τοῦ τόπου τῆς τύχης τῶν ζῳδίων μετὰ τῆς εὐθείας γραμμῆς — مطالعه بالفلك المستقيم its rising time in right sphere

τόπος τῆς τύχης (مطالع) 5.4

τόπος τῆς τύχης τῶν μοιρῶν ἐστι μεθ' ὧν ἀνίσχει ὁ ἀστήρ — مطالع درجته التى يطلع معها the rising time of its degree with which it rises

τόπος τῆς τύχης (مطالع) 5.5

ὁ τόπος τῆς τύχης τῶν μοιρῶν τοῦ ἡλίου εἰς τὸ πλάτος τῆς πόλεως — مطالع جزء الشمس فى البلد the rising time of the degree of the sun in the city

τόπος τῆς τύχης (مطالع) 5.5

τοῦ τόπου τῆς τύχης τῶν μοιρῶν τῶν ἀνισχόντων μετὰ τοῦ ἡλίου — مطالع درجة طلوع الكوكب rising time of the degree of the rising of the star

τόπος τῆς τύχης (مطالع) 5.5

ὁ τόπος τῆς τύχης τῶν μοιρῶν τῆς διαμέτρου τοῦ ἡλίου — مطالع نظير جزها the rising time of the opposite point of its degree

τόπος τῆς τύχης (مطالع) 6.2

τῷ τόπῳ τῆς τύχης τοῦ αὐθημερινοῦ τοῦ ἡλίου εἰς τὸ πλάτος τῆς πόλεως — مطالع جزء الشمس فى البلد rising time of the degree of the sun in the city

τόπος τῆς τύχης (مطالع) 6.2

τῷ τόπῳ τῆς τύχης τῆς διαμέτρου τοῦ αὐθημερινοῦ τοῦ ἡλίου εἰς τὸ πλάτος τῆς πόλεως — مطالع نظير جزها فى البلد rising time of the opposite point of its degree in the city

τόπος τῆς τύχης (مطالع) 6.2.1

ὁ τόπος τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς — مطالعه بالفلك المستقيم its rising time in the right sphere

τόπος τῆς τύχης (مطالع) 6.3

ὁ τόπος τῆς τύχης αὐθημερινοῦ τοῦ ἡλίου μετὰ τοῦ ἀπὸ τοῦ πλάτους τῆς πόλεως — مطالع جزء الشمس فى البلد rising time of the degree of the sun in the city

τόπος τῆς τύχης (مطالع) 6.3

τοῦ τόπου τῆς τύχης τοῦ πλάτους τῆς πόλεως — مطالع جزء الطالع فى البلد rising time of the degree of the ascendant in the city

τόπος τῆς τύχης (مطالع) 6.3

ὁ τόπος τῆς τύχης τῆς διαμέτρου τοῦ ἡλίου — مطالع نظير جزء الشمس rising time of the opposite point of the degree of the sun

τόπος τῆς τύχης (مطالع) 6.3

τοῦ τόπου τῆς τύχης καὶ τοῦ πλάτους τῆς πόλεως — مطالع طالع rising time of the ascendant

τόπος τῆς τύχης (مطالع) 6.4

ὁ τόπος τῆς τύχης καὶ τὸ πλάτος τῆς πόλεως — مطالع طالع بالبلد rising time of the ascendant in the city

τόπος τῆς τύχης (مطالع) 6.4

τόπος τῆς τύχης τοῦ ἑνδεκάτου οἰκήματος — مطالع الحادى عشر rising time of the eleventh

τόπος τῆς τύχης (مطالع) 6.4

τόπος τῆς τύχης τοῦ δωδεκάτου οἰκήματός — مطالع الثانى عشر rising time of the twelfth

τόπος τῆς τύχης (مطالع) 6.4

ὁ τόπος τῆς τύχης. — مطالع الطالع rising time of the ascendant

τόπος τῆς τύχης (مطالع) 6.4

ὁ τόπος τῆς τύχης τοῦ δευτέρου οἰκήματος — مطالع الثانى rising time of the second

τόπος τῆς τύχης (مطالع) 6.4

ὁ τόπος τῆς τύχης τοῦ τρίτου οἰκήματος — مطالع الثالث rising time of the third

τόπος τῆς τύχης (مطالع) 6.4

τὸ τέταρτον οἴκημα τοῦ τόπου τῆς τύχης — مطالع الرابع rising time of the fourth

τόπος τῆς τύχης (مطالع) 11.1.1

τοῦ τόπου τῆς τύχης μετὰ εὐθείας γραμμῆς — مطالع الفلك المستقيم rising time of the right sphere

τόπος τῆς τύχης (مطالع) 12.1

τοῦ τόπου τῆς τύχης ἑκάστου — طوالع ascendants

τόπος τῆς τύχης (مطالع) 12.1.2

εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης εἰς τὸ πλάτος τῆς πόλεως ἐκείνης ἐν ᾗ γίνεται τηνικαῦτα ἡ ζήτησις τοῦ γενεθλιαλογικοῦ

— فى جدول مطالع البروج لعرض الميلاد in the table of rising times of the zodiacal signs for the latitude of the nativity

τόπος τῆς τύχης (مطالع) 12.1.2

περὶ τῆς εἰσελεύσεως τοῦ τόπου τῆς τύχης — فى معرفة طالع التحويل on the knowledge of the ascendant of the revolution

τόπος τῆς τύχης (مطالع) 12.1.3

τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς ἧς ἡ ἀρχὴ ἀπὸ τῆς ἀρχῆς τοῦ Κριοῦ

— مطالع الفلك المستقيم من اوّل الحمل rising time in the right sphere from the beginning of Aries

τόπος τῆς τύχης (مطالع) 12.1.3

εἴ τι εὑρεθῇ τόπος τῆς τύχης ἐστίν — الحاصل مطالع طالع the result is the rising time of the ascendant

τόπος τῆς τύχης (مطالع) 12.2.1

ὁ τόπος τῆς τύχης ὁ δ΄ — مطالع الرابع المستقيم rising time of the fourth in right (ascension)

τόπος τῆς τύχης (مطالع) 12.2.1

τοῦ τόπου τῆς τύχης τοῦ δ΄ — مطالع الرابع المستقيم rising time of the fourth in right (ascension)

τόπος τῆς τύχης (مطالع) 12.2.1

τοῦ τόπου τῆς τύχης τοῦ ἀστέρος — مطالع الكوكب المستقيم rising time of the star in right (ascension)

τόπος τῆς τύχης (مطالع) 12.2.1

ὁ τόπος τῆς τύχης ὁ ί — مطالع العشر المستقيم rising time of the tenth in right (ascension)

τόπος τῆς τύχης (مطالع) 12.2.1

ὁ ἀστὴρ μέσον τοῦ ί καὶ τοῦ ά οἰκήματος τοῦ τόπου τῆς τύχης — الكوكب ان كان فيما بين العاشر والطالع if the star is in what is between the tenth and the ascendant

τόπος τῆς τύχης (مطالع) 12.2.1

τοῦ τόπου τῆς τύχης τοῦ ί οἰκήματος — مطالع العاشر المستقيم rising time of the tenth in right (ascension)

τόπος τῆς τύχης (مطالع) 12.2.1

τόπος τῆς τύχης τοῦ ἀστέρος — مطالع الكوكب المستقيم rising time of the star in right (ascension)

τόπος τῆς τύχης (مطالع) 12.2.2

τοῦ τόπου τῆς τύχης τῶν ζῳδίων — مطالع البروج rising time of the zodiacal signs

τόπος τῆς τύχης (مطالع) 12.2.4

ὁ τόπος τῆς τύχης τῆς μοίρας — مطالع الهيلاج rising time of the *haylāj*

τόπος τῆς τύχης (مطالع) 12.2.4

τὸν τόπον τῆς τύχης τῆς διαμέτρου τοῦ ἀστέρος — مطالع نظير درجته the rising time of the opposite point of its degree

τόπος τῆς τύχης (مطالع) 12.2.4

τῆς ἑνώσεως τῶν $\overline{\beta}$ τόπων τῆς τύχης — امتزاج المطالعين a mixture of the two rising times

τόπος τῆς τύχης (مطالع) 12.3

μία μοῖρα τοῦ τόπου τῆς τύχης — درجة مطالعيّة degree of rising time

τόπος τῆς τύχης (مطالع) 12.3.1

τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνης — مطالع المسير اليه المحصل the resulting rising time of the motion towards it

τόπος τῆς τύχης (مطالع) 12.3.1

ὁ τόπος τῆς τύχης ὁ τέλειος τοῦ αἰλὰτζ — مطالع الهيلاج المحصل the resulting rising time of the *haylāj*

τόπος τῆς τύχης (مطالع) 12.3.1

ἡ περισσεία ἡ μέση τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνου

— فضلة بين مطالعى درجة الهيلاج the excess (of what is) between the two rising times of the degree of the *haylāj*

τόπος τῆς τύχης (مطالع) 12.3.1

ὁ τόπος τῆς τύχης τῆς διαμέτρου ἐκείνου — مطالع النظير rising time of the opposite point

τόπος τῆς τύχης (مطالع) 12.3.1

τοῦ τόπου τῆς τύχης ἐκείνου μετὰ τῆς εὐθείας γραμμῆς

— مطالع الفلك المستقيم rising time in right sphere

τόπος τῆς τύχης (مطالع) 12.3.2

τὸν τόπον τῆς τύχης τούτου μετὰ τῆς εὐθείας γραμμῆς — مطالعه المستقيم its rising time in right (ascension)

τόπος τῆς τύχης (مطالع) 12.4.4

ὁ τόπος τῆς τύχης τῆς εἰσελεύσεως — طالع تحويل السنة ascendant of the revolution of the year

τραχηλαία (الجيوب) 2.0.0

τῆς τραχηλαίας — الجيوب sines

τραχηλαῖα (الجيب) 2.2

ἡ μεγάλη τραχηλαῖα — الجيب الاعظيم the greatest sine

τραχηλαῖα (جيب) 2.2.2

ἡ τετελειωμένη τοῦ τόξου ἐκείνου τραχηλαῖα — جيب تمام sine of the complement

τραχηλαῖα (جيب) 5.3

ἡ τραχηλαῖα τοῦ τετελειωμένου πλάτους — جيب تمام عرض الكوكب sine of the complement of the latitude of the planet

τραχηλαῖα (جيب) 5.3

εἰς τὴν τραχηλαῖαν τοῦ μήκους τοῦ ἀστέρος ἀπὸ τῆς ἀρχῆς τοῦ Καρκίνου ἢ τῆς ἀρχῆς τοῦ Αἰγοκέρωτος οἷον ἀπὸ τούτων τῶν ζῳδίων ἐστὶν ἐγγύτερον τοῦ

ἀστέρος — جيب بعده عن نقطة الانقلاب الاقرب اليه the sine of its distance from the point of the solstice closest to it

τραχηλαῖα (جيب) 6.5.1

τὴν τραχηλαῖαν τὴν τετελειωμένην τῆς ἀναβάσεως — جيب تمام الارتفاع the sine of the complement of the altitude

τραχηλαῖα (جيب) 6.5.1

τραχηλαῖά ἐστι τοῦ σημείου — جيب السمت sine of the azimuth

τραχηλαῖα (جيب) 6.5.2

τραχηλαῖά ἐστι τῆς ἀναβάσεως ἐκείνης τῆς μὴ ἐχούσης σημεῖον. — جيب الارتفاع الذى لا سمت له sine of the altitude which has no azimuth

τραχηλαῖα (جيب) 6.7

τὴν τραχηλαῖαν τὴν τετελειωμένην τοῦ πλάτους τοῦ Μακκᾶ

— جيب تمام عرض مكة sine of the complement of the latitude of Mecca

τραχηλαῖα (جيب) 6.7

ἡ τραχηλαῖα τοῦ μήκους τοῦ τελείου

— جيب الطول المعدل sine of the equated longitude

τραχηλαῖα (جيب) 6.7

τὴν τραχηλαῖαν τὴν τετελειωμένην τοῦ τελείου μήκους

— جيب تمام الطول المعدل sine of the complement of the equated longitude

τραχηλαῖα (جيب) 6.7

τραχηλαῖα τοῦ τετελειωμένου μήκους μέσον τῆς ζητουμένης πόλεως καὶ τοῦ θεομισούσης Μακκᾶ — جيب تمام المسافة sine of the complement of the distance

τραχηλαῖα (جيب) 9.1.1

ἡ τραχηλαῖα ἡ τετελειωμένη τῆς ἀναβάσεως του τόπου τῶν ἄκρων τῆς κερκίδος — جيب تمام عرض اقليم الرؤية sine of the complement of the latitude of the clime of the sighting

τραχηλαῖα (جيب) 9.1.3

τὴν τραχηλαῖαν τῆς τετελειωμένης ἀναβάσεως τῆς σελήνης — جيب تمام ارتفاع القمر sine of the complement of the altitude of the moon

τραχηλαῖα (جيب) 11.1.4

τὴν τραχηλαῖαν τὴν τετελειωμένην τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων — جيب تمام عرض اقليم الرؤية sine of the complement of the latitude of the clime of the sighting

τραχηλαῖα (جيب) 11.1.4

τὴν τραχηλαῖαν τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων — جيب عرض اقليم الرؤية sine of the latitude of the clime of the sighting

τραχηλαία (جيب) 11.1.7

τὴν τραχηλαῖαν τὴν τετελειωμένην τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων — جيب تمام عرض القليم الرؤية sine of the complement of the latitude of the clime of the sighting

τραχηλαῖα (جيب) 12.2.3

τὴν τετελειωμένην τραχηλαῖαν τοῦ πλάτους τοῦ ἀστέρος

— جيب تمام عرض الكوكب sine of the complement of the latitude of the planet

τρίγωνον (التثليث) 12.2.3

τὸ πλάτος ἐστὶ τοῦ τριγώνου — عرض التثليث latitude of the trine

τρίγωνον (التثليث) 12.2.3

ἡ διάμετρος τούτου τρίγωνόν ἐστι δεξιόν — ويقابله التثليث الايمن and opposite to it (the sinister sextile) is the dexter trine

τρίγωνον (التثليث) 12.2.3

ἡ διάμετρος ἐκείνου τρίγωνον

— زدناه (التسديس) على تسعين فتجتمع قوس التثليث we add it (the sextile) to 90 and the sum is the arc of trine

τρίγωνον (التثليث) 12.2.4

τὸ δεξιὸν τρίγωνον — الايمن التثليث dexter trine

τρίγωνον (التثليث) 12.2.4

τὸ ἀριστερὸν τρίγωνον — التثليث الايسر sinister trine

τρυτάνη (معيار) 11.2.1

τρυτάνη τῆς θεωρίας τῆς σελήνης — معيار الرؤية measurement of the sighting

τύχη cf. τόπος τῆς τύχης

τύχη (الطالع) 6.2.1

τῆς τύχης — الطالع ascendant

τύχη (الطالع) 6.3

τῆς τύχης τοῦ δ΄ — الطالع ascendant

τύχη (الطالع) 9.1.2

τῆς τύχης τοῦ καιροῦ — الطالع ascendant

τύχη (الطالع) 9.1.2

μεταξὺ τῆς τύχης καὶ τοῦ ι΄ οἰκήματος — الطالع ascendant

τύχη (الطالع) 9.3

τὸ μῆκος τῆς σελήνης ἀπὸ τῆς τύχης — بعد القمر من الطالع distance of the moon from the ascendant

τύχη (طالع) 10.1.3

τὴν τύχην τῆς συνόδου ἢ τῆς διαμέτρου — طالع وقت الاتصال ascendant at the time of approach

τύχη (الطالع) 10.3.2

ἡ τύχη τοῦ καιροῦ — الطالع ascendant

τύχη (الطالع) 10.3.2.1

ἡ τύχη — الطالع the ascendant

τύχη (طوالع) 12.1

τοῦ τόπου τῆς τύχης ἑκάστου — طوالع ascendants

τύχη (الطالع) 12.1.2

ἡ τύχη — الطالع ascendant

τύχη (طالع) 12.1.2

περὶ τῆς εἰσελεύσεως τοῦ τόπου τῆς τύχης — فى معرفة طالع التحويل on the knowledge of the ascendant of the revolution

τύχη (طالع) 12.1.3

εἴ τι εὑρεθῇ τόπος τῆς τύχης ἐστίν — الحاصل مطالع طالع the result is the rising time of the ascendant

τύχη (طالع) 12.1.3

τῆς τύχης τοῦ μέσου τῆς οἰκουμένης — طالع القبة وطالع وسط المعمورة ascendant of the cupola and the ascendant of the middle of the inhabited world

τύχη (الطالع) 12.2.1

ἐὰν μέσον τῆς τύχης καὶ τοῦ δ΄ — كان فيما بين الطالع والرابع it (the planet) is in what is between the ascendant and the fourth

τύχη (الطالع) 12.2.1

ὁ ἀστὴρ μέσον τοῦ ι΄ καὶ τοῦ α΄ οἰκήματος τοῦ τόπου τῆς τύχης

— الكوكب ان كان فيما بين العاشر والطالع if the star is in what is between the tenth and the ascendant

τύχη (الطالع) 12.4.1

τὸ σημεῖον τοῦ ζῳδίου τῆς τύχης τοῦ θεμελίου τοῦ γενεθλιαλογικοῦ περισσεύεται εἰς τοὺς χρόνους ἐκείνους

— زدنا على صورة البرج الذى فيه الكوكب او صورة الطالع we add them (the completed years) to the image of the zodiacal sign in which the planet is or to the image of the ascendant

τύχη (الطالع) 12.4.2

ἡ μοῖρα τῆς τύχης τῆς εἰσελεύσεως — درجة الطالع تحويل السنة degree of the ascendant of the revolution of the year

τύχη ( ) 12.4.2

περὶ τῆς κινήσεως τῶν ψήφων τῆς τύχης τῆς εἰσελεύσεως

— فى تسيير ادلاء تحويل السنة on the prorogation of the indicators of the revolution of the year

τύχη ( ) 12.4.3

περὶ τῆς ἐλάσεως τῆς τύχης τῆς εἰσελεύσεως τοῦ μηνός

— فى تحويل الشهور وتسيير ادلايها on the revolution of the months and the prorogation of their indicators

τύχη (طالع) 12.4.4

ὁ τόπος τῆς τύχης τῆς εἰσελεύσεως — طالع تحويل السنة ascendant of the revolution of the year

τύχη (طالع) 12.4.4

περὶ τῆς ἐλάσεως τῆς εἰσελεύσεως τῆς τύχης

— فى تسيير طالع تحويل السنة on the prorogation of the ascendant of the revolu-

tion of the year

ὑπεξέστη (برز) 11.3.1

ἡ σελήνη ὑπεξέστη τοῦ φωτὸς τοῦ ἡλίου καὶ πρὸ τοῦ δῦναι τὸν ἥλιον φαίνεται αὕτη

— برز الهلال عن الشعاع فيمكن ان يرى نهارا قبل مغيب الشمس

the crescent has come into view from under the rays and it is possible to see it in daylight before the setting of the sun

ὑπεξέστη (برز) 11.6.1

ἡ σελήνη ὑπεξέστη τοῦ φωτὸς τοῦ ἡλίου καὶ πρὸ τοῦ δῦναι τὸν ἥλιον φαίνεται

— قد برز عن الشعاع للابصار it (the moon) has emerged from under the rays for sighting

ὑπεξίστανται ( ) 11.5

περὶ τῶν ε̄ πλανωμένων ἀστέρων ὅτι κατὰ ποῖον καιρὸν ἐξέρχονται ἤτοι ὑπεξίστανται τοῦ φωτὸς τοῦ ἡλίου καὶ κατὰ ποίαν ὥραν εἰσέρχονται ὑπὸ φῶς τοῦ ἡλίου κατὰ τὸ πρωΐ ἢ τὴν ἑσπέραν — فى تشريق الكواكب المتحيرة وتغريبها on the rising of the moveable stars (planets) and their settings

ὑπέρ (فوق) 12.2.1

ὑπὲρ γῆν — فوق الارض above the earth

ὑπερβαίνει (جاز) 1.5.2

ὑπερβαίνει — يجاوز go beyond

ὑπό (تحت) 12.2.1

ὑπὸ γῆν — تحت الارض below the earth

ὑποποδίζει (راجع) 8.2

ὁ ἀστὴρ ὑποποδίζει — راجع retrograding

ὑποποδίζει (راجع) 8.2.1

Ἐὰν ὁ ἀστὴρ ὑποποδίζῃ — وان كان الكوكب راجعا if the planet is retrograding

ὑποποδίζει (رجع) 8.2.2

ὑποποδίζει — رجع retrograde

ὑποποδίζῃ (راجعا) 11.5.2

ἐὰν ὁ ἀστὴρ ὑποποδίζῃ — اذا كان راجعا if the star is retrograding

ὑποποδισμός (رجوعها) 8.0.0

τοῦ ὑποποδισμοῦ αὐτῶν — رجوعها their (the planets') retrogression

ὑποποδισμός (الرجوع) 8.2

τοῦ ὑποποδισμοῦ — الرجوع retrogression

ὕψωμα (اوجات) 7.0.0

τῶν ὑψωμάτων — اوجات apogees

ὕψωμα (الاوج) 7.1.1

ὕψωμά ἐστι τῆς ὀρθώσεως — الاوج المعدّل equated apogee

ὕψωμα (اوج) 7.4

τὰ ὑψώματα — اوجات apogees

ὕψωμα (اوج) 8.1.1

τὸ ὕψωμα τοῦ ἡλίου — اوجها its (the sun's) apogee

ὕψωμα (اوج) 8.1.1

τὸ τελείον ὕψωμα — اوج معدل الشمس equated apogee of the sun

ὕψωμα (اوج) 8.1.4

τὸ ὕψωμα — اوج apogee

ὕψωμα (ذروة) 9.2.4

τὸ ὕψωμα τοῦ μικροῦ κύκλου — ذروة التدوير apogee of the epicycle

ὕψωμα (الاوج) 12.1.2

ἡ περισσεία ἐκείνη μετὰ τῆς ὀρθώσεως τοῦ ὑψώματος τελεία γίνεται — الفضلة المعدلة بالاوج excess equated by the apogee

φαίνεται (ظهور) 1.5.1

ὁπόταν ἀπὸ τοῦ ἡλίου διισταμένου φαίνωνται — ظهورها من تحت الشعاع its appearance from under the rays

φαίνεται (ظهر) 11.5

ὁ ἀστὴρ φαίνεται — الكوكب قد ظهر the star has already appeared

φαίνεται (يرى) 11.6.2

ἡ σελήνη φαίνεται — الهلال يرى the crescent is visible

φαινόμενος (رؤية) 11.2

περὶ τῆς σελήνης νέας φαινομένης μετὰ σύνοδον — فى اعمال رؤية الاهلة on the computations for the sighting of the crescent

φανείς (روئة) 1.1

σελήνς νέας φανείσης — روئة الهلال sighting of the crescent

φανείς (الرؤية) 11.5.1

ἐκείνη ἡ περισσεία ἐὰν πλείων τοῦ φανέντος τόξου

— وكان البعد اكثر من قوس الرؤية the distance is greater than the arc of vision

φανείς (الرؤية) 11.5.2

τὸ τόξον τὸ φανέν — قوس الرؤية arc of vision

φανείς (رؤية) 11.6

τῆς σελήνης νέας φανείσης — رؤية الاهلة sighting of the crescent

φανῇ (رؤية) 11.0.0

ὅτι ἡ σελήνη πότε ἵνα φανῇ νέα — رؤية الاهلة the sighting of the crescent

φανῇ (الظهور) 11.5.1

ὅταν φανῇ ὁ ἀστήρ καὶ ὅταν δύνῃ — الظهور والاختفاء appearance and disappearance

φανῆναι (للظهور) 11.5.1

ἐὰν οὖν ὁ ψῆφος οὗτος εἰς τὸ φανῆναι τὸν ἀστέρα — فان كان العمل للظهور if the computation is for the appearance

Φαρούχ (الفاروقة) 1.5.3

Φαρούχ — الفاروقة Fārūqa

φθάνει (نزول) 12.1.1

ἡνίκα φθάνει ὁ ἥλιος εἰς τὴν μοῖραν ἐκείνην —

عند نزول الشمس النقطة المفروضة at the alighting of the sun at the determined point

φῶς (النور) 11.1.5

τὸ ἐξελθὸν τόξον ἐστὶ τοῦ φωτὸς ἤγουν τῆς ἐλλάμψεως τῆς σελήνης

— قوس النور arc of light

φῶς (النور) 11.1.5

τοῦ τόξου τοῦ φωτός — قوس النور arc of light

φῶς (النور) 11.3

τὸ τόξον τοῦ φωτὸς — قوس النور arc of light

φῶς (النور) 11.3.1

τοῦ τόξου τοῦ φωτὸς — قوس النور arc of light

φῶς (الشعاع) 11.3.1

ἡ σελήνη ὑπεξέστη τοῦ φωτὸς τοῦ ἡλίου καὶ πρὸ τοῦ δῦναι τὸν ἥλιον φαίνεται αὕτη

— برز الهلال عن الشعاع فيمكن ان يرى نهارا قبل مغيب الشمس

the crescent has come into view from under the rays and it is possible to see it in daylight before the setting of the sun

φῶς (الشعاع) 11.3.1

ἡ σελήνη ἔτι ὑπὸ τὸ φῶς ἐστι τοῦ ἡλίου κεκρυμμένη — تحت الشعاع under the rays

φῶς (النور) 11.6.1

τὸ τόξον τοῦ φωτός — قوس النور arc of light

φῶς (النور) 11.6.2

τὸ τόξον τοῦ φωτός — قوس النور arc of light

φῶς (الشعاع) 12.2

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων ἤτοι τοῦ πρὸς ἄλληλα τούτων σχηματισμοῦ — مطرح الشعاعات casting of rays

φῶς (نور) 12.2.3

ὁ τόπος ἐστὶ τοῦ φωτὸς τοῦ ἑξαγώνου τοῦ ἀστέρος ἐξ ἀριστερῶν — موضع نور تسديسه الايسر the location of the light of its sinister sextile

φῶς (الشعاع) 12.2.3

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων — مطرح شعاعات الكوكب casting of rays of the planet

φῶς (الشعاع) 12.2.4

διάμετρός ἐστι τοῦ φωτὸς τοῦ ἀστέρος — نظائر الشعاعات the opposite points

of the rays (aspects)

φῶς (الشعاع) 12.2.4

τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων — مطرح الشعاع casting of the rays

φῶς (الشعاع) 12.4.2

τοῦ φωτὸς τῶν ἀστέρων ὅλων — بجميع الكواكب والشعاعات التحويلية by all the stars and the aspects of the revolution

Χαζανῇ (الخازنى) 11.6

τοῦ Χαζανῇ — شيخ الامام الخازنى Shaykh Imām al-Khāzinī

χρόνος (السنة) 1.1

χρόνος — السنة year

χρόνος (سنة) 1.2

κρατοῦνται οἱ χρόνοι τετελειωμένοι τοῦ ἔτους τοῦ Ἰασδακέρδη — اخدنا سنى يزدجرد التامة we take the completed years of Yazdijird

χρόνος (سنين) 1.2

χρόνοι τοῦ ἡλίου — سنين الشمسية solar years

χρόνος (السنون) 1.2

οἱ χρόνοι τῆς σελήνης — السنون القمرية lunar years

χρόνος ( ) 1.4.1

κανόνια τῶν χρόνων τῶν ἡνωμένων καὶ τῶν ἁπλῶν —

جدوّلى المجموعة والمبسوطة the two tables of the collected and simple (years)

χρόνος (سنة) 1.4.1

οἱ ἀτελεῖς χρόνοι τοῦ ἔτους ἐκείνου — سنى التاريخ الناقصة incomplete years of the calendar

χρόνος (سنة) 1.4.2

οἱ τετελειωμένοι χρόνοἰ — سنى التامة complete years

χρόνος (سنية) 7.1

οἱ ἀτελεῖς χρόνοι — سنية الناقصة diminished years

χρόνος (سنى) 7.3

τῶν γνωρίμων χρόνων — سنى العالم years of the world

χρόνος ( ) 7.3

χρόνων τῶν σουλτανικῶν — السلطانية Sultanic (years)

χρόνος (السنة) 7.3

χρόνος τοῦ ἡλίου — السنة الشمسية solar year

χρόνος ( ) 7.3

ὁ χρόνος τῶν Ῥωμαίων — الرومية Roman (year)

χρόνος (السنة) 7.3

τοῦ χρόνου τῆς σελήνης — السنة القمرية lunar year

χρόνος (سنى) 7.3

οἱ χρόνοι οἱ αἰσθητοὶ — سنى العالم years of the world

χρόνος (سنيها) 7.3

τῶν τετελειωμένων σουλτανικῶν χρόνων — سنيها التامة its complete years

χρόνος (السنون) 12.0.0

χρόνοι εἰσὶ τοῦ ἡλίου τετελειωμένοι — السنون التامة الشمسية complete solar years

χρόνος (سنة) 12.0.0

τῆς εἰσελεύσεως τῶν χρόνων — تحويل سنى العالم revolution of the years of the world

χρόνος (سنة) 12.1

περὶ τῆς εἰσελεύσεως τῶν χρόνων ὅλων καὶ τῶν χρόνων τῶν γενεθλιαλογικῶν — فى تحويل سنى العالم والمواليد on the revolution of the years of the world and of nativities

χρόνος (سنة) 12.1.1

περὶ τῆς ἐκβολῆς τῶν ὡρῶν τῆς εἰσελεύσεως τῶν χρόνων ὅλων — فى استخرج اوقات تحويل سنى العالم on the extraction of the times of the revolutions of the years of the world

χρόνος (السنين) 12.4.1

οἱ τετελειωμένοι χρόνοι τοῦ ἡλίου οἱ παρελθόντες ἀπὸ τοῦ γενεθλιαλογικοῦ — السنين التامة التى اتت على المولود the complete years which have passed for the

native

χρόνος ( ) 12.4.1

περὶ τῆς ἐνθυμήσεως ἐκείνου τοῦ ψήφου ὅτι καθ ' ἕκαστον χρόνον $\bar{\alpha}$ ζῴδιον κινεῖται

— فى المنتهى فى كلّ بيت وكوكب وتسييراته on the *muntahā'* in every house and the star and its prorogations

χωρεῖ ( ) 2.1

πρὸς τὸ ἔλαττον χωρεῖ — ناقصا decreasing

χωρεῖ ( ) 2.1

χωρῇ πρὸς τὸ πλέον — زايد increasing

ψῆφος (مقدار) 1.2

ὁ μέσος ψῆφος — مقدار الاوسط measure of the mean

ψῆφος (التقدير) 1.4.2

τοῦ μέσου ἐκείνου ψήφου — التقدير الاوسط mean estimate

ψῆφος ( ) 2.1

ὁ ψῆφος κατὰ τὴν ἀρχὴν τοῦ κανονίου — حاشية (number in) the margin

ψῆφος ( ) 2.1

τοῦ κρατουμένου παρ' ἡμῶν ψήφου — المحفوظ set aside

ψῆφος ( ) 2.1.1

τοῦ ἀπὸ τοῦ μέσου κανονίου ψήφου — فى حشو الجدول (number) in the interior of the table

ψῆφος (تقدير) 7.1

τοῦ μέσου ψήφου — تقدير اوسط mean estimate

ψῆφος ( ) 8.1.4

τοῦ ψήφου τοῦ εὑρεθέντος μέσον τῶν $\overline{\beta}$ κανονίων — تعديله its equalization

ψῆφος (حساب) 8.4

μετὰ τοῦ ψήφου — حسابا by calculation

ψῆφος (عمل) 10.3.2

περὶ τοῦ ψήφου — فى عمل on the calculation

ψῆφος ( ) 11.3

ὁ μέσος ψῆφος — الحد الاوسط المعتدل قوسى الاوّلى والثانية the mean equated limit of the first and second arcs

ψῆφος (العمل) 11.5.1

εἰ δ' ἐστὶν οὗτος ὁ ψῆφος ἵνα δύνῃ ὁ ἀστήρ — فان كان العمل للاختفاء if the computation is for the disappearance

ψῆφος (العمل) 11.5.1

ἐὰν οὖν ὁ ψῆφος οὗτος εἰς τὸ φανῆναι τὸν ἀστέρα — فان كان العمل للظهور if the computation is for the appearance

ψῆφος ( ) 12.4.1

περὶ τῆς ἐνθυμήσεως ἐκείνου τοῦ ψήφου ὅτι καθ ᾽ ἕκαστον χρόνον α̅ ζῴδιον κινεῖται

— فى المنتهى فى كلّ بيت وكوكب وتسييراته on the *muntahā'* in every house and the star and its prorogations

ὥρα (الساعات) 4.3.1

τῆς ὀρθῆς ὥρας — الساعات المستوية equal hours

ὥρα (ساعات) 4.3.1

ἡ ὥρα τῆς νυκτὸς πάσης — ساعات النهار hours of the daytime

ὥρα (اوقات) 5.0.0

τῆς ὥρας ἐκείνης τῆς κατὰ τὴν ἀνάβασιν καὶ κατάβασιν τούτων κατὰ τὴν ἡμέραν ἢ τὴν νύκτα — اوقات طلوعها او غروبها من ليل او نهار the times of its rising or setting in the night or day

ὥρα ( ) 6.0.0

ἀπὸ τῆς ἡμέρας πόσαι ὧραι παρῆλθον — ما مضى من النهار او الليل what has passed of the day or of the night

ὥρα (الساعات) 6.1

τὴν ὀρθὴν ὥραν καὶ τὴν μὴ ὀρθήν — الساعات المستوية والمعوجة equal and seasonal hours

ὥρα (الطالع) 6.2

τῆς ὥρας ἐκ τῆς περιφορᾶς — الطالع من الدائرة ascendant from the arc

ὥρα (وقت) 6.3

τῆς ὥρας τοῦ καιροῦ — وقت القياس time under consideration

ὥρα (الساعات) 7.4

τὰς ὥρας τῆς ἀναβάσεως — الساعات والارتفاعات hours and altitudes

ὥρα (ساعة) 8.4; 8.4.1

τὴν ὥραν — ساعة an hour

ὥρα (ساعة) 9.2

τῆς ὥρας τοῦ μήκους τοῦ μέσου τῆς ἡμέρας — ساعات البعد عن الزوال hours of distance from noon

ὥρα ( ) 9.2

ὥρα τῆς συνόδου — الاجتمع (hour) of conjunction

ὥρα (ساعات) 9.2

ἡ ὥρα τοῦ μέσου τῆς ἡμέρας — ساعات نصف النهار hours of half the day

ὥρα (ساعة) 9.2

ἡ ὥρα τοῦ μήκους μετὰ τὸ μέσον τῆς ἡμέρας ἐστίν. — ساعات البعد عن الزوال hours of distance from noon

ὥρα (ساعة) 9.2

ἡ ὥρα τοῦ μήκους πρὸ τοῦ μέσου τῆς ἡμέρας ἐστίν — ساعات البعد عن الزوال hours of distance from noon

ὥρα ( ) 10.1.1

καὶ γίνεται ὥρα τελεία — يصير الاتصال حققا the approach becomes complete

ὥρα (ساعات) 10.1.1

ὥρα ἐστὶ τῆς συνόδου ἢ τῆς διαμέτρου ἀπὸ τῆς παρελθούσης νυκτός — ساعات الاتصل المطلقة من الليلة الماضية the hours of the general approach of the night just passed

ὥρα (ساعات) 10.1.1

ὥρα ἐστὶ τῆς συνόδου ἢ τῆς διαμέτρου ἀπὸ τῆς ἐρχομένης νυκτός — ساعات الاتصل المطلق من اللّية المقبلة the hours of the general approach of the coming night

ὥρα (ساعات) 10.1.1

ὥρα ἐστὶ τῆς συνόδου ἢ τῆς διαμέτρου εἰς ἐκείνην τὴν ἡμέραν — ساعات الاتضال المطلق الماضية من ذلك اليوم the hours of the general approach that have passed of that day

ὥρα (ساعات) 10.1.1

τῶν ὡρῶν τῆς ἡμέρας ἐκείνης πάσης — ساعات النهار كله hours of the whole day

ὥρα (ساعات) 10.1.1

ἡ ὥρα ἐστὶ τοῦ μήκους — ساعات البعد hours of distance

ὥρα (ساعات) 10.2.1.1

ἡ ὥρα τῆς μέσης ἐκλείψεως — ساعات وسط الخسوف hours of the middle of the eclipse

ὥρα (ساعات) 10.2.1.1

ἡ ὥρα τῆς συνόδου — ساعات الاتصال hours of the approach

ὥρα (ساعات) 10.2.1.4

ἡ ὥρα τῆς τελείας ἀποκαταστάσεως τῆς σελήνης — ساعات تمام الانجلاء hours of the completion of the clearing

ὥρα (ساعات) 10.2.1.4

ἡ μέση ὥρα τῆς ἐκλείψεως τῆς σελήνης — ساعات اوسط الخسوف hours of the middle of the eclipse

ὥρα (ساعات) 10.2.1.4

ὥρα τῆς ἀρχῆς τῆς ἐκλείψεως τῆς σελήνης — ساعات بداء الخسوف hours of the beginning of the eclipse

ὥρα (ساعات) 10.2.1.4

ὥρα τῆς διαμέτρου — ساعات الاستقبال hours of opposition

ὥρα (ساعات) 10.2.1.4

ὥρα πεσοῦσα — ساعات السقوط hours of the falling (half duration)

ὥρα (ازمان) 10.2.1.4

τῆς ὥρας τῆς ἐκλείψεως τῆς σελήνης — ازمان الخسوف duration of the eclipse

ὥρα (ساعات) 10.2.1.5

ὥρα ἐστὶν ἀπὸ τῆς ἀρχῆς τῆς ἐκλείψεως τῆς σελήνης μέχρι τῆς τελείας ἀποκαταστάσεως

— ساعات وقوع الخسوف من البداء الى تمام الانجلاء hours of the occurrence of the eclipse from the beginning to the completion of the clearing

ὥρα (ساعات) 10.2.1.5

αἱ πεσοῦσαι ὧραι — ساعات سقوط hours of the falling

ὥρα (ساعات) 10.2.1.5

ἡ τετελειωμένη ὥρα καθ' ἣν ἀποκαθίσταται ἡ σελήνη — ساعات تمام الانجلاء hours of the completion of the clearing

ὥρα ( ) 10.2.1.5

ἡ ἀρχὴ τῆς ὥρας τῆς ἀποκαταστάσεως τῆς σελήνης — بداء الاجلاء (hours) of the beginning of the clearing

ὥρα (ساعات) 10.2.1.5

ἡ ὥρα τῆς μέσης ἐκλείψεως — ساعات اوسط الخسوف hours of the middle of the eclipse

ὥρα (ساعات) 10.2.1.5

ὥρα τῆς τελείας ἐκλείψεως — ساعات بداء المكث hours of the beginning of the duration

ὥρα (ساعات) 10.2.1.5

ὧραί εἰσι τῆς στάσεως — ساعات الاستقبال hours of opposition

ὥρα (ساعات) 10.2.2.1

ἡ ὥρα τῆς στάσεως — ساعات المكث hours of duration

ὥρα (ساعات) 10.2.2.1

οἱ δάκτυλοι τῆς πεσούσης ὥρας — الاصابع وساعات السقوط the digits and the hours of the falling

ὥρα (ساعات) 10.2.2.3

ἡ ὥρα τῆς νυκτὸς τῆς ἐκλείψεως πλείων ἐστὶν ἀπὸ τῆς ὥρας τῆς νυκτός — زادت بعض ساعات احد المواضع على ساعات الليل some of the hours of one of the places is greater than the hours of night

ὥρα (ساعات) 10.2.2.3

ἐὰν ἡ ὥρα τῆς ἐκλείψεως τῆς σελήνης ἀπὸ τῆς ἡμέρας πλείων ᾖ — زادت ساعات احد المواضع المذكورة على ساعات النهار the hours of one of the mentioned places is greater than the hours of the day

ὥρα (ساعات) 10.3.1

αἱ ὧραί εἰσι τοῦ μήκους πρὸ τοῦ μέσου τῆς ἡμέρας καὶ μετὰ τὸ μέσον τῆς ἡμέρας — ساعات قبل الزوال وبعده فى الطول والعرض the hours before noon and after it in longitude and latitude

ὥρα (ساعات) 10.3.2

τὴν ὥραν τῆς συνόδου ὀρθήν — تعديل ساعات الاجتماع الحقيقى equation of the correct hours of the conjunction

ὥρα (ساعات) 10.3.2

ἡ μέση ὥρα ἐστὶ τῆς ἐκλείψεως — ساعات وسط الكسوف hours of the middle of the eclipse

ὥρα (ساعات) 10.3.2

ὥρα τοῦ μέσου τῆς ἡμέρας — ساعات نصف النهار hours of half the day

ὥρα (ساعات) 10.3.2.1

ὥρα ἐστὶ τῆς μέσης ἐκλείψεως. — ساعات وسط الكسوف hours of the middle of the eclipse

ὥρα (ساعات) 10.3.2.1

ἡ ὥρα τοῦ β′ μήκους — ساعات الاجتماع الثانى the hours of the second conjunction

ὥρα (ساعات) 10.3.2.1

ὥρα τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως τοῦ α′ — ساعات الاختلاف الاول hours of the first difference (in vision)

ὥρα (ساعات) 10.3.2.1

τῆς ὥρας τοῦ μέσου τῆς ἡμέρας — ساعات نصف النهار hours of half of the day

ὥρα (ساعات) 10.3.2.1

ἡ ὥρα τοῦ μήκους ἐστὶ μετὰ τὸ μέσον τῆς ἡμέρας

— نطلب البعد فى الساعات بعد الزوال we seek the distance in the hours after noon

ὥρα (ساعات) 10.3.2.1

ἡ ὥρα τοῦ μήκους ἐστὶ πρὸ τοῦ μέσου τῆς ἡμέρας

— نطلب البعد فى الساعات قبل الزوال we seek the distance in the hours before noon

ὥρα (ساعات) 10.3.2.1

ἡ ὥρα τοῦ μέσου τῆς ἡμέρας — ساعات نصف النهار hours of half of the day

ὥρα (ساعات) 10.3.2.1

ἡ ὥρα τῆς σονόδου — ساعات الاجتماع hours of conjunction

ὥρα (ساعات) 10.3.2.1

ἡ ὥρα τῆς συνόδου — ساعات الاجتماع hours of conjunction

ὥρα (ساعات) 10.3.2.3

ἡ πεσοῦσα ὥρα μετὰ τῆς ὀρθώσεως ταύτης — ساعات السقوط وتعديلها hours of the falling and their equation

ὥρα (ساعات) 11.1.1

ἡ ὥρα τοῦ μέσου τῆς ἡμέρας — ساعات نصف نهار درجة الشمس hours of half of the day of the degree of the sun

ὥρα (ساعات) 11.1.1

ὥρα ἐστὶ μέσον τῆς ἡμέρας ἐκείνης καὶ μέσον τῆς καταβάσεως τῆς μοίρας τῆς σελήνης

— ساعات ما بين نصف النهار الى مغيب جزء القمر the hours between the half of

the day to the setting of the degree of the moon

ὥρα (ساعات) 12.1.1

αἱ ὧραι τῆς εἰσελεύσεως ἀπὸ τῆς ἡμέρας ἢ τῆς νυκτὸς

— ساعات وقت التحويل من ليل او نهار hours of the time of the revolution at night or in the day

ὥρα (ساعات) 12.1.1

ὥρα ἐστὶ τῆς εἰσελεύσεως — ساعات تحويل hours of the revolution

ὥρα (ساعات) 12.1.1

ἡ ὥρα τοῦ μέσου τῆς ἡμέρας — ساعات نصف النهار hours of half of the day

ὥρα (اوقات) 12.1.1

περὶ τῆς ἐκβολῆς τῶν ὡρῶν τῆς εἰσελεύσεως τῶν χρόνων ὅλων —

فى استخرج اوقات تحويل سنى العالم on the extraction of the times of the revolutions of the years of the world

ὥρα (ساعات) 12.1.2

ἡ ὥρα τῆς εἰσελεύσεως — ساعات وقت التحويل hours of the time of the revolution

ὥρα ( ) 12.3

τῶν ὡρῶν τῶν καλῶν καὶ κακῶν — موضع السعود والنحوس place of the benefices and malefices

ὧραι (الساعات) 9.2.1

αἱ ὧραι τοῦ μήκους — الساعات التى هى بها بعد القمر عن نصف النهار hours by which there is a distance of the moon from half of the day

ὡραῖος (اللطيف) 10.3.2.1

τὸ ὡραῖον κανόνιον — الجدول اللطيف the easy table

PART IV

Greek Text

1

9

12

|Ἀρχὴ τοῦ βιβλίου τοῦ Σαντζαρῆ f38V, f273vv

Μοῖρα α΄. Περὶ τῶν γνωρίμων ἐτῶν.

Μοῖρα β΄. Περὶ τῶν καταλήψεων τῶν ψήφων τῶν κατὰ πολὺ λυσιτελούντων εἰς τὴν ἐργασίαν τῆς συντάξεως ἤγουν τῆς περισσείας, τῆς τραχηλαίας τοῦ τόξου, τῆς σαγίτας καὶ τοῦ σκιάσματος.

Μοῖρα γ΄. Περὶ τῆς πρώτης καὶ δευτέρας μετακλίσεως τῆς βορείας καὶ νοτίας καὶ τοῦ πλάτους τῶν πόλεων καὶ τῆς ἀναβάσεως τῶν ἀστέρων εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας καὶ τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς.

|Μοῖρα δ΄. Περὶ τῆς ὀρθώσεως τῆς ἡμέρας μετὰ τοῦ τόξου τῆς ἡμέρας καὶ f81vL
τῆς νυκτὸς καὶ τῶν ὀρθῶν ὡρῶν μετὰ τῶν μοιρῶν τῶν μὴ ὀρθῶν ὡρῶν καὶ τῶν τόπων τῶν ζῳδίων εἰς πάντα τὰ κλίματα μετὰ τοῦ πλάτους τῆς ἀνατολῆς.

Μοῖρα ε΄. Περὶ τῆς κινήσεως τῶν ἀπλανῶν ἀστέρων ἀπὸ τῶν αὐθημερινῶν ἐκείνων καὶ τοῦ μήκους ἤτοι τῆς διαστάσεως ἐκείνων ἀπὸ τοῦ κύκλου τοῦ κατὰ τὸ νυχθήμερον κινουμένου καὶ τῆς ἀναβάσεως τῶν ἀπλανῶν εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας καὶ τῆς μοίρας ἐκείνης ἥτις ἀπὸ τοῦ ζῳδίου
|ἐκείνου μετὰ τοῦ ἀστέρος ὁμοῦ εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας f274rv
γίνεται καὶ τῆς μοίρας ἥτις ἀνίσχει μετὰ τοῦ ἀστέρος καὶ τῆς μοίρας τῆς

1 Tit. diff. lectu V ‖ 2 πρώτη v ‖ 15 τὸν om. v

μετὰ τοῦ ἀστέρος δυνούσης καὶ τῆς καταλήψεως τῆς ὥρας ἐκείνης τῆς κατὰ τὴν ἀνάβασιν καὶ κατάβασιν τούτων κατὰ τὴν ἡμέραν ἢ τὴν νύκτα.

Μοῖρα ς΄. Περὶ τῆς καταλήψεως ἐκείνης ὅτι ἀπὸ τῆς ἡμέρας πόσαι ὧραι παρῆλθον καὶ πόσαι μοῖραι ἀπὸ τῆς μὴ ὀρθῆς ὥρας καὶ εἰς τὰς ὥρας τῆς τύχης καὶ τῆς ὀρθώσεως τῶν $\overline{\iota\beta}$ οἰκημάτων, καὶ τῆς καταλήψεως τοῦ σημείου τῆς ἑκάστης ἀναβάσεως καὶ τοῦ σημείου τῆς προσευχῆς ἑκάστης.

Μοῖρα ζ΄. Περὶ τῆς ἐκβολῆς τῶν μέσων κινήσεων τῶν $\overline{\zeta}$ ἀστέρων καὶ τῶν ἰδίων | τούτων κινήσεων καὶ τῶν ὑψωμάτων καὶ τῶν ὀρθώσεων ἑκάστης καὶ f38vV
τῆς καταλήψεως τῆς ἀρχῆς τοῦ σουλτανικοῦ χρόνου κατὰ ποίαν ἡμέραν ἐστὶν ἀπὸ τῶν ἡμερῶν τῆς ἑβ|δομάδος ἀπὸ τῶν μηνῶν καὶ τῶν χρόνων τῶν ἐτῶν καὶ f82L
τοῦ τέλους τούτου καὶ τῆς ὀρθώσεως μετὰ τοῦ θεμελίου ὅτι τὸ αὐθημερινὸν ἀπὸ τῆς συντάξεως ἀπὸ τούτου τοῦ θεμελίου ἐκβάλλεται εἰς $\overline{\alpha}$ χρόνον τοῦ ἡλίου διὰ τὸ αὐθημερινόν.

Μοῖρα η΄. Περὶ τῆς ἐκβολῆς τῶν $\overline{\zeta}$ ἀστέρων τοῦ αὐθημερινοῦ καὶ τοῦ ἀναβιβάζοντος καὶ τῆς κατ' ὀρθὸν κινήσεως καὶ τοῦ ὑποποδισμοῦ τῶν ἀστέρων καὶ τοῦ πλάτους ἐκείνων καὶ τῆς μεταβάσεως ἑκάστου καὶ τῶν διαμέτρων τούτων.

Μοῖρα θ΄. Περὶ τοῦ πλείονος καὶ ἐλάττονος ἀπὸ τῆς ὄψεως τῆς θεωρίας τῆς σελήνης καὶ τῆς ὀρθώσεως τοῦ τόπου ἐκείνου εἰς τὸ μῆκος καὶ πλάτος.

6 προσεχῆς v ‖ 9 τῆς ἀρχῆς sup. lin. L | συλτανικοῦ v ‖ 14–15 ἀναβιβάζοντος] ☋ Vv,☊ L ‖ 19 ἐκείνου quia القمر masc.

Μοῖρα ι΄. Περὶ τῆς καταλήψεως τῶν συνόδων καὶ διαμέτρων ἡλίου καὶ σελήνης μετὰ τοῦ μήκους καὶ τῆς μεταβάσεως ἐκείνων καὶ τῶν ἐκλείψεων ἡλίου καὶ σελήνης. ἡ ι΄ δὲ αὕτη μοῖρα εἰς τρία διαιρεῖται.

Μοῖρα ια΄. Περὶ τῆς σελήνης νέας φαινομένης καὶ τῶν $\overline{\varepsilon}$ ἀστέρων.

5 Μοῖρα ιβ΄. Περὶ τῆς τύχης τῶν χρόνων καὶ τῶν $\overline{\delta}$ καιρῶν καὶ τῆς εἰσελεύσεως τῆς τύχης τοῦ χρόνου ἐκείνου καὶ τοῦ γενεθλιαλογικοῦ καὶ τῆς ἀκτινοβολίας τῶν ἀστέρων.

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3 $\overline{\gamma}$ L

Μοῖρα πρώτη. Περὶ τῶν γνωρίμων ἐτῶν. ταῦτα εἰς $\overline{\varepsilon}$ κεφάλαια ἐτέθησαν·

Κεφάλαιον α΄. Περὶ τῆς ἡμέρας καὶ νυκτὸς καὶ τοῦ μηνὸς καὶ τοῦ χρόνου, τίνα ταῦτα.

Κεφάλαιον β΄. Περὶ τοῦ ἔτους τί ἐστι καὶ ποῖα ἔτη εἰς τὸν ἡμέτερον χρόνον, δῆλα.

|Κεφάλαιον γ΄. Περὶ τῆς καταλήψεως τῆς ἀρχῆς τοῦ χρόνου κατ' ἔτος καὶ f82vL
τῶν μηνῶν κατὰ ποίαν ἡμέραν εἰσὶ τῆς ἑβδομάδος | καὶ τῆς ἐκβολῆς τοῦ ἑνὸς f39rV
ἔτους ἀπὸ τοῦ ἑτέρου μετὰ τοῦ ψήφου.

Κεφάλαιον δ΄. Περὶ τῆς ἀρχῆς τῶν χρόνων καὶ τῶν μηνῶν κατὰ ποίαν ἡμέραν εἰσέρχονται τῆς ἑβδομάδος καὶ τῆς ἐκβολῆς τοῦ ἑνὸς ἔτους ἀπὸ τοῦ ἑτέρου διὰ τῶν κανονίων.

Κεφάλαιον ε΄. Περὶ τῶν ἑορτῶν καὶ τῶν μεγάλων ἡμερῶν καὶ δήλων τῶν κατ' ἔθνος τελουμένων καὶ διὰ ψήφων καὶ διὰ κανονίων.

Κεφάλαιον α΄. Περὶ τῆς ἡμέρας καὶ νυκτὸς καὶ τοῦ μηνὸς καὶ τοῦ χρόνου τίς.

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1 μοῖρα πρώτη iter. in marg. v^2 ‖ 2–3 Περὶ τῆς... τίνα ταῦτα] περὶ τούτου· ἡμέρα τίς ἐστι καὶ νὺξ τίς καὶ μὴν τίς καὶ χρόνος τίς L ‖ 4 Περὶ τοῦ ἔτους] περὶ καταλήψεως τούτου ὅτι τὸ ἔτος L 4–5 δῆλα post ἔτη transpon. L ‖ 6 καὶ + τῶν ἀρχῶν L ‖ 9 Περὶ ... μηνῶν] περὶ τῆς καταλήψεως τούτου ὅτι ἡ ἀρχὴ τοῦ χρόνου κατ' ἔτος καὶ ἀρχαὶ τῶν μηνῶν L ‖ 13 ψήφου L ‖ 14 ἡμέρας + τῆς L | καὶ[1] + τῆς L ‖ 15 τίς om. L

Ἡμέρα καὶ νὺξ ἤτοι νυχθήμερον ἐκεῖνό ἐστιν· ἡ τῆς σφαίρας κινουμένης ἀπὸ τοῦ αὐτοῦ σημείου εἰς τὸ αὐτὸ πάλιν ἀποκατάστασις, ὃ καὶ δι᾽ ὡρῶν τελειοῦται $\overline{\text{κδ}}$. τὴν ἀρχὴν δὲ τούτου ἕκαστον ἔθνος ἰδίᾳ ποιεῖται. οἱ Ἄραβες τὴν ἀρχὴν τοῦ νυχθημέρου ἀπὸ τῆς δύσεως κρατοῦσι τοῦ ἡλίου. ἐπειδὴ τοὺς μῆνας αὐτῶν ἀπὸ τῆς σελήνης νέας φανείσης κρατοῦσιν, οἱ καὶ διὰ τῆς κινήσεως ταύτης ἀριθμοῦνται. ἡ δὲ σελήνη μετὰ δύσιν ἡλίου φαίνεται νεά. οἱ Μουσουλμάνοι τὴν ἀρχὴν τῆς ἡμέρας πρὸ τοῦ ἀνατεῖλαι τὸν ἥλιον κρατοῦσι μέχρι καὶ τῆς δύσεως διότι καὶ τὴν νηστείαν τούτων οὕτως τελοῦσιν. οἱ ἀστρονόμοι τὴν ἀρχὴν τοῦ νυχθημέρου ἀπὸ τοῦ μέσου τῆς ἡμέρας κρατοῦσι διότι | καὶ οἱ ψῆφοι τῶν ἀστέρων εἰς τὸ μέσον ἐτέθησαν τῆς ἡμέρας. εἰ γὰρ f83L κατὰ τὴν ἀρχήν, ἐπεὶ ἡ ἡμέρα αὔξει καὶ μειοῦται, οὐκ ἔμελλεν εἶναι ὁ ψῆφος ὀρθός. καὶ ἡμέρα δὲ ἐξ ἐκείνου λογίζεται, ἀπ᾽ ἀνατολῆς ἡλίου μέχρι δύσεως, καὶ νὺξ ἡ μετὰ δύσιν ἡλίου μέχρι πάλιν τῆς τούτου ἀνατολῆς. καὶ περὶ τοῦ χρόνου τίς.

Χρόνος ἐκεῖνος· ἡ τοῦ ἡλίου κίνησις διὰ τοῦ ζῳδιακοῦ κύκλου ἀπὸ τοῦ αὐτοῦ ζῳδίου καὶ τῆς μοίρας εἰς τὸ αὐτὸ ζῴδιον καὶ μοῖραν ἀποκατάστασις, καὶ ἡ τῶν $\overline{\delta}$ καιρῶν τελείωσις, καὶ ἡ τῶν $\overline{\text{τξε}}$ ἡμερῶν καὶ δ᾽ παρά τι περιφορά. οὗτος ὁ χρόνος τοῦ ἡλίου. τῆς δὲ σελήνης οὗτος· ἡ μέση κίνησις τοῦ

1 Ἡμέρα . . . νυχθήμερον om. L | ἐστι + νυχθήμερον L | σφαίρας + ἐκείνης sed del. v ‖ 3 τὴν . . . τούτου] τοῦ νυχθημέρου οὖν τούτου τὴν ἀρχὴν L ‖ 4 ἐπειδὴ] διὰ τί ὅτι L ‖ 5 αὐτῶν] ἐκείνων L | φαινομένης L ‖ 6 ἡ δὲ σελήνη] αὕτη δὲ L ‖ 9 ἀπὸ + τῆς ἀρχῆς Vv ‖ 12 καὶ + ἡ L ‖ 13 περὶ + δὲ L ‖ 14 τίς om. Vv ‖ 17 ἡ^2 om. Vv ‖ 18 τῆς σελήνης δὲ Vv

ἡλίου ἀφαιρεῖται | ἀπὸ τῆς μέσης κινήσεως τῆς σελήνης. εἴ τι καταλειφθῇ, f39vV
αἱ $\overline{\text{τξ}}$ μοῖραι μερίζονται εἰς ἐκεῖνο. εἴ τι ἐξελθῇ, ἐκεῖνο ἡμέραι εἰσὶ τοῦ ἑνὸς μηνὸς τῆς σελήνης. εἰς τὴν σύνταξιν οὖν ταύτην ἐψηφίσθη τοῦτο καὶ εὑρέθησαν ἡμέραι τόσαι $\overline{\text{κθ}}$ λα΄ ν΄΄ ἡμέραι καὶ πρῶτα καὶ δεύτερα λεπτά· ταῦτα
5 ἐτηρήθησαν εἰς τὰ $\overline{\text{ιβ}}$ καὶ ἀνεφάνησαν αἱ ἡμέραι τῆς σελήνης τόσαι τοῦ ἑνὸς χρόνου· $\overline{\text{τνδ}}$ κβ΄ β΄΄ ἡμέραι καὶ λεπτὰ πρῶτα καὶ δεύτερα. ἀπὸ τούτου ἀνεφάνη ὅτι ἡ σελήνη διὰ τῶν ἡμερῶν τούτων τὰ $\overline{\text{ιβ}}$ διέρχεται ζῴδια. ἕτεροι τοὺς $\overline{\beta}$ τούτους χρόνους ἑνοῦσιν. τὸν οὖν χρόνον ἐκεῖνον διὰ τῆς κινήσεως ἀριθμοῦσι τοῦ ἡλίου, καὶ τὸν μῆνα διὰ τῆς κινήσεως τῆς σελήνης, καὶ τὰς μεγάλας
10 ἡμέρας καὶ τὰ πάσχα τούτων διὰ τοῦ ψήφου τῆς σελήνης ἀριθμοῦσιν. εἰς $\overline{\gamma}$ δὲ χρόνους | πολλάκις καὶ δύο, μέσον τῶν δύο ἡλίου καὶ σελήνης πλείστης f83vL
γίνεται ἔλλειψις καὶ πλειονασμός. εἷς γοῦν μὴν προστίθεται ὅπως πάλιν ἐξισωθῶσιν. εἰς τὸν χρόνον ἐκεῖνον εἰς ὃν οὐκ ἐγένετο πλεονασμὸς $\overline{\text{τνδ}}$ ἡμέραι εἰσίν, εἰς ὃν δὲ χρόνον ἐγένετο | πλεονασμὸς τοῦ μηνὸς, ἡμέραι τόσαι f275rv
15 $\overline{\text{τπδ}}$.

Οἱ Ἑβραῖοι δὲ καὶ Ἰνδοὶ τοῦτον τὸν χρόνον κρατοῦσιν. οἱ μὲν Ἑβραῖοι τὴν ἀρχὴν τοῦ χρόνου κρατοῦσιν ἡνίκα ὁ ἥλιος γένηται κατὰ σύνοδον τῇ σελήνῃ εἰς τὸν Ζυγόν, ἀπὸ τῶν $\overline{\text{κδ}}$ τοῦ Ἄπ μέχρι καὶ τῶν $\overline{\text{κζ}}$ τοῦ Αἰλούλ, οἱ

3 οὖν] δὲ V, om. v ‖ 4 α΄ λεπτὰ L | β΄ L ‖ 5 καὶ ἀνεφανήσαν] ὡς ἂν ἀναφανῶσιν L 5–6 τῆς ... χρόνου] τοῦ ἑνὸς χρόνου τῆς σελήνης εὑρέθη τόσον L | τόσαι + αἱ V ‖ 6 κβ΄] ιβ΄ Vv | α΄ L | β΄ Lv ‖ 7 διεξέρχεται v ‖ 8 ἥνωσαν L ‖ 11 δύο[1]] $\overline{\beta}$ LV | δύο[2]] $\overline{\beta}$ Lv ‖ 13 χρόνον + δὲ v ‖ 16–17 ἑβραῖοι[2]... κρατοῦσιν om. Vv ‖ 18 ζυγόν + κρατοῦσι τὴν ἀρχὴν τοῦ χρόνου Vv

δὲ Ἰνδοὶ ἡνίκα συνοδεύσῃ ὁ ἥλιος τῇ σελήνῃ εἰς τὸν Κριόν.

Κεφάλαιον β′. Περὶ τοῦ ἔτους, τοῦ μηνὸς καὶ τοῦ χρόνου, τί εἰσιν, πόθεν ἐγνώσθησαν καὶ διὰ τί ἐγένοντο.

Οἱ ἀρχαῖοι ἐκεῖνοι ἀστρονόμοι ἐπεὶ εἶδον ὅτι ἡ σελήνη αὔξει καὶ μειοῦται, τὸν ψῆφον τῶν μηνῶν καὶ τοὺς χρόνους ἀπὸ τούτου ἔγνωσαν, ὅτι οἱ τέσσαρες οὗτοι καιροὶ ἀεὶ πρὸς ἑαυτοὺς ἐπανακυκλοῦνται ἀφ' ὧν κατελήφθη ὁ χρόνος ἔτι τε καὶ ἀπὸ τῆς ποιότητος καὶ μεταβολῆς αὐτῶν — τῆς θερμότητος πρὸς τὴν ψυχρότητα, καὶ ἀνάπαλιν τῆς κατὰ τὸν αὐτὸν καὶ ἕνα καιρὸν ἤγουν χρόνον συμβαινούσης. ἠβουλήθησαν οὖν ἰδεῖν κατὰ ποῖον καιρὸν γίνεται τοῦτο. ἐπεὶ οὖν αἱ μέγισται τῶν ἡμερῶν | καὶ αἱ πράξεις πᾶσαι | εἰς τοὺς καιροὺς γίνονται, f84rL, f40rV διὰ τοῦτο ἐτέθη παρ' αὐτῶν τὸ ἔτος καὶ κρατεῖται.

Χρεὼν οὖν εἰπεῖν καὶ τί ἐστιν ἔτος. ἔτος τοῦτο ἀφ' οὗ οἱ χρόνοι ἀριθμοῦνται, ὅτι τηνικαῦτα μέγιστον ἔργον ἐγένετο ἀπὸ τῶν τοῦ οὐρανοῦ ἢ τῆς γῆς, οἷον ἐμφάνεια προφήτου ἢ εὐτυχία τινὸς ἢ ἀπώλεια κόσμου ἢ κίνησις γῆς καὶ καταποντισμὸς ἢ ἔκλειψις ἡλίου καὶ σελήνης τελεία ἢ ἕτερα ὅμοια τούτοις ἃ γίνονται χρόνων πλείστων παρῳχηκότων.

1 συνοδεύσῃ] γένωνται κατὰ σύνοδον L ‖ 2–3 τοῦ[1]...ἐγένοντο] ἐκείνου ὅτι τί ἐστι τὸ ἔτος καὶ διὰ τί ἐγένετο καὶ πόθεν ἐγνώσθη ὁ μὴν καὶ ὁ χρόνος L ‖ 5 ἔγνων Vv | $\overline{\delta}$ L ‖ 7 αὐτῶν + ἀπὸ L ‖ 8 καὶ ἕνα in marg. v ‖ 9 τοῦτο om. L ‖ 10 μέγιστοι codd. ‖ 11 ἐτέθη in marg. L ‖ 15 τελεία om. Vv

Οἷα οὖν ἐστι γενεά, τὸ ἔτος ταύτης ἰδίᾳ, καὶ ὁ χρόνος ὡσαύτως. οἱ χρόνοι τοίνυν ἐκεῖνοι μετὰ τῶν ἐτῶν ἐκείνων εἰσὶ συνηγμένοι διὰ τὴν κατάληψιν τοῦ τότε καιροῦ, ὡς ῥηθήσεται. ἰδίᾳ οὖν ἐτέθησαν ταῦτα.

Περὶ τῆς καταλήψεως τῶν ἐτῶν τῶν γενομένων δήλων καὶ κατὰ τὸν ἡμέτερον καιρόν. $\overline{\zeta}$ δέ εἰσιν. ἓν ἐκείνων τὸ τῶν Ἀράβων. ἡ ἀρχὴ δὲ τοῦ ἔτους τούτου ἀπὸ τῆς ἀρχῆς τοῦ χρόνου ἐκείνου ἐκρατήθη ἡνίκα ὁ Μωάμεθ ἀπὸ τοῦ Μακκᾶ ἀπῆλθεν εἰς τὴν Μαδιναίαν, καὶ οἱ χρόνοι τῆς σελήνης μετὰ τοῦ ἔτους τούτου ἐδεσμεύθησαν, καὶ οἱ μῆνες οὗτοι ἀπὸ τῆς σελήνης νέας φανείσης ἀριθμοῦνται καὶ πάντες οἱ Μουσουλμάνοι τῷ ψήφῳ τῷδε χρῶνται. καὶ ἡ ἀρχὴ τοῦ ἔτους τούτου ἡμέρα ἦν ς΄. αἱ ἡμέραι δὲ καὶ οἱ μῆνες τοῦ ἔτους τούτου οὐκ ἐξισοῦνται. καὶ ἡμεῖς δὲ | χάριν εὐκολίας τοῦτον τὸν f84v L
μῆνα μετὰ τοῦ μέσου ψήφου κρατοῦμεν, τῶν $\overline{\lambda}$ δηλονότι καὶ τῶν $\overline{\kappa\theta}$ μέχρι τελειώσεως τοῦ χρόνου. διὰ τί; διότι τὸ τεμμάχιον τῆς ἡμέρας πλέον τοῦ μέσου τῆς ἡμέρας ὄν, μία ἡμέρα κρατεῖται. διὰ τί οὖν ἐγένετο οὕτως; διότι ἡ κίνησις τῶν ἀστέρων ἐν τῇ βίβλῳ ταύτῃ εἰς τὸ ἔτος τοῦτο ἐτέθη. ἐὰν γὰρ αἱ ἡμέραι τῶν μηνῶν οὐκ ἦσαν δῆλαι, ὁ ψῆφος τῶν ἀστέρων πῶς ἂν ἔμελλε

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5 ἐκείνων + τὸ ἔτος L, ἐκεῖνο Vv ‖ 6 ὁ + ἀσεβὴς Vv | μωάμεδ L ‖ 8–9 φανείσης νέας σελήνης L ‖ 9 πάντες + δὲ L ‖ 10 ἀρχὴ + δὲ L ‖ 12 τῶν² om. L ‖ 13 χρόνου sed linea strictum, τοῦ sup. lin. v | τῆς + μιᾶς L ‖ 14 μέσου in marg. L

γενέσθαι; | καὶ τὰ ἔτη δὲ ταῦτα ἐξ ἐκείνων πῶς ἔμελλον ἐκβληθῆναι; εἰς τὴν f275vv
σύνταξιν ταύτην τὰ ὀνόματα τῶν μηνῶν εἰς τοῦτο τὸ ἔτος εἰς τὰ κανόνια
ἐτέθησαν οὕτως, ὅτι αἱ ἡμέραι | τῶν μηνῶν ἐκείνων εἰσὶν ἐκεῖ καὶ ἡνωμέναι f 40vV
καὶ διακεχωρισμέναι.

Δεύτερον ἔτος ἀπὸ τῶν ἐτῶν ἐκείνων, τὸ τοῦ Μωταδίτ.

Οἱ χρόνοι ἐκείνου τοῦ ἔτους οἱ χρόνοι τῶν Ῥωμαίων. καὶ οἱ μῆνες μετὰ τοῦ ψήφου καὶ τῶν ὀνομάτων τῶν Περσῶν. καὶ ἡ ἀρχὴ τοῦ ἔτους τούτου ἡ ια΄ τοῦ Ἀζυράν. καὶ αἱ κλοπιμαῖαι $\overline{\varepsilon}$ ἡμέραι εἰς τὸ τέλος τοῦ Ἀπὰν μηνὸς τίθενται. διὰ τί; ὅτι καὶ οἱ ἀρχαῖοι ἐκεῖνοι οἱ λατρεύοντες τῷ πυρὶ οὕτως ἔθηκαν ταύτας.

Τρίτον. Τὸ ἔτος τῶν Ῥωμαίων.

Οἱ χρόνοι τούτου οἱ χρόνοι τοῦ ἡλίου εἰσίν. καὶ οἱ μῆνες τούτου | μετὰ f85r L
Συρικῆς διαλέκτου. ἡ ἀρχὴ δὲ τοῦ ἔτους τούτου ἡμέρα β΄. καὶ ἕκαστος χρόνος τούτων, ἡμέραι $\overline{\tau\xi\varepsilon}$ δ΄. τὸ δ΄ οὖν ἐκεῖνο ἡνίκα γένηται πλέον τοῦ μέσου τῆς ἡμέρας, μία ἡμέρα κρατεῖται. ἐκείνη δὲ ἡ περιττὴ ἡμέρα εἰς τὸ

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1 ἐκβληθῆναι + περὶ τῶν ψήφων δὲ τούτων. πῶς ἐγένετο ἐξ ἐκείνου ῥηθήσεται ὅτι τῆς σελήνης νέας φανείσης ὁ ψῆφος ταύτης πῶς ὀφείλει κρατηθῆναι; L ‖ 5 δεύτερον ἔτος] ἕτερον L | ἐκείνων + β ἔτος L ‖ 6 χρόνοι + οὖν L ‖ 14 πλέον γένηται v

τέλος προστίθεται τοῦ Συμπὰτ μηνός. καὶ ὁ χρόνος ἐκεῖνος ἡμέραι τόσαι· $\overline{\text{τξς}}$. ἀπὸ τῶν χρόνων οὖν τοῦ ἡλίου τῶν ὡς θεμέλιον κρατουμένων κατὰ $\overline{\text{ρι}}$ χρόνους μία ἡμέρα περιττεύει. ἐτέθησαν οὖν τὰ ὀνόματα καὶ αἱ ἡμέραι τῶν μηνῶν εἰς δύο τόπους πλησίον τῶν μηνῶν ἐκείνων καὶ ἡνωμέναι καὶ διῃρημέναι. χρείας τοίνυν γενομένης, ἐκεῖθεν ζητοῦνται καὶ οἱ μῆνες καὶ αἱ ἡμέραι.

Τέταρτον. Τὸ ἔτος τῶν Περσῶν.

Τοῦτο ἐτέθη εἰς τὴν ἡμέραν τοῦ Ἰασδακέρδη Σαριάρ. ἡ ἀρχὴ τοῦ ἔτους ἐκείνου ἡμέρα γʹ. τὸ ἔτος δὲ τοῦτο κατὰ $\overline{\beta}$ τρόπους ἐτέθη. εἷς ἐκεῖνος διὰ τὸ σέβας ἐκείνων, ὅπερ ἐστὶ πασιτά. καὶ καθ' ἕκαστον χρόνον $\overline{\text{τξε}}$ ἡμέρας κρατοῦσιν οὗτοι ἀεί, καὶ καθ' ἕκαστον μῆνα ἡμέρας $\overline{\lambda}$. αἱ κλοπιμαῖαι δὲ $\overline{\varepsilon}$ ἡμέραι εἰς τὸ τέλος τοῦ Ἀπὰν τίθενται. τὰ ὀνόματα δὲ τῶν μηνῶν καὶ τῶν ἡμερῶν τοῦ ἔτους ἐκείνου ἐτέθησαν εἰς τὸ κανόνιον. καὶ τὸ ἕτερον δὲ ἔτος ἐτέθη διὰ τὰς ἐργασίας τῶν $\overline{\delta}$ καιρῶν καὶ τῆς ἀρχῆς τῶν ἐργασιῶν, ὅπερ λέγεται καπισά. τὸ ἔτος τοῦτο | εἰς πολλά τινα τίθεται. ἓν ἐκεῖνο· f85vL
ὅτι ἕκαστος μὴν $\overline{\lambda}$ ἔχει ἡμέρας, καὶ ἑκάστη ἡμέρα ἴδιον ἔχει ὄνομα. καὶ αἱ κλοπιμαῖαι $\overline{\varepsilon}$ ἡμέραι εἰς τὸ τέλος | τοῦ χρόνου τίθενται. δεύτερον δὲ τοῦτο· f41r V
ὅτι ἀεὶ ἡ ἡμέρα τῆς εἰσελεύσεως τοῦ ἡλίου εἰς τὸν Κριόν, ἤγουν ἡ νέα ἀπὸ

3 μία] $\overline{\alpha}$ L ‖ 4 $\overline{\beta}$ LV ‖ 17 δὲ om. L ‖ 18 ἡ^1 sup. lin. v

τῶν ἡμερῶν, ἔστι τοῦ ἔτους τούτου τῆς ἀρχῆς τοῦ Φαρβα⟨ρ⟩δὶν μηνός. τὸ τρίτον· ὅτι ὅταν γένηται ὁ χρόνος καπισά, μία ἡμέρα εἰς τὸ τέλος ἐκείνου ⟨οὐ⟩ προστίθεται. εἰς τοὺς $\overline{\rho\kappa}$ δὲ χρόνους τῶν ἡμερῶν τούτων συνηγμένων εἷς μὴν γίνεται περισσός. διὰ τί; ὅτι ἡ περίσσεια τοῦ χρόνου τοῦ ἡλίου εἰς τὸν χρόνον τῆς σελήνης | κατὰ τοῦτον τὸν καιρὸν ἐγγὺς τῶν $\overline{\lambda}$ ἡμερῶν ἐστιν. f276rv

Οἱ μῆνες οὖν τοῦ ἔτους τούτου εἰς δύο διῃρέθησαν χάριν ἐργασίας. ἓν ἐκεῖνο· ὅτι οἱ μῆνες τούτου ἐξισοῦνται μετὰ τῶν $\overline{\delta}$ καιρῶν. καὶ ἡ ἀρχὴ τοῦ χρόνου ἐκείνου ὁ Φαρβα⟨ρ⟩δίν, καὶ εἰς τὸ τέλος τούτου ὁ Ἰσφανταρδμάδ. καὶ αἱ κλοπιμαῖαι $\overline{\varepsilon}$ ἡμέραι εἰς τὸ τέλος τοῦ Ἰσφανταρδμὰδ τίθενται. ὡσαύτως καὶ αἱ ἡμέραι αἱ μεγάλαι τῶν ἑορτῶν καὶ αἱ δῆλαι εἰς τούτους τοῦς μῆνας τοῦ καπισά. τὸ δεύτερον· ὅτι οἱ μῆνες κατὰ τοὺς $\overline{\delta}$ καιροὺς εἰς ἕνα τόπον οὐ τίθενται. καὶ εἰς τοὺς $\overline{\rho\kappa}[\overline{\delta}]$ χρόνους εἷς μὴν εἰς τὸν τόπον τοῦ πρώτου μηνὸς τίθεται. ἡ τάξις δὲ τούτου οὕτως ἐστίν· ὅτι οἷος μὴν κατὰ τὴν ἀρχὴν τοῦ ἔαρος πάλιν ὕστερον τοῦ χειμῶνος προστίθεται καὶ κατὰ $\overline{\text{١٢٦٢}}$ χρόνους | ὁ f86r L πρῶτος μὴν ὁ Φαρβαρδὶν πάλιν εἰς τὸν ἴδιον τόπον εὑρίσκεται. καὶ ἡ ἀρχὴ τῆς πρώτης ἡμέρας τοῦ Φαρβαρδὶν ἡ εἰσέλευσις τοῦ ἡλίου εἰς τὸν Κριόν· ἤγουν οὕτω γίνεται.

Ἐκεῖνος τοίνυν ὁ ἄνθρωπος, ὃς τέθεικε τοῦτο τὸ ἔτος, οὕτω φησίν·

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3 οὐ] ﻻ Ar. ‖ 4 περιττός L | διότι L ‖ 6 $\overline{\beta}$ L ‖ 8 χρόνου] μηνὸς LVv, أَلسَّنَةُ Ar. ‖ 11 $\overline{\beta}$ L ‖ 12 ά L ‖ 15 φαρβαδὶν L ‖ 16 φαρβαδὶν L | φαρβαρδὶν + πάλιν εἰς τὸν ἴδιον τόπον εὑρίσκεται sed cancell v | ἡ om. L ‖ 18 τὸ ἔτος τοῦτο L

ὅτι κατὰ τὴν ἀρχὴν τῶν πρώτων ἀνθρώπων ἐκείνων ἡνίκα ἐγένετο ὁ κατακλυσμός, καὶ οἱ δύο μῆνες τοῦ Φαρβαρδίν· ὁ εἷς ἐκεῖνος ὁ εἰς τὸν ἴδιον τόπον ἱστάμενος, καὶ ὁ ἕτερος ὁ ἀπὸ τόπου εἰς τόπον κινούμενος κατ' ἐναντίον. καὶ κατὰ τὴν ἡμέραν τῆς ἀρχῆς τοῦ μηνὸς ἐκείνου ὁ ἥλιος εἰς τὴν ἀρχὴν ἦν τοῦ Κριοῦ. καὶ ἀπ' ἐκείνου δὲ τοῦ καιροῦ μέχρι τῆς ἀρχῆς τοῦ ἔτους τῶν Περσῶν τόσοι | παρῆλθον χρόνοι· ͵ϛ ͵γ ͵α. εἰς τὸν χρόνον δὲ f41v V τῆς βασιλείας τῶν Περσῶν κατὰ τὸν Ἀδδὲρ μῆνα ὁ ἥλιος εἰς τὸν Κριὸν εἰσήρχετο. καὶ ἐκεῖνος ὁ Ἀδδὲρ μὴν κατ' ἐναντίον ἦν τοῦ Φαρβαρδὶν τοῦ ἱσταμένου. καὶ αἱ ε̅ ἡμέραι αἱ κλοπιμαῖαι εἰς τὸ τέλος τοῦ Ἀπὰν μηνὸς τίθενται κατ' ἐναντίον τοῦ Ἰσφανταρδμὰδ τοῦ ἱσταμένου. καὶ κατὰ τὴν ἀρχὴν τοῦ ἔτους τοῦ Ἰασδακέρδη ὁ Ντάϊ μὴν κατ' ἐναντίον ἦν τῆς ἀρχῆς τοῦ ἱσταμένου Φαρβαρδίν. οὗτος δὲ ὁ μὴν λέγεται παραμονή.

Χρέων οὖν εἰδέναι τοῦτον τὸν μῆνα μετὰ τοῦ ψήφου. κρατοῦνται οἱ τετελειωμένοι | χρόνοι τοῦ ἔτους τοῦ Ἰασδακέρδη, καὶ ἑνοῦνται τούτοις ἀεὶ f86v L ρκγ β΄. εἴ τι εὑρεθῇ, διπλασιάζεται. καὶ αὖθις εἴ τι εὑρεθῇ, μερίζεται εἰς τὰ σμθ. εἴ τι ἐξέλθῃ, μῆνές εἰσι τοῦ καπισά. ἐκεῖνο καταλιμπάνεται ἀπὸ τοῦ Ἀδδὲρ μηνός. ἔνθα οὖν καταλήξει ὁ ψῆφος, καὶ αἱ ε̅ κλοπιμαῖαι ἡμέραι προστίθενται τῷ τέλει τοῦ μηνὸς τούτου. ἔπειτα τηρεῖται οἷος μήν ἐστι πρὸ ἐκείνου. ἐκεῖνος εἴπερ ἐξισοῦται τούτῳ, οὗτος μὴν λέγεται τῆς παραμονῆς.

2 φαρβαδίν L | ὁ^1 om. L ‖ 3 ὁ^2 om. v ‖ 4 ἐναντίον + ἦσαν L ‖ 7 τοῦ βασιλέως Vv ‖ 8 φαρβαδὶν L ‖ 11 ἰασδακέρ$^{\delta}$ Vv ‖ 12 φαρβαδίν L ‖ 17 ἀδὲρ Vv

οὗτος οὖν ὁ ῥηθεὶς ψῆφος κατὰ τὸ τέλος ἦν τῆς τῶν Περσῶν εὐτυχίας. τῶν Ἀράβων δὲ ὑπερισχυσάντων τούτων κατελείφθη ἡ τάξις τούτου, καὶ αἱ κλοπιμαῖαι δὲ πέντε ἡμέραι κατελείφθησαν εἰς τὸ τέλος τοῦ Ἀπὰν μηνὸς μέχρι τοῦ χρόνου ἐκείνου τῶν Περσῶν τοῦ ͵γϡ | ἀπὸ τοῦ ἔτους τοῦ Ἰασδακέρδη. ἐκείνη f276vv
5 οὖν ἡ περιφορὰ ἐτελειώθη τηνικαῦτα, τότε καὶ ὁ ἥλιος εἰς τὴν ἀρχὴν ἐγένετο τοῦ Κριοῦ κατὰ τὴν ἀρχὴν τοῦ Φαρβα⟨ρ⟩δὶν ὄντος τούτου κατ' ἐναντίον τοῦ ἱσταμένου μηνός. ἐκείνας οὖν τὰς ε̅ κλοπιμαίας ἡμέρας τινὲς τῶν Περσῶν εἰς τὸ τέλος τοῦ Ἰσφανταρδμὰδ τεθείκασιν. ἄλλοι δὲ ταύτας εἰς τὸ τέλος τοῦ Ἀπὰν κατέλειψαν. διὰ τί; διότι οἱ λατρεύοντες τῷ πυρὶ προσεδόκησαν ὡς,
10 ἄλλως | γενομένου | καὶ τῶν ἡμερῶν μετατεθεισῶν, τὸ σέβας ἐκείνων μέλλει f42rV, f87rL καταστραφῆναι, ὅπερ οὐκ ἦν πρὸς ἀλήθειαν.

Ὡς γοῦν ἀνέτειλεν ὁ ἥλιος εἰς τὸ φ΄ ἔτος τῶν Περσῶν, ὁ ἥλιος ἦν εἰς τὴν ἀρχὴν τοῦ Κριοῦ, εἰς τὸ μῆκος τῶν ρ̅, κατὰ τὴν ἀρχὴν τοῦ Ἀρδεμπεὲστ μηνὸς τοῦ μὴ ἱσταμένου. καὶ ἐκεῖναι αἱ ε̅ αἱ κλοπιμαῖαι ἡμέραι κατὰ τὸ
15 τέλος τοῦ μὴ ἱσταμένου Φαρβαρδὶν ἐτέθησαν ὅτι ἐξισώθησαν ὁ πρῶτος καὶ μὴ ἱστάμενος μὴν ὁ Ἀρδεμπεὲστ μετὰ τῆς πρώτης τοῦ ἱσταμένου Φαρβαρδὶν μηνός. κατὰ πάντα δὲ χρόνον, ὅς ἐστι παρὰ τῶν τεθέντων χρόνων εἰς τόδε

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1 οὖν om. L | τῆς εὐτυχίας ἦν τῶν περσῶν L ‖ 3 ε̅ L | τὸ] τοῦ V 3–4 ἐκείνου τοῦ χρόνου v ‖ 4 ͵γεϡ L | ἰασδακέρ$^{\delta}$ LVv ‖ 5 ἐτελειώθη] ἐπληρώθη L ‖ 9 διότι] δι' ἐκεῖνο ὅτι L | ὡς] ὅτι L ‖ 11 πρὸς] εἰς L ‖ 12–13 εἰς τὴν ἀρχὴν ἦν v ‖ 14 μὴ om. Vv | αἱ^{2} om. L ‖ 15 βαδὶν L, φαρ sup. lin. L^{2} | ά L ‖ 16 ά L | φαρβαδὶν L, φαρμαδὶν v ‖ 17 παρὰ] πρὸ L

τὸ κανόνιον, ἐκεῖνος ὁ χρόνος ἐστὶ τοῦ καπισᾶ μηνὸς ιγ΄, καὶ ὁ Φαρβα⟨ρ⟩δὶν μὴν εἰς τὸν χρόνον ἐκεῖνον β΄ συμβαίνει, ὁ εἷς εἰς τὴν ἀρχὴν τοῦ χρόνου, | καὶ ὁ ἕτερος εἰς τὸ τέλος. εἰς ἐκεῖνον οὖν τὸν ὕστερον Φαρβα⟨ρ⟩δὶν οὐ f277rv τίθενται αἱ δῆλαι καὶ μέγισται ἡμέραι τῶν ἑορτῶν. ἐκεῖνος ὁ χρόνος $\overline{\text{٣٢ ≦}}$ ἡμέραι ἐστίν. ὅταν οὖν ἐξισώθησαν | ἡ ἀρχὴ τοῦ μὴ ἱσταμένου Ἀρδεμπεὲστ f42v V καὶ ἡ ἀρχὴ τοῦ ἱσταμένου Φαρβα⟨ρ⟩δὶν, ἡμέρα ἑβδόμη ἦν ιβ΄ τοῦ μηνὸς τοῦ Ῥαμπιαλάχειρ, χρόνοι Ἀράβων $\overline{\text{≦٢≦}}$. κατ' ἐκείνην τὴν ἡμέραν ὁ ἥλιος εἰς τὴν ἀρχὴν τοῦ Κριοῦ. ἀπὸ τοῦ ἔτους οὖν τοῦ κατακλυσμοῦ μέχρι τότε παρῆλθον χρόνοι $\overline{\text{۱۸۳٦}}$. καὶ | μέχρι τοῦ ἔτους τοῦ Ἰασδακέρδη χρόνοι τόσοι· $\overline{\text{≦٥٥}}$. καὶ f88rL μέχρι τοῦ ἔτους Ἀλεξάνδρου $\overline{\text{۱۱۲٦}}$. μέσον τοίνυν τῶν μηνῶν ἐπεὶ ἐγένετο ψεῦδος δι' ἐκεῖνο ὅτι ἡ εὐτυχία ἐκείνων μετετράπη, οὗτος ὁ ψῆφος κατελείφθη κενός.

Ἐτέθη οὖν παρ' ἡμῶν κανόνιον εἰς ὃ ἐτέθησαν οἱ μῆνες ἐκείνου τοῦ θεμελίου. καὶ οἱ καταλειφθέντες μῆνες κἀκεῖνοι ἐτέθησαν ἐκεῖ. εἰς τοῦτο δὲ τὸ κανόνιον καὶ δύο ἔτη ἐτέθησαν· ἓν ἔτος τῶν Ῥωμαίων, καὶ τὸ ἕτερον τῶν Περσῶν. χρόνοι ἀτελεῖς.

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1 φαρβασὶν V, φαρβαδὶν v, βαδὶν L, φαρ sup. lin. L^2 ‖ 2 β΄] δεύτερον codd. pro δὶς ‖ 3 φαρβασὶν v ‖ 4 μέγιστοι codd. ‖ 5 ἀρδεμπεέστου v ‖ 6 ζ L ‖ 9 $\overline{\text{٢٨٣٧}}$ v | ἰασδακὲρ$^{\delta}$ V, ἰασδακερ$^{\delta}$ v ‖ 10 $\overline{\text{۱۱۲۲}}$ v ‖ 13 οἱ om. L ‖ 15 $\overline{\beta}$ L

KanÔnion naciz¦k kat¦ Pšrsaj								
mÂnej tÁj paramonÂj				œtoj tîn `Rwma…wn				
[1]mšraj[a] ˜bdom£doj	Ðrm¾[b] ¢rcÁj[c] toà crÔnou	yÁfoj	of[d] mÁnej toà[d] qemel…ou ¢rca…wn	œtoj[e] toà 'Iasdakšrdh ¢tele…wton[f]		mÁnej `Rwma…wn	crÔnoi `Rwma…wn ¢teleˆj	mÁnej toà kapis© ¢teleˆj ¢pÔ toà a/ œtouj[g] 'Iasdakšrdh
j	a	Cornt£t[h]	Farbard…n[i]	٣٧٦	id	'Ad£r	١٣١٨	d
z	a	T…r[j]	'Ardempešst[k]	٤٥٥	ig	'Ad£r	١[ع][ع]٢	e
z	a	Mournt£t[l]	Cornt£t[h]	٦٢[ع]	ib	'Ad£r	١٤٦٢[t]	j
a	a	Sareb£r[m]	T…r[j]	٧[ع]٩	ia	'Ad£r	١٦٩١	z
a	a	Mšer[n]	Mournt£t[l]	٨٧٣	i	'Ad£r	١٨١٤	h
b	a	'Ap£n[o]	Sareb£r[m]	٩٩٨	q	'Ad£r	١٩[ع]٥	q
b	a	'Addšr[p]	Mšer[n]	١١٢٢	h	'Ad£r	٢٥٦[ع]	i
g	a	Nt£i[q]	'Ap£n[o]	١٢[ع]٧	z	'Ad£r	٢١٨٩	ia
g	a	Mpacm£n[r]	'Addšr[p]	١٣٧١	j	'Ad£r	٢٣١٣	ib
d	a	'Isfant¦r dm£d[s]	Nt£i[q]	١[ع]٩٦	e	'Ad£r	٢[ع]٣٨	ig
d	a	Farbard…n[i]	Mpacm£n[r]	١٦٢٥	d	'Ad£r	٢٤٦٢	id
e	a	'Ardempešst[k]	'Isfant¦r dm£d[s]	١٧[ع]٤	g	'Ad£r	٢٢٨٧[u]	ie
e	a	Cornt£t[h]	Farbard…n[I]	١٨٦٩	b	'Ad£r	٢٨١١	ij
j	a	T…r[j]	'Ardempešst[k]	١٩٩[ع]	a	'Ad£r	٢٩٣٦	iz

a.[1]merîn V, + tÁj v | b. Ðrm¾ om. v | c. ¢rc¾ v | d. of et toà om. v | e. crÔnoi v | f. ¢teleiètoi v | g. œtouj + toà v | h. cort£t v | i. farbard…n LV | j. tÚr v | k. ¢rtipešst v | l. mert£t v | m. sacrioÚr v | n. mšer v | o. ¢panm£ v | p. ¥derma v | q. dÁma v | r. pšcman v | s. ¢sfant£r v | t. mistake for ١٤٦٦ | u. mistake for ٢٦٨٧

Πέμπτον ἀπὸ τῶν δήλων τούτων ἐτῶν τὸ ἔτος τοῦ Μελιξᾶ. καὶ γὰρ προσταγὴ ἐγένετο τοῦ τοιούτου Σουλτάνου Μελιξᾶ ὡς ἂν τὰ αὐθημερινὰ θῶσιν εἰς τὸ ἔτος τούτου κατὰ τὴν ἀρχὴν τῶν χρόνων τοῦ ἔτους ἐκείνου ἡνίκα ὁ ἥλιος εἰσέρχεται εἰς τὴν ἀρχὴν τοῦ Κριοῦ. καὶ ἡ ἀρχὴ ἑκάστου μηνὸς οὕτως ἵν' ᾖ ὅτε ὁ ἥλιος ἀπὸ ζῳδίου μεταβαίνει εἰς ζῴδιον καὶ αἱ μέσαι κινήσεις τῶν ἀστέρων ἀπὸ τῶν ἑτέρων ἐτῶν ἐκβάλλονται, καὶ διὰ τὴν εὐκολίαν τὸ αὐθημερινὸν εἰς τοῦτο τὸ ἔτος τίθεται. καὶ ἡ ἀρχὴ τοῦ ἔτους τούτου ἡμέρα α΄ ἦν ἀπὸ τοῦ μηνὸς τοῦ Σαμπὰν χρόνῳ $\overline{\text{ιγ٦٨}}$ ἀπὸ τοῦ ἔτους τῶν Ἀράβων. εἰς τοὺς $\overline{\text{٢٢٥}}$ χρόνους $\overline{\text{νγ}}$ ἡμέραι καπισά εἰσι· $\overline{\text{με}}$ γὰρ καπισὰ ἐκεῖναί εἰσιν ὅτι εἰς τοὺς $\overline{\text{δ}}$ χρόνους μία ἡμέρα γίνεται καπισά, καὶ $\overline{\text{η}}$ ἡμέραι ἐκεῖναί εἰσιν | ὅτι κατὰ $\overline{\langle\text{κ}\rangle\text{ε}}$ χρόνους μία ἡμέρα γίνεται καπισά, ὡς συνάγεσθαι πάσας $\overline{\text{νγ}}$. f88vL

Ἕκτον ἀπὸ τῶν δήλων τούτων ἐτῶν τὸ ἔτος | τοῦ Ναβουχοδονόσορ τὸ πρῶτον. οἱ χρόνοι ἐκείνου Αἰγυπτιακοὶ καὶ μῆνες Αἰγυπτίων. ἡ ἀρχὴ τοῦ ἔτους ἐκείνου ἡμέρα ε΄. μέσον τοῦ ἔτους τούτου καὶ μέσον τοῦ ἔτους Ἀράβων, ἡμέραι τόσαι· $\overline{\text{ιγ٩٩٨٥٢}}$. καὶ μέσον τοῦ ἔτους τούτου καὶ τῆς ἀρχῆς τοῦ ἔτους τοῦ Ἰασδακέρδη τόσαι παρῆλθον ἡμέραι· $\overline{\text{ϡ٥٣ιγ٢ϡ}}$. f43rV

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4 εἰς] κατὰ L ‖ 5 οὕτως om. v ‖ 7 ἀκολίαν v ‖ 8 χρόνοι codd. ‖ 9 εἰσὶ καπισᾶ L ‖ 13 ἐτῶν om. L ‖ 14 ά L ‖ 15 μέσον τοῦ ἔτους om. Vv

Ἕβδομον ἀπὸ τῶν δήλων τούτων ἐτῶν τὸ ἔτος τοῦ Φιλίππου τοῦ ἀδελφοῦ τοῦ Ἀλεξάνδρου ἑτέρου τινός. μέσον τούτου τοῦ ἔτους καὶ τοῦ ἔτους τῶν Περσῶν ἡμέραι τόσαι· ϡϡϡ ϡϡϡ ϡϡϡ. ὁ εἷς χρόνος τῶν Αἰγυπτίων ἡμέραι ϡϡϡ.

Κεφάλαιον γ΄. Περὶ τῆς καταλήψεως ὅτι αἱ ἀρχαὶ τῶν χρόνων καὶ τῶν μηνῶν τούτων τῶν ἐτῶν κατὰ ποίαν ἡμέραν εἰσέρχονται τῆς ἑβδομάδος καὶ τῆς ἐκβολῆς τοῦ ἑνὸς ἔτους ἀπὸ τοῦ ἑτέρου μετὰ τοῦ ψήφου. τοῦτο οὖν εἰς τέσσαρας διαιρεῖται διαιρέσεις·

Διαίρεσις α΄. Περὶ τῆς ἀρχῆς τῶν χρόνων | καὶ τῶν μηνῶν κατὰ ποίαν f277vv
ἡμέραν εἰσέρχονται τῆς ἑβδομάδος μετὰ τοῦ ψήφου.

Εἰ βούλει εἰδέναι τὴν ἡμέραν τῆς ἑβδομάδος καὶ τὴν ἀρχὴν τοῦ χρόνου καὶ τὰς ἀρχὰς τῶν μηνῶν τοὺς τετελειωμένους χρόνους οὗ βούλει ἔτους ἀεὶ τήρει, ἤγουν κροῦε.

7 δ̄ L ‖ 11 τὰς ἀρχὰς om. Vv | τετελειωμένους + χρόνους LVv | ἀεὶ om. Vv ‖ 12 ἤγουν κροῦε om. Vv

f89L

| tÕ œtoj tîn 'Ar£bwn	tÕ œtoj tîn `Rwma…wn	tÕ œtoj tîn Persîn		tÕ œtoj tÕ SoultanikÒn
		pasit£	kapis£	
e„j t¦ rla e‡ ti eØreqÍ id prost…qentai toÚtoij ¢e…. e•ta tÕ prosteq•n mer…zetai e„j t¦ l. kata-limp£nontai oân t¦ temm£cia. tÕ d• eØreq•n ™ke‹no thre‹tai.	e„j t¦ e e‡ ti eØreqÍ b[a] toÚt J[b] prost…qentai. kaˆ t¦ b œpeita mer…zontai e„j t¦ d[c]. t¦ temm£cia kata-limp£nontai. e„ d ' oÙ kataleifqÍ ti[d], Ð crÒnoj ™ke‹noj[e] kapis£[f]. e‡ ti d• eØreqÍ, ™ke‹no thre‹tai.		oÙd•n prost…qentai[g] met¦ toà y»fou ˜k£stou mhnÕj toà kapis© ¢n¦ b.	e„j t¦ sog e‡ ti[h] eØreqÍ prost…qetai toÚt J rb. kaˆ p£lin e‡ ti eØreqÍ e„j t¦ sk mer…zetai. tÕ kataleifq•n e„j tÕ mšson katalimp£netai, kaˆ tÕ eØreq•n ful£ttetai.

a. dÚo v | b. toÚtoij v | c. tšssara v | d. ti + e„j tÕ mšson L | e. ™ke‹noj Ð crÒnoj L | f. katis© v | g. prost…qetai v | h. ti + d• Vv

ἔπειτα πάλιν προστίθεται εἰς ἐκεῖνα τὸ εὑρεθὲν καὶ τηρεῖται f43v V

	πασιτά	καπισά	πασιτά	καπισά	
ἕξ	ἕν	δύο	τρία	τρία	ἕν

ἐκεῖνο τὸ καταλειφθὲν ὕστερον εἰς τὴν περίσσειαν μερίζεται εἰς τὰ $\overline{\zeta}$. τὸ καταλειφθὲν ἡμέρα τῆς ἑβδομάδος τῆς ἀρχῆς τοῦ χρόνου.

Εἰ βούλει εἰδέναι τὰς ἡμέρας τῆς ἑβδομάδος ποῖαι κατὰ τὴν ἀρχὴν τῶν μηνῶν κατ' ἐκεῖνον τὸν χρόνον, πρόσθες κατὰ μῆνα τὸν παρελθόντα ἀπ' ἐκείνου τοῦ χρόνου.

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5 ἡμέραι Vv ‖ 7–8 θόντα... χρόνου in marg. V

f89v
L

| [a]tÕ œtoj tîn 'Ar£bwn	tÕ œtoj tîn `Rwma…wn[a]	[a]tÕ œtoj tîn Persîn		tÕ œtoj SoultanikÒn
		[a]pasit£	[a]kapis£	
di¦ ›na mÁna dÚo[b], kaˆ di¦ ¥llon[e], ›n. oÛtwj mšcri telouj.	kat¦ mÁna di¦ $\bar{l}$ ¹merîn teleioÚmenon dÚo prost…qentai. tÕn plšon d• tîn[d] $\bar{l}$ Øperba…nonta toÚtJ tr…a[e] prost…qentai. e„j tÕn crÒnon toà kapis© e„j tÕn Soump¦t mÁna $\bar{a}$. e„j d• tÕn crÒnon toà pasit©[f] oÙdšn. kaˆ e„j tÕn[g] Soum¦t oÙdšn.	di¦ ›na ›kaston mÁna dÚo prost…qentai kaˆ e„j tÕn 'Ap¦n oÙdšn.	kaq' ›kaston mÁna ¢n¦ $\bar{b}$ mšcri teleièsewj toà mhnÔj toà Nomp£t	kaq' ›kaston mÁna Ôj teleioàtai di¦ kq ¹merîn $\bar{a}$, kaˆ e„j tÕn di¦ $\bar{l}$ ¹merîn teleioÚmenon $\bar{b}$ prost…qentai, kaˆ e„j tÕn d…a la ¹merîn teleioÚmenon[h] $\bar{g}$[i] prost…qentai, kaˆ e„j tÕn d…a lb ¹merîn teleioÚmenon $\bar{d}$ prost…qentai.

a. om. Vv | b. $\bar{b}$ L | c. di' ¥llon Vv | d. tÕn Vv | e. $\bar{g}$ L | f. om. L | g. om. L | h. ¹merîn teleioÚmenon om. LV | i. $\bar{g}$ + $\bar{g}$ L in fin. lin.
Column 4, tÕ œtoj SoultanikÒn, written below columns 1 to 3 in L.

| εἴ τι εὑρεθῇ ἀπὸ τῆς περισσείας, ἐκεῖνο μερίζεται εἰς τὰ $\overline{\zeta}$, ἤγουν ἀνὰ $\overline{\zeta}$ f278rv καταλιμπάνεται ἵνα ἀπὸ τῶν ἡμερῶν τῆς ἑβδομάδος ἀναφανῇ ποία ἐστὶν ἡ ἀρχὴ τοῦ μηνὸς ἐκείνου.

Δεύτερα διαίρεσις. Εἰς τὴν ποίησιν τῶν ἡμερῶν τῶν χρόνων καὶ τῶν ἡμερῶν τῶν μηνῶν εἰς ἕκαστον ἔτος.

Χρείας γενομένης γενέσθαι τὴν μέθοδον ταύτην, πρὸ ἐκείνου δεῖ γινώσκειν ὅτι ἡ ἀρχὴ τοῦ χρόνου ἐκείνου καὶ ἡ ἀρχὴ τοῦ μηνὸς | κατὰ ποίαν ἡμέραν f90rL συμβαίνει ἀπὸ τῶν ἡμερῶν τῆς ἑβδομάδος. ἐκείνη δὲ ἡ ἡμέρα ὀφείλει εἶναι δήλη ἀπὸ τοῦ ψήφου τῶν ἡμερῶν τῆς ἑβδομάδος. ταῦτα γὰρ χρεῖα διὰ τὸ ἔτος τῶν Ἀράβων δι᾽ ἐκεῖνο, ὅτι ὁ ψῆφος τῶν μηνῶν ἐκείνων εἰς δύο ψήφους κρατεῖται. εἷς ἐκεῖνος τῆς σελήνης φανείσης μετὰ σύνοδον νεωστί, καὶ ἕτερος ἵν᾽ ᾖ ὁ ψῆφος $\overline{\kappa\theta}$ ἢ $\overline{\lambda}$. οὗτος λέγεται ψῆφος μέσος, ὁ ψῆφος δὲ τῶν ἡμερῶν τῶν ἑβδομάδων διὰ τὸν μέσον ψῆφον ἐκρατήθη. ἡ ζητουμένη οὖν ἡμέρα διὰ τοῦ ψήφου τούτου κατορθοῦται. | fin. f43vV

Ὅταν βούλει ποιῆσαι ἡμέρας καὶ χρόνους εἰς οἷον βούλει ἔτος, τοὺς τετελειωμένους τούτους χρόνους τήρει ἤγουν κροῦσε.

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1 εὑρεθεῖ L ‖ 4 β΄ V | τὴν ποίησιν] τὰ ποιήματα L ‖ 6 ταύτην] πάντων v,ταύτην sup. lin. v | ἐκείνου] τούτου Vv ‖ 8 ἀπὸ τῶν ἡμερῶν om. Vv ‖ 9 τοῦ ψήφου om. Vv ‖ 10 ὅτι] ἐπειδὴ Vv | μηνῶν] γραμμάτων v, cancell et μηνῶν sup. lin. v | $\overline{\beta}$ L ‖ 11 νεωστί] πρώτως Vv ‖ 12 τῶν ἡμερῶν iter. V ‖ 15 ὅταν –p. 394 om. Vv

tÕ œtoj tîn 'Ar£bwn	tÕ œtoj tîn `Rwma…wn	œtoj tîn Persîn		œtoj SoultanikÒn
		pasit£	kapis£	
e„j tÔsa: ١٥٦٣١, e‡ ti eØreqÍ, ~noàntai toÚtJ id. kaˆ e‡ ti gšnhtai, mer…zetai e„j t¦ l . e‡ ti kataleifqÍ, ¢pÕ tîn temmac…wn kata-limp£netai kaˆ tÕ eØreq•n thre‹tai.	e„j t¦ tÔsa: ١٤٦١ toÚtoij ~noàntai b . kaˆ tÕ eØreq•n mer…zetai e„j t¦ d. e‡ ti eØreqÍ ¥nw, krate‹tai kaˆ t¦ temm£cia katalimp£nontai. e‡ d ' oÙ kataleifqÍ ti, Ð crÒnoj ™stˆ toà kapis©	e„j t¦ tÔsa: ٣٧٤	e„j t¦ ٣٧٤٠kaˆ perissÕn po…ei e„j ™ke‹no. e‡ ti eØreqÍ di¦ toàto, Óti kaq'›kaston mÁna Óti ™stˆ kapis£, ¹mšrai l tÕ eØreq•n thre‹tai.	e„j t¦ ٨٥٣٤٣ , ~noàntai toÚtoij to‹j eØreqe‹sin ١٥٢ . e‡ ti eØreqÍ, mer…zetai e„j t¦ tÒsa ٢٢٥. t¦ temm£cia kata-limp£nontai, kaˆ tÕ eØreq•n thre‹tai.

| ἑνοῦται αἱ ἡμέραι τοῦ παρελθόντος ἀτελειώτου μηνὸς εἰς τὰς ἡμέρας τοῦ f90v L
τετελειωμένου μηνός. δεῖ δὲ εἰπεῖν περὶ τῶν ἡμερῶν τοῦ τετελειωμένου μηνὸς
πῶς καταλαμβάνονται.

œtoj tîn 'Ar£bwn	œtoj tîn `Rwma…wn	œtoj tîn Persîn		œtoj SoultanikÒn
		pasit£	kapis£	
Ð e¢j m¾n l ¹mšraij krate‹tai, kaˆ Ð ›teroj kq mšcri tšlouj.	kat¦ mÁna af ¹mšrai toÚtou kratoàntai met¦ toà y»fou kaqëj ™tšqhsan ™n tù kanon…J. di¦ tÕn Soump¦t d• mÁna kh ¹mšrai kratoàntai. e„j d• tÕn crÒnon toà kapis© kq.	kat¦ mÁna l ¹mšraj kratoàntai, kaˆ e„j tÕn 'Ap¦n mÁna le ¹mšrai.	perisseÚontai e„j ™ke‹no Ó ti sun»cqhsan ¢pÕ tÁj ¢rcÁj toà fstamšnou Farba<r>dˆn mhnÕj met¦ toà y»fou ˜k£stou mhnÕj toà parelqÒntoj l ¹mšrai. kaˆ af parelqoàsai ¹mšrai ¢pÕ toà ¢teleiètou mhnÕj perisseÚontai e„j ™ke‹no.	kat¦ mÁna af ¹mšrai ™ke…nou perisseÚontai oÛtwj æj ™tšqhsan ™n tù kanon…J.

εἴ τι εὑρεθῇ, ἡμέραι εἰσὶ τῶν χρόνων καὶ τῶν μηνῶν τοῦ ἔτους ἐκείνου. ἐκείνη ἡ ἡμέρα εἰς ἣν γίνεται ὁ ψῆφος, ἡ πρυτάνη τῆς τέχνης ταύτης εἰς τὴν δοκιμὴν ταύτην. ἑνοῦται εἰς τὰς ἡμέρας ἑκάστου ἔτους αἵτινες εὑρέθησαν.

το ἔτος τῶν Ἀράβων	τὸ ἔτος τῶν Ῥωμαίων	τὸ ἔτος τῶν Περσῶν		τὸ ἔτος τοῦ Ἐλκάνη
		πασιτά	καπισά	
πέντε	ἕν	δύο	δύο	οὐδέν

εἴ τι εὑρεθῇ εἰς τὰ $\overline{\zeta}$ μερίζεται ἤγουν ἀνὰ $\overline{\zeta}$ γίνεται τούτων ἀφαίρεσις. εἴ τι καταλειφθῇ, ἐὰν ἐξισοῦται ταῖς ἡμέραις ἐκείναις | τῆς ἑβδομάδος εἰς ἃς f91rL γίνεται ὁ ψῆφος, ὁ ψῆφος ὀρθός. εἰ δ' οὐκ ἐξισοῦται, ὁ ψῆφος οὐκ ἔστιν ὀρθός.

Τρίτη διαίρεσις. Εἰς τὸ γνώρισμα τῶν ἡμερῶν τῶν μὴ γινωσκομένων ἐτῶν ἀπὸ τῶν ἡμερῶν τῶν γινωσκομένων ἐτῶν.

Τοῦτο οὕτως ἐστὶ δυνατὸν εἰδέναι ἵνα φανῶσιν αἱ μέσον τῶν ἐτῶν ἐκείνων ἡμέραι. ἴσθι τοίνυν ὅτι αἱ μέσον τοῦ ἔτους τῶν Ῥωμαίων καὶ τῶν Ἀράβων ἡμέραι τόσαι· $\overline{\text{ΜΕ}\,\text{ΟΥΟΙ}}$, καὶ αἱ μέσον τοῦ ἔτους τῶν Ῥωμαίων καὶ τῶν Περσῶν πασιτὰ ἡμέραι τόσαι· $\overline{\text{ΜΕΜΕΜΒΕΕ}}$, καὶ αἱ μέσον τοῦ ἔτους τῶν Ῥωμαίων καὶ τοῦ Σουλτανικοῦ ἡμέραι τόσαι· $\overline{\text{ϡΟϛΜΕΟΙ}}$, καὶ αἱ μέσον τοῦ ἔτους τῶν Ἀράβων καὶ τῶν Περσῶν πασιτὰ ἡμέραι τόσαι· $\overline{\text{ΜϛΒΓ}}$. ὡσαύτως καὶ αἱ μέσον τοῦ ἔτους τῶν Ἀράβων καὶ τοῦ Σουλτανικοῦ ἡμέραι τόσαι·

$\overline{\text{ιϛϡοο}}$, καὶ αἱ μέσον δὲ τοῦ ἔτους τῶν Περσῶν καὶ τοῦ Σουλτανικοῦ τόσαι· $\overline{\text{ιϛϡοιι}}$. ἐκεῖνο τοίνυν τὸ ἐγνωσμένον ἔτος εἴπερ ἐστὶν πρῶτον αἱ ἡμέραι αὗται ἀπὸ τῶν ἡμερῶν τοῦ ἐγνωσμένου ἐκείνου ἔτους ἀφαιροῦνται, καὶ εὑρίσκονται αἱ ἡμέραι τοῦ μὴ ἐγνωσμένου ἐκείνου ἔτους. ἐὰν δὲ αἱ ἡμέραι τοῦ ἐγνωσμένου ἔτους ὑστεραῖον, αἱ μέσον τῶν $\overline{\beta}$ ἐτῶν ἡμέραι ἑνοῦνται ἐκείναις, καὶ εὑρίσκονται αἱ ἡμέραι τοῦ μὴ ἐγνωσμένου ἔτους.

Διαίρεσις δ΄. | Ἀνάβασις τῶν χρόνων καὶ τῶν μηνῶν. f91vL

Χρείας γενομένης γενέσθαι τὴν τέχνην ταύτην, τηροῦνται αἱ ἡμέραι ἐκεῖναι.

tÕ œtoj tîn 'Ar£bwn	tÕ œtoj tîn `Rwma…wn	tÕ œtoj tîn Persîn		tÕ œtoj toà `ElkanÁ
		pasit£	kapis£	
e„j t¦ l. e‡ ti eØreqÍ, e„j ˜ke‹no prost…qentai id. e‡ ti gšnhtai, mer…zetai e„j taàta: ١٥٦٣١.	e„j t¦ d. e‡ ti eØreqÍ, ˜noàntai toÚtoij b.kaˆ e‡ ti ™xšlqei, mer…zetai e„j taàta: ١٤٦١,	oÙdšn. mer…zetai e„j tÔsa: ٣٦٤,	e„j oÙdšn. diplasi£zontai kaˆ mer…zontai e„j[a] tÒson: ٩٥٨٨٤ e‡ ti ™xšlqV, ¹ t£xij ™stˆ tîn mhnîn ™ke…nwn toà kapis©. ™ke‹noj Ð m¾n ›kastoj l ¹mšrai kratoàntai. e‡ ti eØreqÍ, ™ke‹no ¢faire‹tai ¢pÕ toà y»fou ™ke…nou. e‡ ti kataleifqÍ, mer…zetai e„j tÒson: ٣٦٤,	mer…zetai e„j tÒson: ٨٥٣٤٣, ¢pÕ tÁj perisse…aj ˜noàntai ١٥٢. e‡ ti eØreqÍ, e„j t¦ ٢٢٥ .e„j goàn tÕ eØreqšn.

a e„ L

| εἴ τι ἐξέλθῃ ἀπὸ τῶν μερισμῶν τῶν ἡμερῶν ἐκείνων, χρόνοι εἰσὶ f44rV τετελειωμένοι ἑκάστου ἔτους. εἴ τι καταλειφθῇ, μερίζεται εἰς τόσον·

Ἀράβων	Ῥωμαίων	Περσῶν	Ἐλκανῇ
εἰς τριάκοντα	εἰς τέσσαρα	εἰς οὐδέν	εἰς τὰ σκ

εἴ τι ἐξέλθῃ ἀπὸ τῶν μοιρῶν, ἡμέραι εἰσίν. ταύτας μετὰ τῆς τάξεως ταύτης ἀπόλυε.

3 Ἀράβων... Ἐλκανῇ om. Vv | ἑλκανῇ L 3–4 Empty box between the third and fourth boxes Vv || 5 ἐξέλθει L

f93rL

'Ar£bwn[a]	`Rwma…wn[a]	Persîn[a]		'ElkanÁ[d,a]
		pasit£[a]	kapis£[a]	
e„j ›na mÁna ī ¹mšrai[e], kaˆ tÕ e„j ¥llon kq ¹mšrai[e] ¢e… ¹ ¦rc¾ d• ¢pÕ toà Moucar£m. kaˆ oÛtwj ¢r…qmei mšcri tšlouj.	kat¦ mÁna e‡ ti ™gšneto dÁlon ¢pÕ tîn ¹merîn ™ke…nou. g…netai ¹ ¢rc¾ ¢pÕ toà Tasir¾n[b] toà a/. ™¦n oÙ[c] kateleifqÍ ti ¢pÕ toà merismoà tîn d, Ð Soump¦t m¾n kq ¹mšraij[e] krate‹tai.	e„j ›kaston mhn tri£konta[f] kaˆ ¹ ¢rc¾ ¢pÕ toà Farba<r>d…n, kaˆ e„j tÕ Ôgdoon mÁna īe ¹mšrai[e].	e„j kaq' ›kaston mÁna ¹mšrai[g] tri£konta.	kat¦ mÁna tÒson oá Ð yÁfoj tîn ¹merîn ™gr£fh e„j tÕ kanÒnion. met¦ tÁj t£xewj oân taÚthj mšcri plhrèsewj toà crÒnou . ™¦n Ï oÛtwj tÕ kataleifqšn, kl£sma e„j tÕn ¹šteron yÁfon. plšon œni tîn ١٦٧, oátoj Ð crÒnoj kapis£. tÕ tšloj toà mÁnoj īa ¹mšrai. e‡ d' œlatton, kq

a. om. Vv | b. Tasirˆn Vv | c. oÙk ™katele…fqh L | d. ˜lkanÁ L | e. ¹mšraj Vv | f. ī L | g. ¹mšraj LV

εἴ τι καταλειφθῇ ἀπὸ τῶν ἡμερῶν, ἐὰν ᾖ ἔλαττον ἑνὸς μηνός, ἐκεῖναι αἱ ἡμέραι λέγονται ὁ ἀτελείωτος μὴν μετὰ τῆς ἡμέρας ἐκείνης καθ' ἣν γίνεται ὁ ψῆφος.

Κεφάλαιον τέταρτον. Περὶ τῆς καταλήψεως τῆς ἀρχῆς τῶν χρόνων καὶ τῶν μηνῶν τούτων τῶν ἐτῶν κατὰ ποίαν ἡμέραν | εἰσέρχονται τῆς ἑβδομάδος, καὶ f278vv
τῆς ἐκβολῆς τοῦ ἑνὸς ἔτους ἀπὸ τοῦ ἑτέρου διὰ τῶν κανονίων. | ἡ μέθοδος f92v L
αὕτη εἰς δύο διαιρεῖται.

Διαίρεσις α΄. Περὶ τῆς καταλήψεως τῆς ἀρχῆς τῶν χρόνων καὶ τῶν μηνῶν κατὰ ποίαν ἡμέραν εἰσέρχονται τῆς ἑβδομάδος διὰ τοῦ κανονίου.

Χρείας γενομένης εἰς τοῦτο, οἱ ἀτελεῖς χρόνοι τοῦ ἔτους ἐκείνου τίθενται
| εἰς τὴν ταῦλαν. καὶ ἐξ ἐκείνων ἀφαιροῦνται αἱ περιφοραί, ἤγουν ἀπὸ τοῦ f44v V
ἔτους τῶν Ἀράβων ἀφαιροῦνται ἀνὰ $\overline{\sigma\iota}$ $\overline{\sigma\iota}$. εἴ τι καταλειφθῇ, ζητεῖται εἰς τὰ δύο κανόνια τῶν χρόνων τῶν ἡνωμένων καὶ τῶν ἁπλῶν. εἴ τι εὑρεθῇ κατ' ἐναντίον ἐκείνων τῶν χρόνων τῶν δύο ἀπὸ τῶν ἡμερῶν τῆς ἑβδομάδος, κρατεῖται, καὶ ἐκεῖνο ἡμέρα τῆς ἑβδομάδος ἐστὶ τῆς ἀρχῆς τοῦ χρόνου. οὗτος δὲ ὁ ψῆφος τότε ἐστὶν ὀρθὸς ἡνίκα οἱ καταλειφθέντες χρόνοι εὑρεθῶσι καὶ εἰς

3 δ΄ Vv ‖ 4 ἑβδομάδος + διὰ τοῦ κανονίου v ‖ 5 ἑτέρου] β΄ (?) L ‖ 12 β΄ V ‖ 13 τῶν χρόνων ἐκείνων τὰ δύο Vv ‖ 14 ἡμέραι L ‖ 15 ἔστιν ὁ ψῆφος τότε v

τὰ δύο κανόνια. ὅτε δὲ μὴ εὑρεθῶσι καὶ εἰς τὰ δύο κανόνια, $\overline{\lambda}$ ἐξ ἐκείνων τῶν καταλειφθέντων χρόνων ἀφαιροῦνται. εἴ τι καταλειφθῇ, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὰ κανόνια τῶν ἡνωμένων χρόνων. καὶ κατ' ἐναντίον τῶν $\overline{\lambda}$ ἐκείνων τῶν ἀφαιρεθέντων, γίνεται εἰσέλευσις εἰς τὰ κανόνια τῶν ἁπλῶν ἐτῶν. καὶ γίνεται ἔπειτα ὡς ἐρρέθη. καὶ διὰ τοὺς μῆνας δὲ ὡσαύτως γίνεται εἰσέλευσις κατ' ἐναντίον τῶν μηνῶν εἰς τὰ κανόνια ἐκείνων, καὶ κρατοῦνται αἱ ἡμέραι τῆς ἑβδομάδος. | εἴ τι εὑρεθῇ, ἐκεῖνο ἑνοῦται μετὰ τῶν ἡμερῶν τῆς f93rL
ἑβδομάδος τῆς ἀρχῆς τῶν χρόνων. καὶ εὑρίσκεται ἡ ἡμέρα τῆς ἀρχῆς τοῦ μηνὸς ἐκείνου.

Τὸ ἔτος τῶν Ῥωμαίων.

Αἱ περιφοραὶ ἐξ ἐκείνου ἀφαιροῦνται, ἤγουν ἀνὰ $\overline{\kappa\eta}$ $\overline{\kappa\eta}$ γίνεται τούτων ἀφαίρεσις. εἴ τι καταλειφθῇ, ἐκεῖνο εἰς τὸ κανόνιον ζητεῖται τοῦ ἀνὰ $\overline{\alpha}$ χρόνου. ἐκεῖνο ἐὰν εὑρεθῇ διὰ μέλανος, χρόνος τοῦ πασιτᾶ, εἰ δὲ διὰ κοκκίνου, χρόνος τοῦ καπισᾶ. εἶτα κατ' ἐναντίον τούτου· εἴ τι εὑρεθῇ, αἱ ἡμέραι τῆς ἑβδομάδος κρατοῦνται. ἐκεῖναι οὖν αἱ ἡμέραι τῆς ἑβδομάδος ἡ ἀρχή ἐστι τοῦ χρόνου ἐκείνου. εἰ οὖν βούλεταί τις εἰδέναι τὰς ἡμέρας | τῆς ἀρχῆς ἑκάστου μηνός, ἐὰν ὁ χρόνος πασιτά, κατ' ἐναντίον τῶν μηνῶν f45rV

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1 $\overline{\beta}$ L | μὴ] οὐχ L | $\overline{\beta}$ L | κανόνια om. Vv ‖ 3 ἡμωμένων ut vid. v ‖ 4–5 κανόνια ... ἐτῶν] ἁπλᾶ ἔτη L ‖ 5 καὶ γίνεται ἔπειτα] εἶτα γίνεται Vv | εἴρηται Vv ‖ 16 τὰς] τῆς Vv

τοῦ πασιτᾶ γίνεται εἰσέλευσις εἰς τὸ κανόνιον. εἰ δὲ ὁ χρόνος καπισά, κατ' ἐναντίον τῶν μηνῶν τοῦ καπισᾶ γίνεται εἰσέλευσις εἰς τὸ κανόνιον. καὶ κατ' ἐναντίον ἐκείνου αἱ ἡμέραι τῆς ἑβδομάδος κρατοῦνται. ἐκεῖνο εἰς τὰς ἡμέρας τῆς ἑβδομάδος εἰς τὴν ἀρχὴν τοῦ χρόνου προστίθεται, καὶ εὑρίσκεται ἡ ἡμέρα τῆς ἀρχῆς τοῦ μηνός.

Τὸ ἔτος τῶν Περσῶν.

Διὰ τὸ ἔτος τῶν Περσῶν πασιτὰ αἱ περιφοραὶ τούτου ἀνὰ $\overline{\zeta}$ $\overline{\zeta}$ ἀφαιροῦνται. εἴ τι καταλειφθῇ, ζητεῖται εἰς τὸ κανόνιον. ἔνθα οὖν εὑρεθῇ ἐκεῖνο, ἔστιν ἡ ἡμέρα ἡ ἀρχὴ τοῦ χρόνου τοῦ ἔτους ἐκείνου. καὶ ἡ ἀρχὴ δὲ τοῦ μηνὸς | οὕτω καταλαμβάνεται ὡς ἐρρέθη κἀν τοῖς ἄλλοις τῶν Ἀράβων καὶ τῶν f93vL Ῥωμαίων. | περὶ τοῦ ἔτους τῶν Περσῶν καπισᾶ εἴρηται πρότερον εἰς τὸ f279rv τέλος τοῦ δευτέρου κεφαλαίου. καὶ ἐκεῖθεν γίνεται ἡ κατάληψις τούτου.

Ἔτος Σουλτανικόν.

Αἱ περιφοραὶ τούτου ἀφαιροῦνται ἀνὰ $\overline{\sigma\kappa}$ $\overline{\sigma\kappa}$. εἴ τι καταλειφθῇ, ἓν ἐξ ἐκείνου ἀφαιρεῖται. εἶτα κατ' ἐναντίον τῶν καταλειφθέντων γίνεται εἰσέλευσις εἰς τὰ κανόνια. κατ' ἐναντίον τοῦ ἑνὸς χρόνου καὶ τῶν $\overline{\iota}$ χρόνων καὶ τῶν

9 ἐκείνου] τούτου Vv ‖ 10 ἄλλοις + τῶ Vv | τῶν² om. Vv ‖ 11 περὶ τοῦ ἔτους] διὰ τὸ ἔτος L ‖ 12 β΄ v ‖ 14 ἓν] α΄ Vv ‖ 16 α sup. ἑνὸς V | ι sup. δέκα V | χρόνων om. Vv

$\overline{\rho}$, καὶ κρατοῦνται αἱ ἡμέραι τῆς ἑβδομάδος. εἴ τι εὑρεθῇ, ἡ μία ἡμέρα, $\overline{\rho\beta}$ τεμμάχια ἑνοῦνται τούτῳ. εἰ δ' ἐκεῖνο τὸ τεμμάχιον γίνεται πλέον τῶν $\overline{\sigma\kappa}$, τὰ $\overline{\sigma\kappa}$ ἀφαιροῦνται ἐξ ἐκείνου. καὶ διὰ τὰ $\overline{\sigma\kappa}$ ἓν περισσεύεται εἰς τὰς ἡμέρας ἐκείνας. εἴ τι καταλειφθῇ ἀπὸ τῶν τεμμαχίων, τηρεῖται πόσον. εἴπερ ἐστὶ πλέον τῶν $\overline{\rho\xi\zeta}$, γίνεται δῆλον ὅτι ὁ ἐρχόμενος χρόνος καπισά, εἰ δὲ ἔλαττον τούτων, πασιτά. | ἐκεῖνο δὲ τὸ τεμμάχιον εἴπερ ἔνι ἔλαττον τῶν $\overline{\nu\epsilon}$, ἡ ἀρχὴ f45vV
τοῦ χρόνου ἐξ ἐκείνων ἐστὶ τῶν ἡμερῶν τῆς ἑβδομάδος. εἰ δὲ πλέον τῶν $\overline{\nu\epsilon}$, ἡ ἀρχὴ τοῦ χρόνου ἀπὸ τῶν ἄλλων ἐστὶν ἡμερῶν τῆς ἑβδομάδος. ἔτι εἰ ἔλαττόν ἐστι τῶν $\overline{\nu\epsilon}$, ἡ ἀρχὴ τοῦ χρόνου ἡ ἡμέρα ἐκείνη ἐστὶν ἡ ἐξελθοῦσα. εἰ δ' ἔνι τὸ τεμμάχιον | πλέον τῶν $\overline{\nu\epsilon}$, ἡ ἀρχὴ τοῦ χρόνου ἀπὸ τῆς ἡμέρας ἐκείνης ἐστὶ f94rL
τῆς ἐρχομένης. $\overline{\alpha}$ οὖν ἑνοῦται ταῖς ἡμέραις ταύταις. εἰ δέ εἰσιν αἱ ἡμέραι πλέον τῶν $\overline{\zeta}$, ἀνὰ $\overline{\zeta}$ γίνεται τούτων ἀφαίρεσις.

Ὅτε γίνεται χρεία περὶ τῆς καταλήψεως τῆς ἀρχῆς ἑκάστου μηνός, τηρεῖται ἡ ἀρχὴ τοῦ χρόνου κατὰ ποίαν ἐστὶν ἡμέραν τῆς ἑβδομάδος. αὕτη ἄνω τοῦ κανονίου ζητεῖται. κατ' ἐναντίον οὖν ἐκείνου τοῦ μηνὸς γίνεται εἰσέλευσις εἰς τὸ κανόνιον. καὶ κατ' ἐναντίον τῶν δύο εἴ τι εὑρεθῇ, ἐκείνη ἡ ἡμέρα ἐστὶν ἡ ἀρχὴ τοῦ μηνὸς ἐκείνου.

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1 ρ sup. ἕκατον V ‖ 2 δὲ Vv | γένηται L ‖ 7 ἡμερῶν + τῶν Vv, τῶν sup. lin. L ‖ 10 ἐστὶν ἐκείνης Vv ‖ 13 ὅτε γίνεται χρεία om. Vv ‖ 14 τοῦ χρόνου om. Vv ‖ 15 καIΝάυ^{N} v, κανονίου in marg. v ‖ 16 $\overline{\beta}$ L

Διαίρεσις δευτέρα. Περὶ τῆς ἐκβολῆς τοῦ ἔτους τῶν Ῥωμαίων, τῶν Περσῶν καὶ τοῦ Σουλτανικοῦ ἀπὸ τοῦ ἔτους τῶν Ἀράβων διὰ τοῦ κανονίου.

Πρὸ τῆς ἐργασίας ταύτης καταλαμβάνονται οἱ χρόνοι πάντες τῶν Ἀράβων καὶ τίθενται ἐν τῇ ταύλᾳ, καὶ οἱ τετελειωμένοι αὖθις μῆνες ὑπ' ἐκείνους, καὶ αἱ παρελθοῦσαι δὲ ἡμέραι ἀπὸ τοῦ ἀτελειώτου μηνὸς μετὰ τοῦ μέσου τῶν εἰς τὴν ἀρχὴν τῶν ἡμερῶν ψήφου. καὶ γὰρ αἱ ἀτελείωτοι ἡμέραι τοῦ μηνὸς μετὰ τοῦ μέσου ἐκείνου ψήφου ὀρθοῦνται, οὐχὶ διὰ τῆς ὄψεως. τίθενται ὑπὸ τὸν μῆνα. εἶτα κατ' ἐναντίον τῶν τετελειωμένων ἐκείνων μηνῶν κρατοῦνται αἱ συνηγμέναι ἡμέραι, καὶ τίθενται ὑπὸ τὰς πρότερον κρατηθείσας ἡμέρας. ἔπειτα οἱ μῆνες ἐκεῖνοι καταλιμπάνονται τῶν ἡμερῶν ἐνωθεισῶν, καὶ ἐναπολιμπάνονται f94vL
οἱ τετελειωμένοι | χρόνοι τῶν Ἀράβων ἄνω | μετὰ τῶν παρελθουσῶν ἡμερῶν f46rV,f279vv
ἀπὸ τοῦ ἀτελειώτου χρόνου. εἶτα γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν τριακονταετηρίδων τοῦ ἔτους τῶν Ἀράβων, καὶ ζητοῦνται οἱ τετελειωμένοι τούτων χρόνοι. ἐὰν οὖν εὑρεθῇ ἐκεῖ ὅμοιος τούτοις ψῆφος, ἔστω. εἰ δ' οὐχ εὑρεθῇ, ζητεῖται ψῆφος ἐλάττων ἐκείνων καὶ ἐγγύτερον τῶν τεθέντων εἰς τὴν ταῦλαν, καὶ κατ' ἐναντίον ἐκείνου τοῦ ψήφου γίνεται εἰσέλευσις. καὶ οἱ χρόνοι κρατοῦνται οἱ τετελειωμένοι τοῦ ἔτους τῶν Περσῶν ἢ τῶν Ῥωμαίων ἢ οἱ Σουλτανικοί. κατ' ἐναντίον δὲ καὶ ἔμπροσθεν τῶν χρόνων κρατοῦνται αἱ ἡμέραι. καὶ τίθενται εἰς τὴν ταῦλαν οἱ χρόνοι ἄνω καὶ αἱ

1 ππερὶ V ‖ 13 $\bar{\lambda}$ ετηρίδων L ‖ 17 οἱ χρόνοι ... τετελειωμένοι] κρατοῦνται οἱ τετελειωμένοι χρόνοι Vv ‖ 19 τὴν om. Vv

ἡμέραι κάτωθεν. εἶτα οἱ χρόνοι τῶν Ἀράβων ἀφ' ὧν γίνεται εἰσέλευσις εἰς τὸ κανόνιον ἀφαιροῦνται ἀπὸ τῶν χρόνων ἐκείνων τῶν τεθέντων πρότερον ἐν τῇ ταύλᾳ. εἴ τι οὖν καταλειφθῇ, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν ἁπλῶν ἐτῶν τῶν Ἀράβων, καὶ κρατοῦνται οἱ χρόνοι καὶ αἱ ἡμέραι, καὶ ἑνοῦνται μετὰ τῶν χρόνων ἐκείνων καὶ τῶν ἡμερῶν τῶν ἀπὸ τῶν τριακονταετηρίδων κρατηθέντων. εἶτα αἱ ἡμέραι ἐκεῖναι τοῦ ἔτους τῶν Ἀράβων ἑνοῦνται ταῖς ἡμέραις ἑκάστου | ἔτους ἀπὸ τῶν τριῶν, ἤγουν f95rL ἑκάστου ἔτους ἡμέραι ἑνοῦνται τῷ ἔτει τῶν Ἀράβων οὗ ἐστι χρεία. εἶτα τηρεῖται. ἐὰν αἱ ἡμέραι τῶν ἐτῶν ἐκείνων ὑπερβαίνουσι τὰ $\overline{\text{ϡϛϡ}}$, ταῦτα ἀφαιροῦνται ἀπὸ τῶν ἡμερῶν, καὶ $\overline{\alpha}$ ἑνοῦται εἰς τοὺς χρόνους. εἴ τι οὖν εὑρεθῇ, χρόνοι εἰσὶ τετελειωμένοι. οἷον δὲ ἄρα ἐστὶν ἔτος $\overline{\alpha}$ ἀεὶ ἑνοῦται ἐκείνῳ. καὶ εὑρίσκονται οἱ ἀτελείωτοι χρόνοι τοῦ ἔτους ἐκείνου. ἐκεῖναι οὖν αἱ ἡμέραι αἱ καταλειφθεῖσαι | τοῦ ἔτους ἐκείνου τηροῦνται. καὶ κατ' ἐναντίον f46vV τῶν ἡμερῶν ἐκείνων γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν ἡμερῶν καὶ τῶν μηνῶν οἷς γίνεται χρεία. ἐὰν οὖν οὐχ εὑρεθῇ ἐκεῖ ὁ ψῆφος οὗτος, ζητεῖται ψῆφος ἐλάττων καὶ ἐγγύτερον τούτου. καὶ κατ' ἐναντίον τοῦ ψήφου ἐκείνου τηρεῖται ποῖος μὴν εὑρέθη. οὗτος οὐ κρατεῖται ἀλλ' ὁ ὄπισθεν ἐκείνου, καὶ τίθεται ὑπὸ τοὺς χρόνους τοὺς ἐν τῇ ταύλᾳ. εἶτα αἱ εὑρεθεῖσαι ἡμέραι ἐν τῷ κανονίῳ ἀφαιροῦνται ἀπὸ τῶν κρατουμένων ἡμερῶν. εἴ τι οὖν καταλειφθῇ,

5 καὶ[3] om. v ‖ 6 $\overline{\lambda}$ ἐτηρίδων L ‖ 9 $\overline{\text{τξε}}$ sup. $\overline{\text{ϡϛϡ}}$ Vv ‖ 15 χρεία + νῦν L

τίθεται ὑπὸ τοὺς μῆνας ἐκείνους. εἰ δ' οὐ καταλειφθῇ τι, ἀεὶ ἓν προστίθεται ὑπὸ τοὺς μῆνας. |εἴ τι οὖν εὑρεθῇ, χρόνοι, μῆνες καὶ ἡμέραι εἰσὶ τοῦ ἔτους 280rv ἐκείνου.

Τὸ ἔτος τῶν Περσῶν πασιτὰ |ἐγένετο δῆλον. δεῖ οὖν εἰδέναι καὶ τὸ ἔτος f95vL τῶν Περσῶν καπισά. οἱ τετελειωμένοι χρόνοι τῶν Περσῶν τίθενται εἰς τὴν ταῦλαν, καὶ ͵αβ̅α̅ ἐνοῦνται τούτοις. εἴ τι γένηται, μερίζεται εἰς τόσον· ͵αβ̅α̅ϲ̅ . εἴ τι οὖν ἐξέλθῃ, μῆνές εἰσι τοῦ καπισᾶ μετὰ τῆς τάξεως ἐκείνης ἤγουν τῆς ἀπαριθμήσεως τούτων ἀπὸ τοῦ Ἀδὰρ μηνός. ἔνθα δὲ λήξει ὁ ψῆφος καὶ αἱ κλοπιμαῖαι ε̅ ἡμέραι εἰς τὸ τέλος ἐκείνου τίθενται. ἐκεῖνος δὲ ὁ πρὸ ἐκείνου μήν, εἴπερ ἐστὶ κατ' ἐναντίον ἐκείνου μετὰ τοῦ μηνὸς τοῦ Φαρβαρδὶν τοῦ ἱσταμένου.

Κεφάλαιον ε΄. Περὶ τῆς καταλήψεως τοῦ πάσχα ἑκάστου ἔθνους καὶ τῶν δήλων καὶ μεγίστων ἡμερῶν.

Ἀπὸ τῶν δήλων τούτων ἡμερῶν ἐστί τι δῆλον εἰς τὰς ἡμέρας τοῦ μηνὸς καὶ ἀκίνητον ἀεὶ κατὰ τὸν ἴδιον τόπον ἱστάμενον, καὶ ἔστι τι ὃ γίνεται δῆλον ἀπὸ τῶν ἡμερῶν |τοῦ μὴ ἱσταμένου μηνὸς διὰ τὰς ἡμέρας τῆς ἑβδομάδος, ἕτερον f47rV δὲ ὅτι γίνεται δῆλον μετὰ τῶν χρόνων ἅμα τοῦ ἡλίου καὶ τῆς σελήνης, ἄλλο

1 α̅ Vv ‖ 2 οὖν om. Vv | χρόνος corr. in χρόνοι v ‖ 6 ρκα sup. ͵αβ̅α̅ V, in marg. v | ρκδ sup. ͵αβ̅α̅ϲ̅ Vv ‖ 7 ἤγουν + τοῦ ποιήσασθαι L 7–8 τὴν ἀπαρίθμησιν L ‖ 10 φαρβαδὶν L

δὲ ἔνι δῆλον εἰς τοὺς $\overline{\beta}$ τούτους χρόνους μετὰ τῶν ἡμερῶν τῆς ἑβδομάδος. τοῦτο οὖν τὸ κεφάλαιον εἰς $\overline{\zeta}$ διαιρεῖται.

Διαίρεσις α΄. Περὶ τῆς καταλήψεως τῶν καιρῶν καὶ τῆς ἐκβολῆς τῶν $\overline{\kappa\eta}$ μονῶν τῆς σελήνης.

Αἱ μοναὶ ἐκεῖναι εἰς τὸν ζῳδιακὸν κύκλον πᾶσαι ἴσαί εἰσιν. ἡ ἀρχὴ οὖν | τῆς κινήσεως τῶν μονῶν ἐκείνων ἀπὸ τῆς ἀρχῆς ἐστι τοῦ Κριοῦ. τὰ πρόσωπα f96rL δὲ τῶν μονῶν τούτων ἀπὸ τῶν ἀπλανῶν ἐκείνων ἀστέρων εἰσίν, τὰ πρόσωπα δὲ τῶν ἀστέρων ἐκείνων οὐκ εἰσὶν ὅμοια, ἀλλὰ καὶ ὁ τόπος τούτων οὐκ ἔστι κατ' ἐναντίον. εἰς τοὺς καιροὺς δὲ ὅταν ἐξέρχωνται οὗτοι, ἤγουν ὁπόταν ἀπὸ τοῦ ἡλίου διισταμένου φαίνωνται, ἡ πρώτη μονὴ εἰς τὸ ἔτος τὸ $\overline{\text{ϡϡϡϡ}}$ τῶν Ῥωμαίων ἡμέρᾳ κβ΄ εἰς μῆνα τὸν Νισὰν ἐξήρχετο. μετὰ οὖν $\overline{\iota\gamma}$ ἡμέρας ἡ ἑτέρα μονὴ ἐξήρχετο, κατὰ τὴν αὐτὴν τάξιν καὶ αἱ ἕτεραι μοναὶ μετὰ $\overline{\iota\gamma}$ ἡμέρας ἐξήρχοντο. ἡ ιε΄ μονὴ ἧς τὸ ὄνομα Γάφιρ εἰς τὰς $\overline{\iota\delta}$ ἡμέρας ἐξέρχεται, καὶ αὖθις αἱ ἕτεραι μοναὶ ἀπ' ἐκείνου, μετὰ τὰς $\overline{\iota\gamma}$ ἡμέρας ἐξέρχεται ἑκάστη. τοῦτο τοίνυν τὸ λεχθὲν εἰς τὸν χρόνον ἐστὶ τοῦ πασιτᾶ. εἰς δὲ τὸν χρόνον τοῦ καπισᾶ ἡ ια΄ μονή — τὸ ὄνομα ταύτης Ζουμπρά — εἰς τὰς $\overline{\iota\delta}$ ἡμέρας ἐξέρχεται. ὁπόταν οὖν ἡ μία μονὴ ἐξέλθῃ ἀπὸ τῆς ἀνατολῆς, ἡ μονὴ ἐκείνη ἡ ιε΄ δύνει. αὗται αἱ μοναὶ ἐτέθησαν εἰς τὸ κανόνιον εἰς τὴν ὥραν ἡνίκα

5 μοῖραι codd. ‖ 6 μοιρῶν codd. | ἀρχῆς om. L, spat. ca. 4 1.4. ‖ 9 ἐξέρχονται L | ὁπόταν] ὅταν Vv ‖ 10 φαίνονται L | τὸ² om. L | $\overline{\text{ϡϡϡϡ}}$ v ‖ 11 νισσὰν v ‖ 13–14 ἐξήρχοντο . . . ἡμέρας om. Vv ‖ 16 ζομπρά L ‖ 18 αἱ sup. lin. L

ἀνατέλλει | ἑκάστη, ἀφ' οὗ κανονίου καταλαμβάνονται. f280vv

Διαίρεσις δευτέρα. Περὶ τῆς καταλήψεως τῆς μεγάλης νηστείας τῶν Χριστιανῶν.

Ἡ ἀρχὴ ταύτης πάντοτε δευτέρᾳ | ἐστίν. ἐκείνη ἡ δευτέρα ὀφείλει f47vV
ἐγγύτερον | εἶναι τῆς συνόδου τοῦ ἡλίου καὶ τῆς σελήνης, ἐκείνης τῆς f96vL
συνόδου ἥτις ἐστὶν ἀπὸ τῆς β´ τοῦ Σουμπὰτ μέχρι τῆς ή´ τοῦ Ἀδάρ. καὶ ἀπὸ τούτων πλέον οὐχ ὑπερβαίνει. εἰ δ' ἔστιν ὁ χρόνος καπισά, καὶ ἀπὸ τῆς γ´ τοῦ Σουμπὰτ μέχρι τῆς ή´ τοῦ Ἀδὰρ ὀφείλει εἶναι ἡ συνόδος. εἰ δὲ εἰς τὴν δευτέραν ταύτην πρὸ τῆς β´ τοῦ Σουμπὰτ γένηται ἡ σύνοδος, ἐκείνη ἡ σύνοδος οὐ κρατεῖται, ἀλλὰ καταλιμπάνεται. καὶ ζητεῖται ἑτέρα σύνοδος ἡ μετ' ἐκείνην. εἶτα κρατεῖται ἡ ἐγγυτέρα ταύτης τῆς συνόδου δευτέρα καὶ ἐκείνη ἐστὶν ἡ δευτέρα τῆς μεγάλης νηστείας. οὗτος δὲ ὁ ψῆφος ἀπὸ τοῦ αὐθημερινοῦ γίνεται. εἰ δὲ δεήσει καταληφθῆναι τοῦτο ἀπὸ τῆς συντάξεως, ἐκεῖ ἐτέθη κανόνιον ἀφ' οὗ καταλαμβάνεται ἡ νηστεία.

Διαίρεσις γ´ · Περὶ τῆς καταλήψεως τῶν μεγάλων ἡμερῶν τῶν ἀναφανεισῶν

2 β´ L, V ‖ 4 ταύτης om. L | ἐστίν om. Vv | $\overline{\beta}$ L ‖ 5 εἶναι om. L | τοῦ om. Vv | τῆς^2 om. Vv ‖ 6 τῆς^1] τῶν LVv | τοῦ om. L | τῆς^2] τῶν LVv ‖ 7 δέ ἐστιν L | τῆς] τῶν LVv ‖ 8 τριῶν v | τῆς] τῶν LVv | τοῦ^2 om. L ‖ 9 τῆς] τῶν LVv | Σουμπὰτ + ἤτοι τοῦ φεβρουαρίου Vv | ἡ om. Vv ‖ 10 οὐ — ἀλλὰ om. Vv 10–11 ἑτέρα . . . ἐκείνην] ἡ μετ' ἐκείνην σύνοδος Vv ‖ 404 .15 –405.1 τῶν^2 . . . νηστείαν] αἳ εἰς τὴν νηστείαν ἀναφαίνονται Vv

εἰς τὴν νηστείαν ταύτην .

Ἴσθι ὅτι πρὸ τῆς δευτέρας τῆς νηστείας ταύτης $\overline{\kappa\beta}$ ἡμέρας ἐστὶν ἡ νηστεία τῆς Νινευΐ, ἥτις γ΄ ἡμέρα ἐστίν, καὶ τὸ πάσχα ἐκείνης ε΄. καὶ ὕστερον τῆς μεγάλης νηστείας $\overline{\kappa\delta}$ ἡμέρας ἡ νηστεία λέγεται τοῦ Φαρούχ, ἥτις ἐστὶν ἀεὶ δ΄. καὶ εἰς τὴν μεγάλην αὖθις νηστείαν μετὰ ἡμέρας $\overline{\mu\beta}$ ἡ ἡμέρα ἐστὶ τῶν βαΐων. καὶ μετὰ ἡμέρας $\overline{\mu\theta}$ ἡ πασχαλία. ἐκείνη ἡ ἡμέρα ἀεὶ κυριακή, καὶ ἡ πρὸ τῆς τοῦ πάσχα ἡμέρας ε΄ ἡ μεγάλη πέμπτη. καὶ ἡ μετ' αὐτὴν παρασκευὴ ἡ σταύρωσις τοῦ Χριστοῦ. καὶ ἡ μετὰ τὴν | πασχαλίαν παρασκευὴ ἡ μικρὰ βαϊοφόρος. f97rL
ἐκείνη λέγεται παρασκευὴ τῶν ἁγίων. καὶ ὕστερον τοῦ πάσχα μετὰ ἡμέρας $\overline{\mu}$ ἡ ἀνάληψις τοῦ Χριστοῦ. καὶ μετὰ τὴν ἀνάληψιν $\overline{\iota\alpha}$ ἡμέρας ἡ ἑορτὴ τοῦ Ἁγίου Πνεύματος. καὶ ἡ μετὰ τὴν ἑορτὴν τοῦ πάσχα κυριακὴ ἡμέρα λέγεται τῆς διαλέξεως ἢ τοῦ Θωμᾶ. καὶ ἐκείνη ἡ β΄ ἡ μετὰ τὴν πεντηκοστὴν νηστεία λέγεται τοῦ Σελέχ. καὶ ἡ μετ' αὐτὴν παρασκευὴ χρυσῆ λέγεται παρασκευή. καὶ ἐκείνη ἡ νηστεία τοῦ Σελὲχ ἡμέρας $\overline{\mu\eta}$, καὶ ἀπὸ τῆς νηστείας ταύτης ἡμέρα μθ΄ | πάσχα λέγεται τοῦ Σελέχ. ἐκείνη ἀεὶ κυριακή. καὶ μετ' αὐτὴν f48rV

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2 ἴσθι ὅτι om. Vv | ὅτι + ἐκείνη ἡμέρα δευτέρα L | τῆς[1] — νηστείας om. L | ἡμέρα L | ἐστὶν om. Vv ‖ 3 ἥτις ... ἐστίν] ἡμέρα γ΄ Vv | ἐκεῖνο codd. 3–4 ὕστερον ... δ΄] μετὰ ταύτην τὴν νηστείαν ἡμέρας (ἡμέραι v) $\overline{\kappa\delta}$ ἡ νηστεία λέγεται τοῦ φαροὺχ ἡμέρας δ΄ Vv ‖ 4 ἡ νηστεία om. L ‖ 5 καὶ εἰς] εἰς δὲ Vv | αὖθις om. Vv | ἡ om. L | ἐστὶ om. Vv ‖ 6 ἡμέρας om. Vv | ἀεὶ + ἡ et cancell. v ‖ 7 ε΄] πέμπτη V ‖ 8 ἡ[2] om. L ‖ 9 ἐκείνη ... ἁγίων] ἡ τῶν ἁγίων λεγομένη Vv | ὕστερον τοῦ πάσχα om. Vv 9–10 $\overline{\mu}$ ἡμέρας Vv ‖ 11 καὶ om. Vv ‖ 12 καὶ ... β΄ om. Vv | πεντηκοστὴν + δευτέρα ἡ Vv ‖ 13 λέγεται om. Vv | παρασκευή[2] om. Vv ‖ 14 καὶ ... Σελὲχ] ἡ δὲ νηστεία αὕτη Vv | τῆς νηστείας om. Vv ‖ 15 ἡμέρα] ἡμέρας codd. | κυριακή] α΄ Vv | μετ' αὐτὴν] ὕστερον μετὰ τὴν πασχαλίαν ταύτην L

ἡμέρας $\overline{\text{ιγ}}$ ἡ πασχαλία ἡ λεγομένη ἐστὶ δουκράνη Μαρμαρῆ. καὶ ὕστερον τῆς πασχαλίας τοῦ Σελεχεὶμ ἡμέρας $\overline{\text{ν}}$ ἡ νηστεία τοῦ Ἡλίου. ἐκείνη ἡ ἡμέρα ἀεὶ δευτέρα. καὶ αὕτη ἡ νηστεία ἡμέρας $\overline{\text{μη}}$, καὶ ἡ μθ΄ ἡ ἡμέρα τῆς πασχαλίας.

Διαίρεσις δ΄. Περὶ τῶν ἡμερῶν τοῦ πάσχα τῶν Μουσουλμάνων καὶ τῶν μεγάλων ἡμερῶν ἐκείνων.

Μουχαράμ

Ἡ α΄ μεγάλη παρ' ἐκείνοις ὡς ἀρχὴ τοῦ χρόνου ἐκείνων.

Ἡ θ΄ καθ' ἣν ὁ υἱὸς τοῦ Ἀλῆ συνῆψε πόλεμον μετὰ τοῦ Ἰαζίτ.

Ἡ ι΄ καθ' ἣν ὁ Ἰαζὶτ ἐφόνευσε τὸν υἱὸν τοῦ Ἀλῆ.

Ἡ ις΄. ἡ γενομένη προσκύνησις ἀντικρὺ τῶν Ἱεροσολύμων.

Ἡ ιζ΄ ὅτε διὰ τῶν |ἐλεφάντων ἐγένετο ἐπιβολὴ κατὰ τῶν | Ἱεροσολύμων. f281rv, f97vL

Σαφάρ

Ἡ α΄ καθ' ἣν εἰς Δαμασκὸν εἰσήχθη ἡ κεφαλὴ τοῦ υἱοῦ τοῦ Ἀλῆ.

Ἡ ις΄. ἡ ἀσθενεία τοῦ ἀσεβοῦς Μωάμεθ.

Ἡ κ΄ ὅτε αὖθις ἐπανεστράφη ἡ κεφαλὴ τοῦ υἱοῦ τοῦ Ἀλῆ ἔνθα ἐφονεύθη.

Ἡ κδ΄. ἡ μετὰ τὴν φυγὴν ἐκβολὴ ἀπὸ τῶν ὀρέων τῶν ἀσεβῶν τοῦ Μωάμεθ

1 ἡ^1...λεγομένη] καὶ ἐκείνη ἡμέρα ἐστὶ τῆς πασχαλίας ἥτις λέγεται L 1–2 ὕστερον τῆς πασχαλίας] μετὰ τὴν νηστείαν Vv ‖ 2 σελὲχ Vv | $\overline{\text{ν}}$ ἡμέρας L 2–3 ἡμέρα ἀεὶ δευτέρα] ἀεὶ ἡμέρα β΄ L ‖ 8 ὁ ...πόλεμον] συνῆψε πόλεμον ὁ υἱὸς τοῦ ἀλῆ Vv ‖ 9 καθ' ἣν] ὅτι Vv ‖ 10 ἡ^1] τῇ L | προσκύνησις + κατ' Vv ‖ 11 ἡ] τῇ L | ἐπιβουλὴ LV ‖ 13 ἡ^1] τῇ L | καθ' ἣν] ὅτε Vv ‖ 14 ἡ^1] τῇ Vv | εὐσεβοῦς sup. ἀσεβοῦς L^2 ‖ 16 εὐσεβῶν sup. ἀσεβῶν L^2

καὶ τοῦ Ἀμπουπάκη.

Ῥαμπιὰλ ἀουάλ

Ἡ α΄. ὁ θάνατος τοῦ ἀσεβοῦς Μωάμεθ.

Ἡ γ΄. ἡ εἰς τὸν σκοτεινὸν τάφον εἰσέλευσις τοῦ ἀσεβοῦς ἐν τῇ οἰκίᾳ τῆς αὐτοῦ γαμητῆς.

Ἡ η΄. ἡ εἰς τὴν Μαδιναίαν ἄφιξις τοῦ ἀσεβοῦς.

Ἡ ι΄ καθ' ἣν ἐμίγη τῇ κυρίᾳ αὐτοῦ τῇ Χαδ[δ]ιτζᾶ.

Ἡ ιβ΄. ἡ γέννησις τοῦ ἀσεβοῦς.

Ἡ ιδ΄. ὁ θάνατος τοῦ Ἰαζίτ.

Ῥαμπιαλάχειρ

Ἡ γ΄. ⟨ἡ⟩ κατάκαυσις παρὰ τοῦ Ἀντζὰτ τοῦ Μακκᾶ.

Ἡ ιδ΄. ἡ προσευχὴ τῶν ἀπερχομένων εἴς τινα τόπον ἢ μενόντων οἴκοι.

Νταζμὰτ οὔλε

Ἡ η΄. ἡ γέννησις τοῦ Ἀλῆ τοῦ Ἀμπιταλῆ.

Ἡ ιε΄. ὁ διὰ καμήλων πόλεμος.

Ντζαμὰν ἀλάχειρ

Ἡ γ΄. ὁ θάνατος τῆς θυγατρὸς τοῦ ἀσεβοῦς τῆς Φατμᾶς.

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3 εὐσεβοῦς sup. ἀσεβοῦς L^2 ‖ 4 ἡ^2 sup. lin. v | σκοτεινὸν om. Vv | φωταυγὲς sup. σκοτεινὸν L^2 | εὐσεβοῦς sup. ἀσεβοῦς L^2 ‖ 5 μακαρίας συμβίης sup. γαμητῆς L^2 ‖ 6 εὐσεβοῦς sup. ἀσεβοῦς L^2 ‖ 7 χαδιτζᾶ L ‖ 8 εὐσεβοῦς sup. ἀσεβοῦς L^2 ‖ 9 ἰαζήτ Vv ‖ 11 κατάκαυσις] ἐμπρησμὸς Vv ‖ 12 ἀπερχομένων + ἢ εἰσερχομένων Vv | τινα om. Vv | ἢ μενόντων οἴκοι om. Vv ‖ 16 ἀλλάχειρ L ‖ 17 εὐσεβοῦς sup. ἀσεβοῦς L

Ἡ θ΄. ὁ θάνατος τοῦ Ἀμπουπάκη.

Ἡ ιε΄. ἡ καταβολὴ τῆς προσευχῆς αὐτῶν παρὰ τοῦ υἱοῦ τοῦ Ζουπάκη.

Ῥαντζάπ

Ἡ α΄. ἡ τοῦ ἀσεβοῦς καταπολέμησις τοῦ Μαρκούμ.

| Ἡ δ΄ καθ' ἣν ὁ Ἀλῆς καὶ ὁ Ἀβιὰ συνῆψαν ἀλλήλοις πόλεμον εἰς τὸ Σιφή. f98rL

| Ἡ κς΄. ἡ τοῦ ἀσεβοῦς δεῖξις πρὸς τοὺς ἀσεβεῖς ὅτι προφήτης ἐστίν. f48vV

Ἡ κζ΄. ἡ νὺξ καθ' ἣν ἐπορεύθη ὁ ἀσεβὴς εἰς τὸ μασγῆδιν χαράμ, καὶ ἀπὸ τούτου ὡς αὐτοὶ φλυαροῦσιν ἀνῆλθεν εἰς τὸν οὐρανόν. καὶ ἡ ἀλήθεια ὅτι εἰς τὸν οἶκον τοῦ πατρὸς αὐτοῦ τοῦ διαβόλου ἐπορεύθη.

Σαπάν

Ἡ γ΄. ἡ γέννησις Χοσάην τοῦ υἱοῦ τοῦ Ἀλῆ.

Ἡ ε΄. ἡ γέννησις τοῦ Χασὰν τοῦ υἱοῦ τοῦ Ἀλῆ.

Ἡ ιγ΄, ἡ ιδ΄, ἡ ιε΄. αἱ λευκαὶ ἡμέραι.

Τῆς ιε΄ ἡ νὺξ ἡ μιαρὰ τούτων προσευχὴ ἡ λεγομένη παράτιν, καὶ κατὰ τὴν αὐτὴν ἡ πρὸς τὸ Μακκὰ ἐπαναστροφὴ τῆς μιαρᾶς προσευχῆς αὐτῶν.

Ῥαμαδάν

Ἡ α΄. ἡ κατάβασις ὡς αὐτοὶ φλυαροῦσι τῆς τοῦ Ἀβραὰμ βίβλου οὐρανόθεν.

Ἡ ς΄. ἡ Μωυσέος βίβλου κατάβασις οὐρανόθεν.

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4 ἀσεβοῦς L, corr. in εὐσεβοῦς L^2 ‖ 6 ἀσεβοῦς L, corr. in εὐσεβοῦς L^2 | ὅτι προφήτης ἐστὶ πρὸς τοὺς ἀσεβεῖς L ‖ 7 κζ. ἡ νὺξ] νὺξ τῶν $\overline{\text{κζ}}$ L ‖ 8 καὶ] κἂν v ‖ 14 Τῆς ιε΄ ἡ νὺξ] ἡ νὺξ τῶν $\overline{\text{ιε}}$ L 14–15 κατὰ τὴν αὐτὴν om. Vv ‖ 15 μακκὰμ L

Ἡ ι΄. ὁ θάνατος τῆς Χαδιντζᾶ, γυναικὸς τοῦ ἀσεβοῦς.

Ἡ ιβ΄. ἡ πρὸς τὸν Δαυὶδ κατάβασις τῆς βίβλου οὐρανόθεν.

Ἡ ιζ΄. ὁ πόλεμος τοῦ Μπάτρι διὰ τῶν ῑ τοῦ ἀσεβοῦς τροπωσαμένου χιλιάδας ῑ .

Ἡ ιη΄. ἡ τοῦ Εὐαγγελίου ὡς φλυαροῦσι κατάβασις.

Ἡ ιθ΄. ἀποκατάστασις τοῦ Μακκᾶ.

Ἡ κα΄. ὁ θάνατος τοῦ Ἀλῆ τοῦ υἱοῦ τοῦ Μουταλῆ, καὶ ὁ θάνατος τοῦ Ἀλιρηδᾶ, υἱοῦ αὐτοῦ.

Ἡ κβ΄. ἡ γέννησις τοῦ Ἀλῆ.

|Ἡ κδ΄. ἡ τοῦ Κουρανίου ὡς φλυαροῦσι κατάβασις πρὸς τὸν ἀσεβῆ. κρεῖττον δ' εἰπεῖν· ἡ ἀπὸ τοῦ πατρὸς αὐτοῦ τοῦ διαβόλου ἄνοδος τούτου πρὸς αὐτόν. f98vL

Ἡ κς΄. ἡ ἐκβολὴ τοῦ Περκουί.

Ἡ κζ΄. ἡ νὺξ ἐκείνη ἡ προσκύνησις τῶν δένδρων.

Σαουάλ

|Ἡ α΄. τὸ πάσχα τῆς μιαρᾶς νηστείας αὐτῶν. 281vv

Ἡ β΄. ἡ α΄ τῶν ς̄ ἡμερῶν τῆς μιαρᾶς προσευχῆς αὐτῶν.

Ἡ δ΄. ἡ διάλεξις τοῦ ἀσεβοῦς μετὰ τῶν Χριστιανῶν.

Ἡ ιζ΄. ὁ πόλεμος τοῦ Χούτ, καὶ ἡ φόνευσις τοῦ θείου τοῦ ἀσεβοῦς.

10–11 κρεῖττον ... αὐτόν] ὃ παρὰ τοῦ πατρὸς αὐτοῦ τοῦ διαβόλου ἐπεχορηγήθη αὐτῷ Vv ‖ 12 περκοί L ‖ 13 νὺξ... προσκύνησις] προσκύνησις διὰ τῆς νυκτὸς Vv ‖ 15 πάσχα + τῆς ἀνοίξεως L ‖ 16 α΄] πρώτη Vv | ἡμερῶν om. Vv

Ἡ κβ΄. ἡ τοῦ Ἰωνᾶ παρὰ τοῦ κήτους καταβρόχθισις.

Δουλκάτ

Ἡ ιδ΄. ⟨ἡ⟩ ἐκβολὴ τοῦ Ἰωνᾶ ἀπὸ τοῦ κήτους.

Ἡ ιε΄. ἡ κατάβασις τοῦ Καπᾶ οὐρανόθεν ὡς αὐτοὶ φλυαροῦσιν, καὶ ἡ συγχώρησις τοῦ Ἀδάμ.

Ἡ κθ΄. ἡ | ἀναβλάστησις τῆς κολοκύνης Ἰωνᾶ. f49rV

Δουλχέντζα

Ἡ α΄. ἡ τῆς Φατμᾶς δόσις πρὸς τὸν Ἀλῆ. πρὸ τούτου ⟨τοῦ⟩ μηνὸς $\overline{\iota}$ ἡμέραι λέγονται τοῦ γνωρίσματος. εἰς ταύτας τὰς ἡμέρας ἡ μιαρὰ προσευχὴ αὐτῶν, ἀλλὰ ἡ ἀπὸ τῶν $\overline{\iota}$ ἡ΄ ἀνάκραξις μεγίστη τῆς μιαρᾶς προσευχῆς αὐτῶν.

Ἡ θ΄. ἡ ἡμέρα ἡνίκα γυμνοῦνται καὶ προσεύχονται διονυσιακῶς.

Ἡ ι΄. ἡ πασχαλία τούτων, ἥτις λέγεται προσφαγή.

Ἡ ια΄. ἡ ἡμέρα τῆς ἁρπαγῆς.

Ἡ ιβ΄. ἡ φυγὴ πάντων ἀπὸ τῆς προσευχῆς αὐτῶν.

| Ἡ ιγ΄. ἡ καθέδρα ἡμέρας $\overline{\gamma}$. f99rL

Ἡ ιζ΄. σφαγὴ τῶν συνήθων τοῦ ἀσεβοῦς τοῦ Ἀτμάν.

Ἡ κε΄. σφαγὴ τοῦ Ἀμάρη Χατάπ.

Ἡ κζ΄. ἡ εἰς τὴν Μαδιναίαν πλείστη θερμή, καὶ ἀπὸ τούτου τῶν πολλῶν

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3 ιδ΄.] δ΄. L ‖ 7 δολχέντζα Vv ‖ 8 δέκα L | μηνὸς] ἡμέρας codd. ‖ 10 ἡ΄ om. Vv ‖ 11 προσεύχωνται V ‖ 12 προσφαγή] προβάτων σφαγή v ‖ 13 ἡ^2 om. L ‖ 16 συνήθων] συντρόφων L ‖ 17 μάρη L, corr. L^2

θνῆσις.

Διαίρεσις ε΄ . Πασχαλίαι τῶν Περσῶν καὶ αἱ μεγάλαι ἡμέραι ἐκείνων οἳ ἀριθμοῦσι πρῶτον καὶ τὰς ἡμέρας, εἶτα τὰς νύκτας.

Φαβαρδίν

ʿΗ α΄. ἡμέρα ἡ νέα.

ʿΗ ς΄. ἡ νέα ἡμέρα τοῦ Μελιξᾶ.

ʿΗ ιζ΄. Σούρως.

ʿΗ ιθ΄. Φαρβαντινάν, ἡ πασχαλία ἐκείνων.

Ἀρδεμπεέστ

ʿΗ γ΄. Ἀρδεμπισκάν, πασχαλία ἐκείνων.

ʿΗ ς΄. ἡ α΄ Χαρτζὰν Ἀσούκτ.

ʿΗ κς΄. ἡ α΄ Κουουμπάς· ἡμέραι $\overline{\varepsilon}$.

Χορντάτ

ʿΗ ς΄. ἡ πασχαλία τοῦ Χορντατάν. ἡ α΄ Ναισὰντζ Σούκτ.

⟨ʿΗ⟩ κς΄. ἡ α΄ Κουμάτ.

Τίρ

ʿΗ ς΄. Ντζάσνι νικουφάρ.

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2 πέμπτη v | μεγάλαι] μέγιστοι L | οἳ] οἵτινες L ‖ 3 α΄ L | εἶτα] καὶ ἔπειτα L ‖ 4 φαρβαδίν L ‖ 5 ἡ² om. L ‖ 6 ς΄. + ἡμέρα L ‖ 7 Σοῦρ ὥς codd. ‖ 9 ἀρδεμπεέτζ L ‖ 10 ἀρδεεμπισμὰν v ‖ 11 ἀσούκγ(?) L ‖ 14 ναισὰν τζσούκτ Vv, ναισαντζσούκτ L ‖ 17 ντζασνινικουφᾶ v

ʽΗ ιγ΄. πασχαλία τοῦ Τιργὰν Μικρά.

⟨ʽΗ⟩ ιη΄. πασχαλία τοῦ Τιργὰν Μεγάλη.

Μουρντάτ

ʽΗ ς΄. Συναχὲντ Σούκτ.

ʽΗ ζ΄. πασχαλία Μουρντατκάν.

Σαρεβάρ

ʽΗ δ΄. πασχαλία τῶν Σαχριρᾶν καὶ ʽΕστία κάνι.

ʽΗ ς΄. Μιτζιχὰν Σούκτ.

ʽΗ ις΄. ἡ α΄ τοῦ φθινοπώρου. ἐκείνη ἡ ἡμέρα ἀπὸ τῶν ε̅ Κουμπάτ, αἳ εἰσι ε̅.

Μμέερ

ʽΗ α΄ φθινοπώρου δευτέρα.

ʽΗ ς΄. Βαγκὰν Σούκτ.

ʽΗ ις΄. Μμεερκὰν πασχαλία.

⟨ʽΗ⟩ κα΄. Μμεερκὰν μεγάλη.

Ἀπάν

ʽΗ ς΄. Ἀπαντζοὺ Σούκτ.

ʽΗ ι΄. πάσχα τοῦ Ἀπανκάν.

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3 μουρτάτ L ‖ 4 συναχθὲντ Vv ‖ 5 μουρτὰτ κὰν L ‖ 7 ἑστία V, corr. in ἱστία V, ἱστία L, εἱστία v ‖ 8 μυτζιχὰν Vv ‖ 9 α΄ om. Vv | κουμπὰζ L | αἳ εἰσι] καὶ ἐκεῖναι ἡμέραι L ‖ 10 μέχερ L ‖ 11 β΄ L ‖ 12 βαγκασούκτ V, βασκουσούκτ v ‖ 16 ἀπάν ντζού σούκτ L, ἀπὰν τζουσούκτ Vv

῾Η κε΄. ἡ α΄ Φαρβαντζάν.

| ⟨῾Η⟩ λα΄. ἡ α΄ — αἱ κλοπιμαῖαι ε̅ ἡμέραι αὗται. Κουμπὰτ λέγεται ἕκτον. f99vL

καὶ εἰς τοὺς ἱσταμένους μῆνας αἱ ε̅ ἡμέραι εἰς τὸ ὕστερον τοῦ Σφαντὰρ δμάδ

| εἰσιν. f49vV

5 Ἀδάρ

῾Η α΄. ἡ καβαλλίκευσις τοῦ Πανοῦ. Παχαρκὲδ λέγεται ἤγουν ὁ Θερσίτης.

῾Η θ΄. Ἀδὰρ τζάσνι.

Ντάϊ

῾Η α΄. Χορὸμ ῾Ρός.

10 ῾Η η΄. πάσχα ἐκείνων.

῾Η ια΄. ἡ πρώτη τοῦ Κουμπὰτ καὶ ἡ τῶν ιε̅ νὺξ πάσχα τοῦ Κακέτελ.

⟨῾Η⟩ κγ΄. πασχαλία.

Παχμάν

| ῾Η α΄. Ζαημανταν⟨ὰ⟩τζ Σούκτ. 282rv

15 ⟨῾Η⟩ β΄. Παχμὰν τζινὰ πασχαλία.

᾽Ισφαντὰρ δμάδ

῾Η α΄. Ἀουὰλ Χουσούμου Σούκτ.

῾Η ε΄. πασχαλία ᾽Ισφαντὰρ δμὰδ κάν.

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1 ἡ[1] om. L ‖ 2 σουμπὰτ codd. ‖ 6 καβαλίκευσις L. | παχαρκὲγ Vv ‖ 7 τζάσνι] ντζάνϊ L. ‖ 9 ῾Ρός] πρός codd. ‖ 11 πρώτη] α΄ L | μακέλετ L, κακέλετ Vv ‖ 13 μπαχμάν Vv ‖ 14 ζαήμαν τὰκτζ codd. ‖ 15 μπαχμὰν Vv | ντζινὰ Vv

ʽΗ ια΄. ἡ α΄ Κουμπάς β΄. ἡμέραι ε̅.

ʽΗ ⟨ι⟩ς΄. Μουσχουπατὰ ἤγουν καιρὸς τοῦ ἔαρος.

⟨ʽΗ⟩ κς΄. Ζαρταρὸτ εἰς τὸ ᾽Ι⟨σ⟩παχὰν συναγωγή.

Διαίρεσις ἕκτη. Τὰ ὀνόματα τῶν ἡμερῶν καὶ τῶν μηνῶν τῶν Περσῶν.

ʽΗ α΄ τοῦ μηνός, Χουρμούζ.

ʽΗ β΄. Παχμάν.

ʽΗ γ΄. ᾽Αρδεμπεέστ.

ʽΗ δ΄. Σαρεβάρ.

ʽΗ ε΄. ᾽Ισφαντὰρ δμάδ.

ʽΗ ς΄. Χορτάτ.

ʽΗ ζ΄. Μουτάτ.

ʽΗ η΄. Τεμπαδτής.

ʽΗ θ΄. ᾽Αδάρ.

ʽΗ ι΄. ᾽Απάν.

ʽΗ ια΄. Χοάρ.

ʽΗ ιβ΄. Μάν.

ʽΗ ιγ΄. Τίρ.

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1 ἡμέρα Vv ‖ 3 ἰπαχὰν LV, ἰπασχὰν v ‖ 4 ς΄ L ‖ 5 χουρμούζς L ‖ 10 χορουτάτ v, χορυτάτ V ‖ 11–13 ʽΗ ζ΄ . . . ᾽Αδάρ om. Vv ‖ 16 μάρ V

ʿΗ ιδ΄. Κός.

ʿΗ ιε΄. Ντάϊ Παμέερ.

ʿΗ ις΄. Μμέερ.

ʿΗ ιζ΄. Σουρώς.

ʿΗ ιη΄. ʿΡάσνι.

ʿΗ ιθ΄. Φαρβαρδίν.

ʿΗ κ΄. Μπαχράμ.

ʿΗ κα΄. ʿΡάμ.

ʿΗ κβ΄. | Μπάτ. f100rL

ʿΗ κγ΄. Ντεπτίν.

ʿΗ κδ΄. Ντίν.

ʿΗ κε΄. Ἄρτ.

ʿΗ κς΄. Ἰ⟨σ⟩τάδ.

ʿΗ κζ΄. Ἀσμάν.

ʿΗ κη΄. ʿΡαμιάδ.

ʿΗ κθ΄. Μμέερ σφάν.

ʿΗ λ΄. Ἀνιράν.

Τὰ ὀνόματα τῶν ε̅ ἡμερῶν τῶν κλοπιμαίων.

ʿΗ α΄. Ἀχνούδ.

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1 κοί Vv ‖ 2 παμμέσαρ Vv ‖ 3 μμέρ Vv ‖ 4 σοῦρ ὡς L ‖ 6 φαρβαδίν L ‖ 7 μπαχράση Vv ‖ 17 λ΄] δ΄ codd.

ʿΗ β΄. Ἀσνούδ.

ʿΗ γ΄. Ἰσφανδμάδ.

ʿΗ δ΄. Κασάτ.

ʿΗ ε΄. Οὐασατούς.

Διαίρεσις ἑβδόμη. Εἰς τὰς πασχαλίας τῶν Χριστιανῶν, αἱ μεγάλαι ἡμέραι, τὰ ὀνόματα τῶν μηνῶν.

Τασιρὴν ἀουάλ

ʿΗ θ΄. Μουρτὰτ μὴν Ματαδίτ.

Τασιρὴν ἀλλάχειρ

ʿΗ η΄. Σαρεβὰρ μὰ Ματαδίτ.

⟨ʿΗ⟩ κβ΄. πασχαλία τοῦ Χανακᾶ.

Κανοῦν ἀουάλ

⟨ʿΗ α΄⟩ πασχαλία τοῦ Συμονί.

ʿΗ η΄. Μμέερ μὰ Ματαδίτ.

⟨. . .⟩

Οὗτος ὁ μὴν $\overline{\text{λε}}$ ἡμέραι, καὶ εἰς τὸν χρόνον τοῦ καπισᾶ ἡμέραι $\overline{\text{λς}}$.

Σουμπάτ

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3 γασάτ L ‖ 7 τασιρὶν Vv ‖ 8 Μουρτὰτ] ν sup. ρ V, μουρντὰτ v | ματαδδίτ codd. ‖ 9 τασιρὶν Vv ‖ 14 ματαδδίτ L

Ἑ β΄. ἡ ὑπαπάντη.

Ἑ ζ΄. ἡ ἀρχὴ τῆς ἀπὸ τῆς γῆς θέρμης.

Ἑ ια΄. Ἀδὰρ μὰ Ματαδίτ. οὗτος Χαλιφᾶς ἦν καὶ ἐτέθη τὸ ἔτος τούτου εἰς τοῦτο.

Ἑ ιδ΄. ἡ ἀπὸ | τῆς γῆς δευτέρα θέρμη. f50rV

Ἑ ιε΄. ἡ ἀρχὴ τῆς βλάστης τῶν φυτῶν.

Ἑ κα΄. αἱ $\overline{\gamma}$ θέρμαι αἱ ἀπὸ τῆς γῆς.

Ἑ κς΄. αἱ πρῶται ἡμέραι τοῦ παλαιοῦ ψύχους, ἡμέραι $\overline{\zeta}$.

Ἀδάρ

⟨Ἑ η΄⟩ ἡ τῶν χελιδόνων καὶ πελαργῶν φανέρωσις.

Ἑ ιγ΄. Ντάϊ μὰ Ματαδίτ.

Νισσάν

⟨Ἑ⟩ ιβ΄. Παχμὰν μὴν Ματαδίτ.

⟨Ἑ⟩ κδ΄. Δου[λ]κράνη μὴν Τζου⟨ρ⟩τζᾶς.

⟨Ἑ⟩ κε΄. ἡ γέννησις τοῦ Ἰῶνα.

Ἰάρ

| Ἑ ιβ΄. Ἰσφαντὰρ δμὰδ Ματαδίτ. f100vL

Ἑ ιγ΄. ἡ πλήμυρα τοῦ Νείλου.

Ἑ ιη΄. ⟨ἡ⟩ παρέλευσις τοῦ θέρους καὶ τῶν ἀνεμῶν κίνησις, ἡμέραι $\overline{\mu}$.

3 μὰ Ματαδίτ] μακαταδδίτ L, μακαταδίτ Vv ‖ 7 αἱ² om. v ‖ 18 ἡ¹ om. Vv | πλήμμυρα codd. ‖ 19 θέρπους v

Ἀζυράν

ἡ Η ια΄. ἡ α΄ Φαρβαρδὶν μὰ Ματαδίτ.

⟨ἡ Η⟩ κα΄. ἡ γέννησις τοῦ Προδρόμου.

⟨ἡ Η⟩ κδ΄. πνεῦσις τοῦ λίβα.

⟨ἡ Η⟩ κζ΄. τελείωσις τῶν $\overline{\mu}$ ἡμερῶν.

Ταμούζ

ἡ Η γ΄. Δουκράνη μὰρ Τουμά.

ἡ Η ια΄. Ἀρδεμπεὲστ μὰ[ι] Ματαδίτ.

ἡ Η ιθ΄. ἡ α΄ ἡμέρα τῶν κυανοκαυμάτων, ἡμέραι $\overline{\zeta}$.

Ἄπ

ἡ Η α΄. ἡ νηστεία τῆς Θεοτόκου.

ἡ Η ς΄. ἡ μεταμόρφωσις.

ἡ Η ι΄. Χορτὰτ μὰ Ματαδίτ.

ἡ Η ιε΄. τὸ πάσχα τῆς Θεοτόκου.

ἡ Η κδ΄. ἡ φόνευσις τοῦ Προδρόμου.

Αἰλούλ

ἡ Η β΄ καθ' ἣν ἐπιτέλλει ὁ Αἰρὰκ ἀστήρ.

ἡ Η θ΄. Τὶρ μὰ Ματαδίτ.

ἡ Η ιγ΄. ἡ πασχαλία τῆς ὑψώσεως τοῦ σταυροῦ.

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2 πρώτη Vv | φαρβαδὶν L ‖ 7 γ] ιγ΄ codd. ‖ 13 χορουτὰτ Vv ‖ 15 ἡ[1] om. Vv ‖ 19 τοῦ + τιμίου καὶ ζωοποίου Vv

| Μοῖρα δευτέρα. Περὶ τῆς καταλήψεως τῶν ψηφῶν, τῆς περισσείας, 282vv
τῆς τραχηλαίας, τοῦ τόξου, τῆς σαγίτας καὶ τοῦ σκιάσματος κατὰ πολὺ λυσιτελούντων τούτων εἰς τὴν τῆς Συντάξεως μετάχειρσιν. αὕτη ἡ μοῖρα εἰς τρία διαιρεῖται τμήματα.

Τμῆμα α΄ . Περὶ τῆς ὀρθώσεως τοῦ μέσου ψήφου τῶν $\overline{\beta}$ κανονίων.

Δεῖ εἰδέναι ὅτι οἷον καὶ ἔστι κανόνιον, ἐκεῖνος ὁ τεθεὶς ψῆφος κατ' ἀρχὰς τῶν κανονίων οἷον θύρα τίς ἐστιν εἰς τὸν ψῆφον ἐκεῖνον τοῦ κανονίου. ἐκεῖνος οὖν ὁ ψῆφος οἷος καὶ ἔστι μέσον τῶν | κανονίων | καὶ ὁ κατὰ τὴν ἀρχὴν f50vV, f101rL
τοῦ κανονίου, ἀεὶ ὀρθός ἐστιν εἰς τὴν περισσείαν, ἐκείνη δὲ ἡ περισσεία ἡ μέσον τῶν δύο κανονίων πᾶσα οὐδὲ συμβαίνει ὀρθή. ἐὰν οὖν ἡ μέσον τοῦ κανονίου αὕτη περισσεία ἐγράφη εἰς τὸ κανόνιον, καὶ τὰ ζῴδια ἀπὸ τῶν ἄνω κατέρχονται, ἡ περισσεία κατ' ἐναντίον ἐκείνου τοῦ ψήφου κρατεῖται. εἰ δὲ τὰ ζῴδια ἀπὸ τῶν κάτω ἀνέρχονται, ἡ περισσεία ἀπὸ τοῦ β΄ ψήφου κρατεῖται. εἰ δ' οὐκ ἐγράφη ἡ περισσεία ἐν τῷ κανονίῳ, γίνεται ζήτησις εἰς τὸν ψῆφον ἐκεῖνον δι' οὗ ἐγένετο εἰσέλευσις. ὁ ψῆφος γοῦν ὁ μετ' ἐκεῖνον τηρεῖται καὶ ὁ ἐλάττων ἀφαιρεῖται τοῦ πλείονος. εἴπερ ὁ β΄ πλείων, ἐκεῖνος ὁ ψῆφος λέγεται

1–3 τῆς περισσείας...μετάχειρσιν] τῶν κατὰ πόλυ λυσιτελούντων εἰς τὴν μετάχειρσιν τῆς συντάξεως ἢ τῆς περισσείας τῆς τραχηλαίας τοῦ τόξου τῆς σαγίτας καὶ τοῦ σκιάσματος L ‖ 5 πρῶτον v | περὶ τῆς ὀρθώσεως] ἡ ὄρθωσις L | ψήφου post κανονίων Vv ‖ 8 οἷος] ὁποῖος Vv | τῶν + μέσον τῶν V | ὁ²] ὅτι Vv ‖ 10 $\overline{\beta}$ L | οὐδὲν codd. ‖ 11 τὰ κανόνια v ‖ 13 δευτέρου Vv ‖ 16 δεύτερος Vv

περισσός. εἰ δὲ ὁ α΄ πλείων, ὁ ψῆφος ἔνευσε πρὸς ἀφαίρεσιν. οὗτος οὖν ὁ ψῆφος τῶν μέσων κανονίων ἐστίν, ἐπεὶ ὁ τῆς ἀρχῆς ἀεὶ πρὸς πλέον χωρεῖ.

Ἐπεὶ χρεία γενέσθαι τὴν ἐργασίαν ταύτην, εἴπερ λεπτὰ οὐκ εἴσιν εἰς τὸν ψῆφον τοῦτον τὸν παρ' ἡμῶν κρατηθέντα, χρεία οὐκ ἔστι τῆς τοιαύτης ἐργασίας. κατ' ἐναντίον δὲ τοῦ ψήφου ἐκείνου, εἴ τι εὑρεθῇ, κρατεῖται. εἰ δέ εἰσι λεπτὰ εἰς τὸν ψῆφον ἡμῶν, κατ' ἐναντίον τῶν μοιρῶν τοῦ κρατουμένου παρ' ἡμῶν ψήφου ἀπὸ τῆς ἀρχῆς τοῦ κανονίου γίνεται εἰσέλευσις, καὶ ἀπὸ τῆς μέσης τοῦ κανονίου κρατεῖται ὁ εὑρεθεὶς | ψῆφος καὶ τηρεῖται. ἔπειτα f101vL ἡ περισσεία τούτου φανεροῦται, καὶ ἐκείνη ἡ περισσεία εἰς τὰ λεπτὰ τοῦ κρατουμένου παρ' ἡμῶν ψήφου τηρεῖται. εἴ τι εὑρεθῇ, μερίζεται εἰς τὴν περισσείαν τῆς ἀρχῆς τοῦ κανονίου. εἴ τι ἐξέλθῃ, ἐὰν ὁ ψῆφος ὁ ἀπὸ τῆς μέσης τοῦ κανονίου τοῦ κρατηθέντος καὶ τηρηθέντος | χωρῇ πρὸς τὸ πλέον, f51rV ἐκεῖνο τὸ ἐξελθὸν ἐνοῦται τούτῳ. εἰ δὲ πρὸς τὸ ἔλαττον, ἀφαιρεῖται ἵνα γένηται ὁ ψῆφος ἐκεῖνος τέλειος μέσον τοῦ ψήφου τῶν $\overline{\beta}$ κανονίων.

Διαίρεσις

Εἴπερ ἐκεῖνος ὁ κρατηθεὶς παρ' ἡμῶν ψῆφός ἐστιν ἀπὸ τοῦ ἀπὸ τοῦ μέσου κανονίου ψήφου, καὶ δεήσει γενέσθαι ἀπὸ τούτου δῆλον τὸν ἀπὸ τῆς ἀρχῆς τοῦ κανονίου ψῆφον, οὗτος ὁ παρ' ἡμῶν κρατούμενος ψῆφος ζητεῖται μέσον

1 πρῶτος Vv ‖ 4 τοῦτον om. Vv ‖ 9 ἐκείνη om. Vv ‖ 14 τοῦ] τῶν v ‖ 17 ἀπὸ τούτου om. Vv

τοῦ κανονίου. εἴπερ τοίνυν εὑρεθῇ ὅμοιος τούτῳ ψῆφος ἐκεῖ, κατ' ἐναντίον ἐκείνου κρατεῖται ὁ ψῆφος τῆς ἀρχῆς τοῦ κανονίου καὶ χρεία οὐκ ἔστιν | ἄλλου τινὸς εἰς τοῦτον τὸν ψῆφον. εἰ δ'οὐχ εὑρεθῇ ὅμοιος ἐκείνῳ, μέσον f283rv τοῦ κανονίου ζητεῖται ὁ ψῆφος, ὃς ἀπὸ τοῦ κρατουμένου παρ' ἡμῶν ψήφου ἐστὶν ἐλάττων καὶ ἐγγύτερον. εἶτα κατ' ἐναντίον ἐκείνου κρατεῖται ὁ ψῆφος ὁ κατὰ τὴν ἀρχὴν τοῦ κανονίου καὶ τηρεῖται. ἔπειτα ὁ ψῆφος ὁ εὑρεθεὶς μέσον τοῦ κανονίου ἀφ' οὗ κατ' ἐναντίον ἐγένετο εἰσέλευσις, ἀπὸ τοῦ κρατουμένου | παρ' ἡμῶν ψήφου ἀφαιρεῖται. εἴ τι οὖν καταλειφθῇ, ἐκεῖνο τηρεῖται εἰς τὴν f102rL περισσείαν τοῦ ψήφου τῆς ἀρχῆς τοῦ κανονίου καὶ τὸ εὑρεθὲν μερίζεται εἰς τὴν περισσείαν τῆς μέσης τοῦ κανονίου. εἴ τι οὖν εὑρεθῇ ἀπὸ τῶν πρώτων καὶ δευτέρων λεπτῶν, ἑνοῦται μετὰ τοῦ ψήφου τοῦ κρατηθέντος ἀπὸ τῆς ἀρχῆς τοῦ κανονίου ὡς ἂν γένηται ὁ ψῆφος ἐκεῖνος ὁ κρατηθεὶς ἀπὸ τῆς ἀρχῆς τοῦ κανονίου τέλειος.

Τμῆμα δεύτερον. Περὶ τῆς καταλήψεως τῶν τόξων τῶν τραχηλαίων καὶ τῶν σαγιτῶν.

Οἱ ἀρχαῖοι ἐκεῖνοι, ὁποῖος ἄρα καὶ ἔστι κύκλος εἰς τὴν σφαῖραν, εἰς τὰ $\overline{\tau\xi}$ ἐμέρισαν, εἰς τὸ γενέσθαι ἕκαστον μετὰ τοῦ ἄλλου ἴσον, καὶ τὰ τεμμάχια ἐκεῖνα ἐκάλεσαν μοίρας. καὶ τὴν διάμετρον δὲ τοῦ κύκλου εἰς $\overline{\rho\kappa}$ μοίρας

10 μέσων L ‖ 11 β′ L ‖ 14 β′ L ‖ 16 κύκλος post ἄρα L

ἐμέρισαν. ἑκάστη δὲ | μοῖρα παρ' αὐτῶν εἰς $\overline{\xi}$ διῃρέθη τμήματα, καὶ ἕκαστον f51vV
ἐκείνων λεπτὸν ἐκάλεσαν. καὶ αὖθις ἕκαστον ἐκείνων εἰς $\overline{\xi}$ διῃρέθη τμήματα, ὧν ἕκαστον δεύτερον λεπτὸν ἐκάλεσαν. καὶ μετὰ τῆς τάξεως ταύτης ἐγένετο ἡ διαίρεσις τῶν καθεξῆς λεπτῶν μέχρι τῶν ι΄ λεπτῶν.

Δεῖ εἰδέναι ὅτι ἡ τραχηλαῖα θεμέλιόν ἐστιν εἰς τὴν κατάληψιν τῆς τάξεως τῶν τόξων. καὶ εἰς ἅπαντας δὲ τοὺς ψήφους οἱ ἀστρονόμοι ταύτῃ χρῶνται. καὶ ἡ μεγάλη δὲ τραχηλαῖα ἥμισύ ἐστι τῆς διαμέτρου, ἧς ὁ ψῆφος μοῖραι $\overline{\xi}$. οἷον οὖν | τόξον καὶ ἔστιν, δεῖ εἰδέναι τὴν τραχηλαῖαν ἐκείνου. εἰ τὸ f102vL
τόξον ἔλαττόν ἐστι τῶν $\overline{\rho}$, κατ' ἐναντίον ἐκείνου κρατεῖται ἡ τραχηλαῖα. εἰ δὲ πλέον τῶν $\overline{\rho}$ καὶ ἔλαττον τῶν $\overline{\rho\pi}$, ἡ περισσεία τῆς μέσης τοῦ τόξου ἐκείνου $\overline{\rho\pi}$ κρατεῖται, ἤγουν τὸ ἔλαττον ἀφαιρεῖται τοῦ πλείονος. εἴ τι καταλειφθῇ ἐξ ἐκείνου, κατ' ἐναντίον κρατεῖται ἡ τραχηλαῖα. καὶ εἰ τὸ τόξον ἐκεῖνο πλέον ἐστὶ τῶν $\overline{\rho\pi}$ μοιρῶν, ἐκεῖνο ἀφαιρεῖται ἀπὸ τῶν $\overline{\tau\xi}$ μοιρῶν. εἴ τι οὖν καταλειφθῇ, κατ' ἐναντίον ἐκείνου κρατεῖται ἡ τραχηλαῖα.

Εἰ γένηται χρεία κατ' ἐναντίον τοῦ τόξου κρατηθῆναι τὴν σαγίταν, ἐὰν τὸ τόξον ἔλαττόν ἐστι τῶν $\overline{\rho\pi}$ μοιρῶν, κατ' ἐναντίον ἐκείνου ἐκβάλλεται ἡ σαγίτα. εἰ δ' ἐστὶ πλέον τῶν $\overline{\rho\pi}$, ἐκεῖνο ἀφαιρεῖται ἀπὸ τῶν $\overline{\tau\xi}$. εἴ τι οὖν καταλειφθῇ, κατ' ἐναντίον ἐκείνου κρατεῖται ἡ σαγίτα. καὶ ἡ σαγίτα δὲ ἡ μεγάλη διάμετρός ἐστι τοῦ κύκλου, καὶ ἐκεῖνο $\overline{\rho\kappa}$ μοῖραί εἰσιν. καὶ ἡ σαγίτα

3 δεύτερον... ἐκάλεσαν] β΄ ὠνόμασεν λεπτὸν L ‖ 4 δεκάτων V ‖ 8 ἐκείνου] ἐκείνην Vv ‖ 15 ἐὰν + οὖν L ‖ 19 μοῖραι post εἰσι L

αὕτη ἐκείνου τοῦ τόξου τοῦ $\overline{\rho\pi}$ ἐστίν.

| Διαίρεσις. Περὶ τοῦ εἰδέναι τὴν τραχηλαῖαν ἀπὸ τοῦ τόξου, καὶ τὸ τόξον 283vv
ἀπὸ τῆς τραχηλαίας.

Βουλομένων ἡμῶν ποιῆσαι ἐργασίαν, γίνεται εἰσέλευσις κατ' ἐναντίον
5 τοῦ τόξου εἰς τὸ ἄκρον τῆς ἀρχῆς τῆς τραχηλαίας. καὶ κατ' ἐναντίον
ἐκείνου ἀπὸ μέσου τοῦ κανονίου ἡ τραχηλαῖα | ἐκβάλλεται. ἐπεὶ οὖν μετὰ f52rV
τοῦ τόξου οὗ εἴχομεν ἦσαν λεπτά, ἐκείνη ἡ τραχηλαῖα τελεία γίνεται | μετὰ f103rL
τῆς ὀρθώσεως τοῦ μέσου τῶν $\overline{\beta}$ κανονίων. οὕτως ὡς ἐρρέθη εἰς τὴν ἀρχὴν
τοῦ α΄ τμήματος. εἴ τι εὑρεθῇ, τραχηλαῖά ἐστιν ἐκείνου τοῦ τόξου. καὶ ἂν
10 γένηται χρεία γενέσθαι τὴν τραχηλαῖαν ἐκείνου τοῦ τόξου τετελειωμένην,
τὸ τόξον ἀφαιρεῖται ἀπὸ τῶν $\overline{\rho}$. [ἐκεῖνο] εἴ τι καταλειφθῇ, τετελειωμένον
ἐστὶ τὸ τόξον καὶ ἡ τραχηλαῖα ἐκείνου κρατεῖται. εἴ τι εὑρεθῇ, τραχηλαῖά
ἐστι τετελειωμένη ἐκείνου τοῦ τόξου.

Καὶ ἂν κρατῆται παρ' ἡμῶν τραχηλαῖα, ἐκείνη εἰς τὸ μέσον τοῦ κανονίου
15 τῆς τραχηλαίας ζητεῖται, καὶ κατ' ἐναντίον ἐκείνου ἀπὸ τῆς ἀρχῆς τοῦ
κανονίου τὸ τόξον κρατεῖται καθ' ὡς εἴρειται εἰς τὴν διαίρεσιν τοῦ πρώτου
κεφαλαίου.

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13 τετελειωμένη... τόξου] τοῦ τετελειωμένου ἐκείνου τόξου Vv ‖ 14 κρατεῖται L ‖ 15 ἀρχῆς] ἄκρας L ‖ 16 α΄ L ‖ 17 κεφάλου L

Διαίρεσις. Περὶ τῆς καταλήψεως τῆς σαγίτας ἀπὸ τοῦ τόξου καὶ τοῦ τόξου ἀπὸ τῆς σαγίτας ἀπὸ τοῦ κανονίου τῆς τραχηλαίας.

Ὅταν κρατῆται παρ' ἡμῶν τόξον, καὶ τὴν σαγίταν ἐκείνου βουλόμεθα εἰδέναι, γίνεται ζήτησις εἰς ἐκεῖνο τὸ τόξον. εἴπερ ἐστὶν ἐκεῖνο ἔλαττον τῶν $\overline{\rho}$, ἡ τετελειωμένη τοῦ τόξου ἐκείνου τραχηλαῖα ἀφαιρεῖται ἀπὸ τῶν $\overline{\xi}$. εἴ τι οὖν καταλειφθῇ, σαγίτα ἐστὶ τοῦ τόξου ἐκείνου. καὶ ἐὰν τὸ τόξον ἐκεῖνο $\overline{\rho}$ μοῖραι, ἡ σαγίτα ἐκείνη μοῖραι $\overline{\xi}$. εἰ δ' ἐκεῖνο τὸ τόξον πλέον τῶν $\overline{\rho}$, ἀφαιροῦνται ἐξ ἐκείνου $\overline{\rho}$. εἴ τι οὖν καταλειφθῇ, ἡ τραχηλαῖα ἐκείνου κρατεῖται καὶ ἑνοῦται | τοῖς $\overline{\xi}$. εἴ τι εὑρεθῇ, ἡ σαγίτα ἐστὶ τοῦ τόξου ἐκείνου. ὅταν ᾖ [ἐν] ἡμῖν σαγίτα, f103vL καὶ τὸ τόξον ἐκείνης βουλόμεθα ἐκβαλεῖν ἀπὸ τοῦ κανονίου τῆς τραχηλαίας, γίνεται τήρησις εἰς ἐκείνην τὴν σαγίταν. ἐὰν ᾖ ἐκείνη ἐλάττων τῶν $\overline{\xi}$, αὕτη ἀφαιρεῖται ἀπὸ τῶν $\overline{\xi}$. εἴ τι οὖν καταλειφθῇ, ἐκεῖνο τραχηλαῖά ἐστιν. τὸ τόξον ἐκείνης κρατεῖται, | καὶ εἴ τι εὑρεθῇ, ἀφαιρεῖται ἀπὸ τῶν $\overline{\rho}$. ἔπειτα f52vV εἴ τι καταλειφθῇ, τόξον ἐστὶ τῆς σαγίτας ἐκείνης. εἰ δὲ ἡ σαγίτα $\overline{\xi}$ μοῖραι, ὀρθή ἐστι καὶ τὸ τόξον ἐκείνης $\overline{\rho}$ μοῖραί εἰσιν. εἰ δὲ ἡ σαγίτα πλείων τῶν $\overline{\xi}$, ἀφαιροῦνται ἐξ ἐκείνης $\overline{\xi}$. εἴ τι καταλειφθῇ, τραχηλαῖά ἐστιν. τὸ τόξον οὖν ἐκείνης κρατεῖται. εἴ τι εὑρεθῇ, ἑνοῦνται τοῖς $\overline{\rho}$, καὶ εὑρίσκεται τὸ τόξον τῆς σαγίτας ἐκείνης.

4 γίνεται post ζήτησις L ‖ 5 οὖν om. Vv

Τμῆμα γ΄. Περὶ τοῦ σκιάσματος.

Εἰς τὸ πλάγιον τοῦ κανονίου τῆς τραχηλαίας ἐτέθη διὰ τοὺς δακτύλους καὶ τὰ ἰχνόποδα. κατ᾽ ἐναντίον οὖν τῆς ἀναβάσεως γίνεται εἰσέλευσις καὶ κρατεῖται τὸ σκίασμα.

Μοῖρα τρίτη. Περὶ τῆς α΄ καὶ β΄ μετακλίσεως τῆς βορείας καὶ νοτίας καὶ τοῦ μήκους τῶν πόλεων καὶ τῆς ἀναβάσεως τῶν ἀστέρων εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας |καὶ τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς. αὕτη f284r δὲ ἡ μοῖρα εἰς $\overline{\delta}$ διαιρεῖται κεφάλαια.

Κεφάλαιον α΄. Περὶ τῆς α΄ καὶ β΄ μετακλίσεως.

Ἡ μεγάλη τοίνυν μετάκλισις μέσον ἐστὶ τοῦ ζῳδιακοῦ κύκλου καὶ τῆς | τελείας τῆς ἡμέρας ζώνης, ἤγουν τοῦ κατὰ τὸ νυχθήμερον κινουμένου f104rL κύκλου. $\overline{\kappa\gamma}$ δὲ μοῖραί εἰσι καὶ $\overline{\lambda\epsilon}$ λεπτά. ἡ μετάκλισις δὲ ἡ β΄ ἡ καὶ ἐλάττων τῆς α΄ εἰς δύο διαιρεῖται. ἡ μία λέγεται α΄, ἧς χρεία εἰς τὴν κατάληψιν τῆς ἀναβάσεως τοῦ ἡλίου εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας καὶ τῆς ὀρθώσεως τῆς ἡμέρας, ἡ δευτέρα δὲ μετάκλισις εἰς τὴν κατάληψιν τοῦ μήκους τοῦ ἀστέρος, ἤγουν τῆς [ἀπ' ἀλλήλων] τῶν ἀστέρων διαστάσεως ἀπὸ τῆς τελείας ζώνης τῆς ἡμέρας λυσιτελεῖ. χάριν τοίνυν τῶν δύο τούτων μετακλίσεων ἐτέθη κανόνιον, ὅπως κατ' ἐναντίον τῶν μοιρῶν τῶν ζῳδίων γίνεται εἰσέλευσις καὶ κρατεῖται ὁ ψῆφος τῆς μετακλίσεως. |εἰ οὖν χρεία εἰδέναι τὴν μετάκλισιν f53rV ταύτην, εἰ βορεία ἢ νοτία ἢ καὶ εἰς τὴν ἀνάβασίν ἐστιν ἢ τὴν κατάβασιν, γίνεται τήρησις εἰς τὰ ζῴδια ἐκεῖνα. εἴπερ ἔλαττόν εἰσι ταῦτα τῶν $\overline{\varsigma}$, βορεία

4 δὲ om. L ‖ 5 α΄ 1 om. L | α΄ 2] πρώτης Lv ‖ 6 τοίνυν om. Vv ‖ 9 α΄ 1] πρώτης Vv | $\overline{\beta}$ L | α΄ 2] πρώτη Vv ‖ 13 $\overline{\beta}$ L ‖ 16 εἰ] ἢ Vv ‖ 17 γίνεται τήρησις εἰς] τηροῦνται Vv

ἐστίν. εἰ δὲ πλέον τῶν $\overline{\varsigma}$, νοτία. καὶ εἰ τὰ ζῴδια μέσον τῶν $\overline{\theta}$, $\overline{\xi}$ καὶ $\overline{\gamma}$ εἰσίν, ἀνάβασίς ἐστιν. εἰ δὲ μέσον τῶν $\overline{\gamma}$, $\overline{\varsigma}$ καὶ $\overline{\theta}$ εἰσίν, κατάβασίς ἐστιν.

Κεφάλαιον β΄. Περὶ τῆς καταλήψεως τοῦ πλάτους ἑκάστης πόλεως.

Ἡ ἀνάβασις τοῦ ἡλίου εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας καταλαμβάνεται, καὶ κατ᾽ ἐναντίον τῶν μοιρῶν τοῦ ἡλίου κρατεῖται ἡ α΄ μετάκλισις. ἐκείνη οὖν ἡ μετάκλισις, εἰ πρὸς τὸ νότιον μέρος, ἕνουται τῇ ἀναβάσει τοῦ ἡλίου. εἰ δὲ βορεία, ἀφαιρεῖται ἐξ ἐκείνης. εἴ τι οὖν εὑρεθῇ, ἀφαιρεῖται | ἀπὸ τῶν $\overline{\varrho}$, καὶ τὸ καταλειφθὲν πλάτος ἐστὶ τῆς πόλεως. f104vL

Εἰ δὲ εἰς τὸν τόπον τῆς μετακλίσεως τὸ μῆκος τοῦ ἀστέρος καταλειφθῇ ἀπὸ τοῦ τελείου κύκλου τῆς ἡμέρας, ἡ μέθοδος ὁμοίως ὡς ἐκεῖ κἀνταῦθα γίνεται.

Διαίρεσις. Περὶ τῆς καταλήψεως τοῦ πλάτους τῆς πόλεως ἀπὸ τοῦ ἀεὶ φαίνοντος ἀστέρος καὶ μήποτε δυομένου.

Ἡ ἀνάβασις ἐκείνου τοῦ ἀστέρος ζητεῖται καὶ καταλαμβάνεται εἰς τοὺς $\overline{\beta}$ καιρούς, ὅταν διίσταται τῆς γῆς μακράν, καὶ ὅταν ὑπάρχῃ ἐγγύς. εἶτα

2 εἰσὶν om. Vv ‖ 3 δεύτερον LV ‖ 5 πρώτη Vv ‖ 9 τόπον] κύκλον codd. | μετακλίσεως + τὸ μῆκος τὴν ἐποχὴν δηλοῖ τοῦ ἀπλανοῦς ἀστέρος in marg. V^2, μετακλίσεως + μῆκος τὴν ἐποχὴν δηλοῖ τοῦ ἀπλανοῦς ἀστέρος in marg. L^2

αἱ $\overline{\beta}$ αὗται ἀναβάσεις ἑνοῦνται, καὶ τὸ εὑρεθὲν μερίζεται εἰς $\overline{\beta}$. εἴ τι οὖν καταλειφθῇ, ἐκεῖνο πλάτος ἐστὶ τῆς πόλεως ἐκείνης. ἢ ὅταν ἔλθῃ ὁ ἥλιος εἰς τὴν ἀρχὴν τοῦ Καρκίνου, κρατεῖται ἡ τελεία ἀνάβασις διὰ τοῦ ἀστρολάβου κατὰ τὸ μέσον τῆς ἡμέρας τοῦ ἡλίου. ἀπὸ τούτου $\overline{\kappa\delta}$ ἀφαιροῦνται. εἴ τι καταλειφθῇ, πλάτος ἐστὶ τῆς πόλεως ἐκείνης, ἔνθα ἐκρατήθη ἡ ἀνάβασις. εἰ δὲ εἰς τὸν Αἰγοκέρωτα κρατηθῇ, ἡ ἀνάβασις $\overline{\kappa\delta}$ ἑνοῦνται καὶ οὕτως κἀνταῦθα ἀναφαίνεται τὸ πλάτος τῆς ζητουμένης πόλεως. χρὴ δὲ εἰδέναι ὅτι μετὰ τὴν | ἀφαίρεσιν ἢ ἕνωσιν τῶν $\overline{\kappa\delta}$ τὸ καταλειφθὲν ἀεὶ ἀφαιρεῖται ἀπὸ τῶν $\overline{\rho}$ καὶ f53vV
ἐκεῖνό | ἐστι τέλειον πλάτος. 284vv

Κεφάλαιον γ΄. Περὶ τῆς καταλήψεως τῆς ἀναβάσεως τοῦ ἡλίου καὶ τῶν ἑτέρων ἀστέρων εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας.

Ἀφ' οὗ καταλειφθῇ τὸ πλάτος τῆς πόλεως, ἀφαιρεῖται | τοῦτο ἀπὸ τῶν $\overline{\rho}$ f105rL
καὶ εὑρίσκεται ἅπαν τὸ πλάτος τῆς πόλεως. ἔπειτα ἡ μετάκλισις ἡ α΄ ἀπὸ τῶν μοιρῶν τοῦ ἡλίου κρατεῖται ἢ τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ τελείου κύκλου τῆς ἡμέρας καὶ τηρεῖται. εἰ ἔστιν ἡ μετάκλισις ἢ τὸ μῆκος τοῦ ἀστέρος βόρειον, ἐκείνη ἡ μετάκλισις καὶ ἐκεῖνο τὸ μῆκος ἑνοῦται τῷ τετελειωμένῳ πλάτει τῆς πόλεως. εἰ δὲ νοτία, ἀφαιροῦνται ἐξ ἐκείνου τοῦ πλατοῦς . εἴ

2–3 εἰς τὴν ἀρχὴν τοῦ καρκίνου] εἰς τὸν καρκίνον κατὰ τὴν ἀρχὴν Vv ‖ 6 ἑνοῦνται] ἀφαιροῦνται L ‖ 13 πρώτη Vv ‖ 16 βορεία v | τελείῳ Vv ‖ 17 ἐξ ἐκείνου τοῦ πλατοῦς om. Vv

τι οὖν εὑρεθῇ, εἴπερ ἐστὶν ἔλαττον τῶν $\overline{\rho}$, ἐκεῖνο ἀνάβασίς ἐστι τοῦ ἡλίου ἢ τοῦ ἀστέρος εἰς τὸ νότιον μέρος εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας. εἰ δὲ πλέον ἐστὶ τῶν $\overline{\rho}$, ἀφαιρεῖται ἐκεῖνο ἀπὸ τῶν $\overline{\rho\pi}$. εἴ τι οὖν καταλειφθῇ, ἀνάβασίς ἐστι τοῦ ἡλίου ἢ τοῦ ἀστέρος εἰς τὸ βόρειον μέρος.

Κεφάλαιον δ΄. Περὶ τῆς καταλήψεως τοῦ τόπου τῆς τύχης τῶν ζῳδίων μετὰ τῆς εὐθείας γραμμῆς.

Ὁ ψῆφος οὗτος· ὅταν γένηται χρεία περὶ τούτου, ἡ τραχηλαῖα τῆς μοίρας ἐκείνης τηρεῖται εἰς τὴν τραχηλαῖαν τῆς τετελειωμένης μετακλίσεως. εἴ τι οὖν εὑρεθῇ, μερίζεται εἰς τὴν τραχηλαῖαν τὴν τετελειωμένην τῆς μετακλίσεως τῆς μοίρας ἐκείνης. τὸ εὑρεθὲν τραχηλαῖά ἐστι τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς. τὸ τόξον τῆς τραχηλαίας ἐκείνης κρατεῖται, καὶ ἐκεῖνο τόπος τῆς τύχης ἐστὶν ἐκείνης τῆς μοίρας. ἐτέθη κανόνιον διὰ τὸν τόπον τῆς τύχης τοῦτον. καὶ ἡ τάξις τοῦ κανονίου | ἐκείνου ἀπὸ τῆς ἀρχῆς τοῦ ζῳδίου f105vL
τοῦ Αἰγοκέρωτος. ἡνίκα οὖν γένηται χρεία, ἀπὸ τῶν μοιρῶν τῶν ζῳδίων κρατεῖται ὁ τόπος τῆς τύχης. οὕτως τὸ ζῴδιον ζητεῖται ἄνω τοῦ κανονίου καὶ αἱ μοῖραι ἐκ πλαγίου. καὶ ἀπὸ τῆς μέσης τοῦ κανονίου κατ' ἐναντίον τῶν $\overline{\beta}$ ὁ τόπος τῆς | τύχης κρατεῖται. εἰ δὲ κρατεῖται παρ' ἡμῶν ὁ τόπος τῆς f54rV

2 εἰς τὸ νότιον μέρος om. Vv ‖ 3 ἐστὶ om. Vv | οὖν om. Vv ‖ 5 περὶ τῆς καταλήψεως] εἰς τὴν κατάληψιν L ‖ 13 τάξις] καταρχὴ Vv | τοῦ ζῳδίου om.V ‖ 17 δύο v

τύχης καὶ βουλόμεθα ἀπὸ τούτων εἰδέναι τὰς μοίρας καὶ τὰ ζῴδια, ἐκεῖνος ὁ τόπος τῆς τύχης ζητεῖται μέσον τοῦ κανονίου. ἔνθα οὖν εὑρεθῇ, κατ' ἐναντίον ἐκείνου κρατεῖται τὸ ζῴδιον καὶ αἱ μοῖραι ἀπὸ τῆς ἀρχῆς τοῦ κανονίου. καὶ ἡ ὄρθωσις μέσον τῶν $\overline{\beta}$ κανονίων οὕτω κρατεῖται καὶ μεθοδεύεται ὡς ἐρρέθη.

5 Εἰ δὲ τὸν τόπον τοῦτον τῆς τύχης τὸν ἀπὸ τοῦ Αἰγοκέρωτος βουληθῶμεν γενέσθαι ἀπὸ τῆς ἀρχῆς τοῦ Κριοῦ, $\overline{\rho}$ μοῖραι ἀφαιροῦνται ἀπὸ τῶν ἐν τῷ κανονίῳ μοιρῶν τοῦ τόπου τῆς τύχης ἢ $\overline{\sigma o}$ ἑνοῦται τούτῳ ἐπεὶ καὶ τῶν $\overline{\beta}$ ὁ ψῆφος εἷς. εἴ τι οὖν ἔπειτα εὑρεθῇ, ἀπὸ τῆς ἀρχῆς ἐστιν ἐκεῖνο τοῦ Κριοῦ.

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7 δύο v

Μοῖρα δ΄. Περὶ τῆς ὀρθώσεως τῆς ἡμέρας μετὰ τῆς σαγίτας καὶ τοῦ τόξου τῆς ἡμέρας καὶ νυκτὸς καὶ τῶν ὀρθῶν ὡρῶν μετὰ τῶν μοιρῶν τῶν μὴ ὀρθῶν ὡρῶν, καὶ τῶν τόπων τῶν ζῳδίων εἰς πάντα τὰ κλίματα μετὰ τοῦ πλάτους τῆς ἀνατολῆς. ἡ μοῖρα αὕτη | εἰς $\overline{\delta}$ διαιρεῖται κεφάλαια. f285rv

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|Κεφάλαιον α΄. Περὶ τοῦ πλάτους τῆς ἀνατολῆς κἄν τε νότιόν ἐστι τοῦτο κἄν τε βόρειον f106rL

Ἐὰν ἡ μετάκλισις τοῦ ἡλίου ἢ ἡ διάστασις τῶν ἀστέρων ἀπὸ τοῦ τελείου κύκλου τῆς ἡμέρας πρὸς τὸ βόρειον μέρος πλέον ἐστὶ τοῦ τελείου πλάτους τῆς πόλεως, ἐκεῖνος οὖν ὁ ἀστὴρ ἀεὶ φανής ἐστι καὶ οὐ δύει ὑπὸ τὴν γῆν. εἰ δὲ ἡ μετάκλισις ἐκείνου ἢ τὸ μῆκος πρὸς τὸ νότιον μέρος, ἐκεῖνος ὁ ἀστὴρ ἀεὶ ὑπὸ γῆν ἐστιν. εἰς ταῦτα οὖν καὶ τὰ $\overline{\beta}$ πλάτος ἀνατολῆς οὐκ ἔστιν. εἰ δὲ ἡ μετάκλισις ἐκείνου ἢ τὸ μῆκος κατ' ἐναντίον εἰσὶν ἑκάτερον τοῦ τετελειωμένου πλάτους τῆς πόλεως, τὸ πλάτος τῆς ἀνατολῆς $\overline{\rho}$ μοῖραί εἰσιν. εἰ δὲ ἡ μετάκλισις ἢ τὸ μῆκος ἔλαττόν εἰσι τοῦ τοιούτου πλάτους τῆς πόλεως, ἐκεῖνος ὁ ἀστὴρ ἀνίσχει καὶ αὖθις δύει καὶ τὸ πλάτος ἔνι τῆς ἀνατολῆς.

| Ἐπεὶ γοῦν χρεία τοῦ ψήφου τούτου, ἡ τραχηλαῖα τῆς μετακλίσεως ἢ τὸ μῆκος μερίζεται εἰς τὴν τραχηλαῖαν τοῦ τετελειωμένου πλάτους τῆς πόλεως. f54vV

1 δ΄] τετάρτη L ‖ 5 Περὶ] εἰς τὴν κατάληψιν L ‖ 10 ἢ] εἰ v,L

εἴ τι εὑρεθῇ, παρ' ἕνα βαθμὸν κρατεῖται, καὶ εὑρίσκεται ἡ τραχηλαῖα τοῦ πλάτους τῆς ἀνατολῆς. τὸ τόξον οὖν ταύτης κρατεῖται, καὶ εὑρίσκεται αὖθις τὸ πλάτος τῆς ἀνατολῆς.

Περὶ δὲ τοῦ γνῶναι τὸ πλάτος τῆς ἀνατολῆς εἴτε βόρειον εἴτε νότιον.

Ἐὰν ἡ μετάκλισις βορεία, καὶ τοῦτο. εἰ δὲ νοτία, καὶ τὸ πλάτος τοῦτο νότιον. εἰ δὲ ὁ ἥλιος μετάκλισιν οὐκ ἔχει ἢ ὁ ἀστὴρ μῆκος, | τηνικαῦτα εἰς f106vL τὸν τέλειον κύκλον εἰσὶ τῆς ἡμέρας καὶ πλάτος ἀνατολῆς οὐκ ἔχουσιν.

Κεφάλαιον β΄.Περὶ τῆς ὀρθώσεως τῆς ἡμέρας καὶ τῆς σαγίτας τῆς ἡμέρας

Ἐὰν ὁ ἥλιος μετάκλισιν οὐκ ἔχῃ ἢ ὁ ἀστὴρ μῆκος, ὄρθωσιν ἡμέρας οὐκ ἔχουσιν, καὶ τὸ ἥμισυ τόξον τῆς ἡμέρας $\overline{\rho}$ μοῖραί εἰσιν. εἰ δὲ ὁ ἥλιος καὶ ὁ ἀστὴρ ἔχουσι μετάκλισιν καὶ μῆκος, τηρεῖται ἑκάστου τραχηλαῖα εἰς τὴν τραχηλαῖαν τοῦ πλάτους τῆς πόλεως. εἴ τι εὑρεθῇ, μερίζεται εἰς τὴν τραχηλαῖαν τὴν τετελειωμένην ἑκάστου. εἴ τι εὑρεθῇ, ἐκεῖνο θεμέλιον λέγεται.

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4 τε^1, τε^2] τι v,L ‖ 9 περὶ + τῆς καταλήψεως L ‖ 10 ἔχει v, L

Εἶτα ἐκεῖνο τὸ θεμέλιον μερίζεται εἰς τὴν τετελειωμένην τραχηλαῖαν τοῦ πλάτους τῆς πόλεως. εἴ τι εὑρεθῇ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται, καὶ ἡ τραχηλαῖα τῆς ὀρθώσεως τῆς ἡμέρας εὑρίσκεται. εἶτα τὸ τόξον ἐκείνης κρατεῖται. καὶ τοῦτό ἐστιν ἡ ὄρθωσις τῆς ἡμέρας. κανόνιον ἐτέθη παρ' ἡμῶν διὰ τοῦτο ἤγουν τὴν ὄρθωσιν τὴν τετελειωμένην τῆς ἡμέρας. κατ' ἐναντίον οὖν τοῦ πλάτους οἵας βουλόμεθα πόλεως ἡ τραχηλαῖα τῆς ὀρθώσεως κρατεῖται τῆς ἡμέρας. καὶ κατ' ἐναντίον τῶν μοιρῶν τοῦ ἡλίου λεπτὰ γενικὰ κρατοῦνται. ταῦτα οὖν τὰ λεπτὰ τηροῦνται εἰς τὴν τραχηλαῖαν τῆς ὀρθώσεως τῆς ἡμέρας. εἴ τι εὑρεθῇ, παρ' ἕνα βαθμὸν κρατεῖται ὅπως εὑρεθῇ ἡ τραχηλαῖα | τῆς ὀρθώσεως τῆς ἡμέρας. εἶτα κρατεῖται τὸ τόξον τῆς τραχηλαίας ταύτης 285vv καὶ εὑρίσκεται ἡ ὄρθωσις τῆς | ἡμέρας εἰς τὰς μοίρας τοῦ ἡλίου | κατ' ἐκείνην f55rV, f107rL τὴν ἡμέραν. εἰ δὲ ἡ ὄρθωσις τῆς ἡμέρας διπλασιασθῇ, εὑρίσκεται περισσεία τῆς ἡμέρας.

Διαίρεσις. Περὶ τῆς σαγίτας τῆς ἡμέρας

Ἐὰν οὖν ἡ μετάκλισις ἢ τὸ μῆκος βόρειον, ἡ τραχηλαῖα τῆς ὀρθώσεως τῆς ἡμέρας εἰς τὰ $\overline{\xi}$ περισσεύεται. εἰ δὲ ἡ μετάκλισις ἢ τὸ μῆκος νότιον, ἡ τραχηλαῖα τῆς ὀρθώσεως τῆς ἡμέρας ἀπὸ τῶν $\overline{\xi}$ ἀφαιρεῖται, καὶ εὑρίσκεται ἡ σαγίτα τῆς ἡμέρας ἢ εἰς τὸν πλεονασμὸν ἢ εἰς τὴν ἀφαίρεσιν.

5 τὴν ὄρθωσιν τὴν τετελειωμένην] τὴν τετελειωμένην ὄρθωσιν Vv ‖ 6–7 κρατεῖται τῆς ὀρθώσεως v ‖ 13 post τῆς ἡμέρας V,v habent annotationem primam ‖ 14 περὶ τῆς σαγίτας] δεῖ εἰδέναι τὴν σαγίταν L ‖ 15 οὖν om Vv | βόρειον] βορεία Vv ‖ 16 νότιον] νότιος v, νότια V ‖ 18 τὸν πλεονασμὸν] τὸ περίσσευμα L | post τὴν ἀφαίρεσιν L habet annotationem primam | ἀφαίρεσιν] ἔλλειψιν Vv

Κεφάλαιον γ΄. Περὶ τοῦ τόξου τοῦ νυχθημέρου καὶ τῆς ὥρας τοῦ νυχθημέρου καὶ τῶν μοιρῶν τῆς μὴ ὀρθῆς ὥρας

| Οἱ ἀρχαῖοι ἐκεῖνοι οὕτως ἔθηκεν ὅτι τὸ ἓν νυχθήμερον $\overline{\text{τξ}}$ καιροί εἰσιν. f107vL
καὶ αὖθις τοῦτο τὸ νυχθήμερον $\overline{\text{κδ}}$ ὧραί εἰσιν. τοῦτο τὸ κεφάλαιον εἰς τὴν κατάληψιν ἐκείνων ἐτέθη. ἐὰν οὖν ἡ μετάκλισις ἢ τὸ μῆκος βόρεια, ἡ ὄρθωσις τῆς ἡμέρας ἑνοῦται τοῖς $\overline{\text{ρ}}$. εἰ δὲ νότια ταῦτα, ἀφαιρεῖται ἀπὸ τῶν $\overline{\text{ρ}}$. εἴ τι εὑρεθῇ, τὸ ἥμισυ τόξον ἐστὶ τῆς ἡμέρας. τοῦτο διπλασιάζεται, καὶ τετελειωμένον τὸ τόξον τῆς ἡμέρας εὑρίσκεται. καὶ ἄλλως ἐὰν ἡ μετάκλισις ἢ τὸ μῆκος | βόρειον, ἡ περισσεία τῆς ἡμέρας ἑνοῦται ταῖς $\overline{\text{ρπ}}$ μοίραις. εἰ f55vV
δὲ νότια ταῦτα, ἀφαιρεῖται | ἡ μετάκλισις ἢ τὸ μῆκος ἀπὸ τῶν $\overline{\text{ρπ}}$ μοιρῶν, f286rv
καὶ ἡ ἡμέρα τοῦ τόξου εὑρίσκεται. ἐὰν δὲ τὸ τόξον τῆς ἡμέρας ἀπὸ τῶν $\overline{\text{τξ}}$ ἀφαιρεθῇ, τὸ τόξον τῆς νυκτὸς εὑρίσκεται.

Διαίρεσις. Περὶ τῆς ὀρθῆς ὥρας

Τὸ τόξον τῆς ἡμέρας μερίζεται εἰς τὰ $\overline{\text{ιε}}$, καὶ ἡ ὀρθὴ ὥρα τῆς ἡμέρας πάσης

2 Περὶ] εἰς τὸ γνώρισμα L ‖ 4 τὸ om. L ‖ 9 καὶ om. Vv ‖ 10 βόρεια LVv | μοίραις om. Vv ‖ 14 Περὶ] εἰς τὴν κατάληψιν L

γίνεται δήλη. αὕτη οὖν ἡ τετελειωμένη | ὥρα τῆς ἡμέρας πάσης ἀπὸ τῶν $\overline{\text{κδ}}$ f108rL
ἀφαιρεῖται, καὶ ἡ ὥρα τῆς νυκτὸς πάσης εὑρίσκεται. εἰ δὲ τὸ τόξον τῆς ἡμέρας μερισθῇ εἰς τὰ $\overline{\text{ιβ}}$, τὰ τεμμάχια τῆς μὴ ὀρθῆς ὥρας τῆς ἡμέρας εὑρίσκονται. ταῦτα εἰ ἀφαιρεθῶσιν ἀπὸ τῶν $\overline{\lambda}$, τὰ τεμμάχια τῆς μὴ ὀρθῆς ὥρας τῆς νυκτὸς καταλαμβάνονται.

Διαίρεσις. Ἐὰν ἡ ὀρθὴ ὥρα τηρηθῇ εἰς τὰ $\overline{\text{ε}}$, καὶ τὸ ἐξελθὸν μερισθῇ εἰς τὰ $\overline{\delta}$, τὰ τεμμάχια τῆς μὴ ὀρθῆς ὥρας εὑρίσκονται. καὶ ἐὰν τὰ τεμμάχια τῆς μὴ ὀρθῆς ὥρας τηρηθῶσιν εἰς τὰ $\overline{\delta}$, καὶ μερισθῶσιν τὰ ἐξελθόντα εἰς τὰ $\overline{\text{ε}}$, ἡ ὥρα ἡ ὀρθὴ εὑρίσκεται.

Κεφάλαιον δ΄. Περὶ τῆς καταλήψεως τοῦ τόπου τῆς τύχης τῶν ζῳδίων εἰς τὰ πλάτη τῶν κλιμάτων πάντων

Γίνεται ἀφαίρεσις τῆς ὀρθώσεως τῆς ἡμέρας ἀπὸ τοῦ τόπου τῆς τύχης τῶν ζῳδίων μετὰ τῆς εὐθείας γραμμῆς ἥτις ἐστὶν ἀπὸ τῆς ἀρχῆς τοῦ Κριοῦ εἰς τὰ βόρεια ζῴδια. εἰ δὲ εἰς τὰ νότια ζῴδια, ἐνοῦται ἡ ὄρθωσις τῆς ἡμέρας τῷ τόπῳ τῆς τύχης τῶν ζῳδίων. εἴ τι εὑρεθῇ, ὁ τόπος τῆς τύχης καὶ τὸ πλάτος ἐστὶ τῆς πόλεως ἐκείνης.

4 ὥρας om. L ‖ 7 τεμμάχια + ταύτης L ‖ 10 δ΄ om. V ‖ 11 πάντων om. L ‖ 14 εἰς] ἐκ L

Μοίρα ε΄. Περὶ τῆς κινήσεως τῶν ἀπλανῶν ἀστέρων ἀπὸ τῶν αὐθημερινῶν ἐκείνων, καὶ τοῦ μήκους ἤτοι τῆς διαστάσεως ἐκείνων ἀπὸ τοῦ κύκλου τοῦ κατὰ τὸ νυχθήμερον κινουμένου, καὶ τῆς ἀναβάσεως τῶν τοιούτων ἀστέρων εἰς τὸν κύκλον | τοῦ μέσου τῆς ἡμέρας, καὶ τῆς μοίρας ἐκείνης ἥτις ἀπὸ τοῦ f108vL
ζῳδίου | ἐκείνου μετὰ τοῦ ἀστέρος ὁμοῦ εἰς τὸν κύκλον γίνεται τοῦ μέσου f56rV
τῆς ἡμέρας, καὶ τῆς μοίρας ἥτις μετὰ τοῦ ἀστέρος ἀνίσχει καὶ τῆς μοίρας ἥτις μετὰ τοῦ ἀστέρος δύει, καὶ τῆς ὥρας ἐκείνης τῆς κατὰ τὴν ἀνάβασιν καὶ κατάβασιν τούτων κατὰ τὴν ἡμέραν ἢ τὴν νύκτα

Ἡ μοῖρα δὲ αὕτη εἰς $\overline{\varepsilon}$ διαιρεῖται κεφάλαια.

Κεφάλαιον α΄. Περὶ τοῦ γνωρίσματος τοῦ αὐθημερινοῦ τῶν ἀστέρων.

Χρὴ εἰδέναι ὅτι οἱ $\overline{\kappa\varepsilon}$ ἀστέρες εἰς τὴν βίβλον ταύτην ἀπὸ τῶν φαινωμένων τούτων ἀστέρων ἐτέθησαν εἰς τὴν ἀρχὴν τοῦ χρόνου τοῦ ο·ϙ τῶν Ἀράβων. ἡνίκα οὖν γένηται χρεία τῆς καταλήψεως τοῦ αὐθημερινοῦ ἐκείνων εἰς τὸ μῆκος, τὰ ο·ϙ ἀπὸ τῶν χρόνων τῶν Ἀράβων ἀφαιρεῖται. εἴ τι καταλειφθῇ, μερίζεται εἰς τὰ $\overline{\xi\eta}$. εἴ τι | ἐξέλθῃ, μοῖραί εἰσιν. αὗται τηροῦνται εἰς τὰ $\overline{\nu\gamma}$ 286vv
δεύτερα λεπτά. εἴ τι εὑρεθῇ, ἑνοῦται τῷ αὐθημερινῷ ἐκείνων τῷ τεθέντι εἰς

8 τὴν om. L ‖ 9 δὲ om. L ‖ 11 τοῦ γνωρίσματος om. Vv | τοῦ^2] τῶν v ‖ 12 $\overline{\kappa\varepsilon}$ om. L ‖ 17 τῷ αὐθημερινῷ] εἰς τὸ αὐθημερινὸν L | τῷ τεθέντι in marg v

τὸ κανόνιον, καὶ εὑρίσκεται τὸ αὐθημερινὸν ἐκείνων τῶν ἀστέρων εἰς ἐκεῖνο τὸ μῆκος καὶ τὸ ἔτος.

Κεφάλαιον β΄. Περὶ τοῦ μήκους ἤτοι τῆς διαστάσεως τῶν ἀστέρων ἀπὸ τοῦ κύκλου τοῦ κατὰ τὸ νυχθήμερον κινουμένου καὶ τῆς ἐσχάτης ἀναβάσεως τούτων

Τηρεῖται. ἐὰν ὁ ἀστὴρ πλάτος οὐκ ἔχῃ, ἡ μετάκλισις ἡ πρώτη ἐκείνη κρατεῖται. καὶ τοῦτό ἐστι τὸ μῆκος τοῦ ἀστέρος ἀπὸ τῆς ὀρθώσεως τοῦ κύκλου. εἰ δὲ ὁ ἀστὴρ ἔχει | πλάτος, ἡ δευτέρα μετάκλισις ἐκείνη κρατεῖται f56v V καὶ τηρεῖται. ἔπειτα τηρεῖται εἰ βορεία ἐστὶν ἢ νότια ὡσαύτως καὶ τὸ πλάτος εἴτε βόρειόν ἐστιν εἴτε νότιον.

Ἔπειτα τηρεῖται. ἐὰν ὦσι καὶ τὰ δύο – ἡ μετάκλισις καὶ τὸ πλάτος – ἢ βόρεια ἢ νότια, ἑνοῦται. εἰ δὲ τὸ ἕν ἐστι βόρειον καὶ τὸ ἕτερον νότιον, εἰ μέν εἰσι καὶ τὰ δύο ἐξισούμενα, ὁ ἀστὴρ εἰς τὸν κύκλον ἐστὶ καὶ οὐκ ἔχει μῆκος. εἰ δ' οὐκ ἐξισοῦνται, τὸ ἔλαττον ἀφαιρεῖται τοῦ πλείονος. εἴ τι καταλειφθῇ, τηρεῖται. ἐὰν τὸ πλέον εἰς τὸ βόρειον ᾖ, τοῦτο βόρειόν ἐστιν. εἰ δὲ τὸ νότιον

1 τὸ + μέγα v ‖ 2 τὸ μῆκος καὶ om. L | post τὸ ἔτος LVv habent annotationem secundam ‖ 9 β΄ L ‖ 10 τηρεῖται[1] om. Vv | νότια + κατλαμβάνονται Vv ‖ 11 εἴτε[1]] εἰ Vv | εἴτε[2]] ἢ Vv ‖ 12 ἔπειτα τηρεῖται om. Vv | ἐὰν ὦσι] εἰ μὲν οὖν εἰσι Vv | ἢ[1] om. Vv ‖ 13 ἢ[2]] εἴ τε Vv | ἐστι om. Vv ‖ 15 δὲ L | τὸ] οἷόν ἐστιν L

πλέον, τὸ τηρούμενον παρ' ἡμῶν νότιον. εἶτα τηρεῖται. ἐὰν ὁ ἀστὴρ εἰς τὸ ξ ἐστὶ τοῦ Καρκίνου, ἢ εἰς τὸ ξ τοῦ Αἰγοκέρωτος, εἴ τι ἐκρατήθη, τὸ μῆκός ἐστι | ἐκείνου ἀπὸ τοῦ κύκλου τῆς ἡμέρας. εἰ δὲ ὁ ἀστὴρ οὐκ ἔστιν εἰς ταῦτα f109vL
– ἤγουν εἰς τὸν Καρκίνον ἢ τὸν Αἰγοκέρωτα – ἀλλὰ ἀλλαχοῦ, ὅπερ ἐτηρεῖτο παρ' ἡμῶν, ἐκεῖνό ἐστιν ἡ μοῖρα τοῦ μήκους ἀπὸ τοῦ κύκλου τῆς ὀρθώσεως τῆς ἡμέρας.

Διαίρεσις. Εἰς τὴν κατάληψιν τοῦ μήκους τῶν ἀστέρων ἀπὸ τῆς ὀρθώσεως τοῦ κύκλου τῆς ἡμέρας

Κρατεῖται ἡ τραχηλαῖα τῆς μοίρας τοῦ μήκους, καὶ τηρεῖται εἰς τὴν τραχηλαῖαν τῆς τετελειωμένης μετακλίσεως τῆς μεγίστης. εἴ τι εὑρεθῇ, μερίζεται εἰς τὴν τετελειωμένην β΄ μετάκλισιν τοῦ αὐθημερινοῦ τοῦ ἀστέρος ἐκείνου. καὶ ἡ τραχηλαῖα τοῦ μήκους εὑρίσκεται ἀπὸ τῆς ὀρθώσεως τοῦ κύκλου τῆς ἡμέρας. | εἰ δὲ τὸ αὐθημερινὸν τοῦ ἀστέρος μετάκλισιν οὐκ 287rv
ἔχει, εἴ τι εὑρεθῇ ἀπὸ τῆς κρούσεως τῆς τραχηλαίας τῆς τετελειωμένης μετακλίσεως, κρατεῖται ἔλαττον ἑνὸς βαθμοῦ. εἴ τι εὑρεθῇ, ἡ τραχηλαῖα τοῦ μήκους ἐστὶν ἀπὸ τῆς ὀρθώσεως | τῆς ἡμέρας. τὸ τόξον ἐκείνης κρατεῖται. f57rV

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1 πλέον + ἦν L | παρ' ἡμῶν om. Vv | νότιον om. Vv ‖ 2 ἐστὶ om. Vv ‖ 3 ἐκεῖνος Vv ‖ 4 ἢ + καὶ L | ἀλλὰ ἀλλαχοῦ om. Vv ‖ 10 μετακλίσεως τῆς μεγίστης] μεγίστης μετακλίσεως Vv ‖ 11 δευτέραν Vv

Διαίρεσις . Εἰς τὸ εἰδέναι τὴν ἀνάβασιν τῆς ὀρθώσεως τῆς ἡμέρας

Πρὸ τούτου ἐρρέθη.

Κεφάλαιον γ΄ . Περὶ τῆς καταλήψεως τῶν μοιρῶν ἐκείνων τῶν μετὰ τοῦ ἀστέρος γινομένων εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας

Οἷος ἀστὴρ πλάτος οὐκ ἔχει, ἐκεῖνος ὁ ἀστὴρ μετὰ τῆς μοίρας τοῦ ἰδίου αὐθημερινοῦ εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας γίνεται. εἰ δὲ ὁ ἀστὴρ ἔχει πλάτος, ἐκεῖνος ὁ ἀστήρ, εἰ ἔστι μέσον τοῦ Καρκίνου, τοῦ Ζυγοῦ καὶ τοῦ Αἰγοκέρωτος, τὸ πλάτος ἐκεῖνο νότιον, καὶ ὁ ἀστὴρ οὗτος | πρότερον f110rL τῆς ἰδίας μοίρας φθάνει εἰς τὸ μεσουράνημα. εἰ δὲ ὁ ἀστὴρ μέσον ἐστὶ τοῦ Αἰγοκέρωτος, τοῦ Κριοῦ καὶ τοῦ Καρκίνου, τὸ πλάτος ἐκείνου βόρειον καὶ ὁ ἀστὴρ πρὸ τῆς ἰδίας μοίρας εἰς τὸν μέσον τῆς ἡμέρας γίνεται κύκλον. κρατεῖται ἡ τραχηλαῖα τοῦ τετελειωμένου πλάτους, και τηρεῖται εἰς τὴν τραχηλαῖαν τοῦ μήκους τοῦ ἀστέρος ἀπὸ τῆς ἀρχῆς τοῦ Καρκίνου ἢ τῆς ἀρχῆς τοῦ Αἰγοκέρωτος οἷον ἀπὸ τούτων τῶν ζῳδίων ἐστὶν ἐγγύτερον τοῦ ἀστέρος. εἴ τι εὑρεθῇ, μερίζεται εἰς τὴν τετελειωμένην τραχηλαῖαν τοῦ μήκους τοῦ ἀστέρος ἀπὸ τοῦ κύκλου τῆς ὀρθώσεως τῆς ἡμέρας. εἴ τι

1 εἰδέναι τὴν ἀνάβασιν] γνώρισμα τῆς ἀναβάσεως L ‖ 3 Περὶ τῆς καταλήψεως] εἰς τὴν κατάληψιν L ‖ 11 post μοίρας add et cancell φθάνει v | post μέσον add et cancell -ουράνημα. εἰ δὲ ὁ ἀ- v ‖ 14 ζῳδίων post ἐγγύτερον Vv ‖ 15 τὴν τραχηλαῖαν τὴν τετελειωμένην L

εὑρεθῇ, ἡ τραχηλαΐά ἐστι τῆς ὀρθώσεως καὶ τὸ τόξον ἐκείνης κρατεῖται. εἶτα τηρεῖται. ἐὰν τὸ αὐθημερινὸν τοῦ ἀστέρος ὄπισθεν ᾖ τοῦ Καρκίνου ἢ τοῦ Αἰγοκέρωτος, ἐκείνη ἡ ὄρθωσις περισσεύεται εἰς τὸν τόπον τῆς τύχης εἰς τὸ ξ τοῦ Καρκίνου ἢ εἰς τὸ ξ τοῦ Αἰγοκέρωτος μετὰ τῆς εὐθείας γραμμῆς. εἴ τι εὑρεθῇ, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὰ κανόνια τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς. καὶ κατ' ἐναντίον ἐκείνου ψήφου κρατοῦνται τὰ ζῴδια ἄνω καὶ αἱ μοῖραι ἐκ τοῦ πλαγίου. καὶ ὁ ψῆφος ὁ ἕτερος ὁ μέσον τῶν $\overline{\beta}$ κανονίων | πληροῦται ὡς ἐρρέθη. εἴ τι ἐξέλθῃ, ἐκεῖνο f57vV
μοῖρά ἐστιν ὅτι μετὰ τοῦ ἀστέρος ὁμοῦ φθάνει εἰς τὸ μεσουράνημα.

Κεφάλαιον δ'. Περὶ τῆς μοίρας ἐκείνης ἥτις ἀνίσχει μετὰ τοῦ ἀστέρος

Ἐὰν ὁ ἀστὴρ πλάτος οὐκ ἔχει, ἐκεῖνος ὁ ἀστὴρ μετὰ τῆς μοίρας τοῦ αὐθημερινοῦ | ἀνίσχει. εἰ δὲ ὁ ἀστὴρ ἔχει πλάτος, ὁ τόπος τῆς τύχης τούτου f110vL
μετὰ τῆς εὐθείας γραμμῆς καταλαμβάνεται, καὶ ἡ ἀρχὴ τούτου ἀπὸ τῆς ἀρχῆς τοῦ Αἰγοκέρωτος. εἴ τι εὑρεθῇ, κρατεῖται. ἔπειτα τηρεῖται. ἐὰν τὸ μῆκος τοῦ ἀστέρος ἀπὸ τῆς ὀρθώσεως τοῦ κύκλου τῆς ἡμέρας βόρειον ᾖ, ἡ ὄρθωσις τῆς ἡμέρας ἀφαιρεῖται | ἀπὸ τοῦ τόπου τῆς τύχης. εἰ δὲ νότιόν ἐστι τὸ μῆκος f287vv
τοῦ ἀστέρος, ἑνοῦται τῷ τόπῳ τῆς τύχης. εἴ τι εὑρεθῇ, ἀπὸ τούτου ἀεὶ $\overline{\rho}$

2 ᾖ] ἢ v ‖ 8 δύο Vv ‖ 10 Περὶ] εἰς τὸ γνώρισμα L

ἀφαιροῦνται. εἴ τι καταλειφθῇ, τόπος τῆς τύχης τῶν μοιρῶν ἐστι μεθ' ὧν ἀνίσχει ὁ ἀστήρ. κατ' ἐναντίον τούτου εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης γίνεται εἰσέλευσις. ἔνθα εὑρεθῇ μέσον τοῦ κανονίου ὁ ψῆφος, κατ' ἐναντίον τούτου κρατοῦνται ἄνω τὰ ζῴδια καὶ ἐκ πλαγίου αἱ μοῖραι, καὶ τὰ λεπτὰ μέσον τῶν $\overline{\beta}$ κανονίων τηροῦνται ὡς ἐρρέθη.

Διαίρεσις. Περὶ τῆς μετὰ τοῦ ἀστέρος δυνούσης μοίρας

Ἐπεὶ χρεία ψήφου, τὸ τόξον τοῦ ἀστέρος τῆς ἡμέρας ἑνοῦται τῇ μοίρᾳ τοῦ τόπου τῆς τύχης ἥτις ἀνίσχει μετ' ἐκεῖνον. εἴ τι εὑρεθῇ, εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης τοῦ πλάτους τῆς πόλεως ἐκείνης ἀπὸ ζῳδίων καὶ μοιρῶν ἐξ ἐκείνης τηρεῖται ὡς ἐρρέθη. εἴ τι εὑρεθῇ, $\overline{\varsigma}$ ζῴδια ἑνοῦται τούτῳ, καὶ εὑρίσκονται αἱ μοῖραι ἐκεῖναι αἱ μετὰ τοῦ ἀστέρος δύνουσαι.

Κεφάλαιον ε΄. Περὶ τοῦ ἀστέρος ὅταν ἀνίσχει καὶ δύνῃ ἢ κατὰ τὴν νύκτα ἢ τὴν ἡμέραν

| Τηρεῖται ἡ μοῖρα ἐκείνη ἡ ἀνίσχουσα | μετὰ τοῦ ἀστέρος. ἐὰν ᾖ μέσον f58rV, f111rL
τοῦ ἡλίου καὶ τῆς διαμέτρου τούτου, κατὰ τὴν ἡμέραν ἀνίσχει ὁ ἀστήρ. εἰ

1 post καταλειφθῇ v add et cancell ὁ ‖ 4 αἱ μοῖραι ἐκ πλαγίου Vv ‖ 6 Περὶ] εἰς τὸ γνώρισμα L | μετὰ om. Vv ‖ 7 τῇ μοίρᾳ in marg. v ‖ 8 τῷ τόπῳ v ‖ 10 ἐρρέθη] εἰρεῖται L | ζῳδίῳ v ‖ 12 Περὶ] εἰς τὴν κατάληψιν L | κατὰ τὴν νύκτα] ἀπὸ τῆς ἡμέρας L ‖ 13 τὴν ἡμέραν] τῆς νυκτὸς L

δὲ ἡ μοῖρα εὑρεθῇ μέσον τῆς διαμέτρου τοῦ ἡλίου καὶ αὐτοῦ τοῦ ἡλίου, κατὰ τὴν νύκτα. ἐὰν ἀνίσχει ὁ ἀστὴρ κατὰ τὴν ἡμέραν, ὁ τόπος τῆς τύχης τῶν μοιρῶν τοῦ ἡλίου εἰς τὸ πλάτος τῆς πόλεως ἐκείνης ἀφαιρεῖται ἀπὸ τοῦ τόπου τῆς τύχης τῶν μοιρῶν τῶν ἀνισχόντων μετὰ τοῦ ἡλίου. εἴ τι εὑρεθῇ, ἐκεῖνο
5 περιφορά ἐστιν ἀπὸ τῆς ἀρχῆς τῆς ἡμέρας ἐκείνης ὅταν ἀνίσχει ὁ ἀστήρ. εἰ δὲ ἀνίσχει ὁ ἀστὴρ κατὰ τὴν νύκτα, ὁ τόπος τῆς τύχης τῶν μοιρῶν τῆς διαμέτρου τοῦ ἡλίου εἰς τὸ πλάτος τῆς πόλεως ἀφαιρεῖται ἀπὸ τοῦ τοποῦ τῆς τύχης τοῦ ἀστέρος. εἴ τι καταλειφθῇ, περιφορά ἐστιν ἀπὸ τῆς ἀρχῆς τῆς νυκτὸς μέχρι τῆς ὥρας καθ' ἣν ἀνίσχει ὁ ἀστήρ. καὶ εἰς τοῦτον τὸν ψῆφον τὸν ῥηθέντα
10 εἰ βουληθῶμεν εἰδέναι ὅταν δύνῃ ὁ ἀστήρ, ἐκείνη ἡ μοῖρα ἡ δύνουσα οὕτως κρατεῖται ὅτι ἀνίσχει καὶ ὁμοίως γίνεται ἡ μέθοδος.

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2 κατὰ τὴν ἡμέραν sup. lin v

Μοῖρα ς΄. Περὶ τῆς καταλήψεως ἐκείνης ὅτι ἀπὸ τῆς ἡμέρας πόσαι ὧραι παρῆλθον καὶ πόσαι μοῖραι ἀπὸ τῆς μὴ ὀρθῆς ὥρας καὶ τῶν ὡρῶν τῆς τύχης καὶ τῆς ὀρθώσεως τῶν $\overline{\iota\beta}$ οἰκημάτων καὶ τῆς καταλήψεως τοῦ σημείου ἑκάστης ἀναβάσεως καὶ τοῦ σημείου τῆς προσευχῆς

Αὕτη ἡ μοῖρα εἰς $\overline{\zeta}$ διαιρεῖται κεφάλαια.

Κεφάλαιον α΄. Περὶ τῆς καταλήψεως | τῆς περιφορᾶς τοῦ ἡλίου ὅταν ἀνίσχῃ f288rv, f111vL
| καθ' ὃν καιρὸν βουλόμεθα εἰδέναι τοῦτο ἤγουν τὴν ὀρθὴν ὥραν καὶ | τὴν μὴ f58vV
ὀρθήν

Ἐπεὶ χρεία εἰς τὸ γνῶναι καὶ ἐργᾶσθαι τὴν ἐπιστήμην ταύτην, πρῶτον κρατεῖται διὰ τοῦ ἀστρολάβου ἡ ἀνάβασις τοῦ ἡλίου καθ' ὃν καιρὸν βουλόμεθα, καὶ τοῦτο λέγεται ἀνάβασις τοῦ καιροῦ. ἔπειτα ἡ ἐσχάτη ἀνάβασις τοῦ ἡλίου εἰς ἐκείνην τὴν ἡμέραν καταλαμβάνεται ὡσαύτως, καὶ σαγίτα τῆς ἡμέρας ζητεῖται καὶ εὑρίσκεται. βουλομένων δ' ἡμῶν ποιῆσαι ψῆφον ποιοῦμεν οὕτως· τηρεῖται ἡ τραχηλαῖα τῆς ἀναβάσεως ἐκείνης εἰς τὴν σαγίταν τῆς ἡμέρας. εἴ τι εὑρεθῇ, μερίζεται εἰς τὴν τραχηλαῖαν τῆς ἐσχάτης ἀναβάσεως. εἴ τι εὑρεθῇ, ἐκεῖνο τραχηλαῖά ἐστιν. τοῦτο ἀεὶ ἀφαιρεῖται ἀπὸ τῆς σαγίτας τῆς ἡμέρας. εἴ τι καταλειφθῇ, ἐκεῖνο σαγίτα ἐστίν. ἀπὸ

1 ἕκτη v ‖ 2 ὥρας om v ‖ 7 τοῦτο add et cancell v ‖ 14 οὕτως] ὅπως v

ταύτης ζητεῖται τὸ τόξον ἐκείνης. εἴ τι εὑρεθῇ, ἐκεῖνο περισσεία λέγεται τῆς περιφορᾶς. ἔπειτα τηρεῖται ὁ καιρὸς τῆς ἀναβάσεως. εἴπερ ἐστὶ πρὸ τοῦ μέσου τῆς ἡμέρας, ἡ περισσεία αὕτη ἀφαιρεῖται ἀπὸ τοῦ ἥμισυ τόξου τῆς ἡμέρας. εἰ δὲ μετὰ τὸ μέσον τῆς ἡμέρας, ἑνοῦται τούτῳ καὶ εὑρίσκεται ἡ περιφορὰ ἀπ' ἐκείνης τῆς ὥρας ὅταν ἀνίσχει ὁ ἥλιος μέχρι καὶ τοῦ καιροῦ ἐκείνου, ἡνίκα γίνεται ἡ ζήτησις. ἀπὸ τούτου οὖν ἐκβάλλονται αἱ ὧραι.

Διαίρεσις. | Εἰς τὸ γνώρισμα τῆς ἀναβάσεως τοῦ ἀστέρος κατὰ τὸν καιρὸν f112rL
ὃν βούλεταί τις ἀπὸ τῆς περιφορᾶς

Χρείας γενομένης περὶ τοῦ ψήφου τούτου καταλαμβάνεται ἡ περισσεία τῆς σαγίτας καὶ ἀφαιρεῖται ἀπὸ τῆς σαγίτας τῆς ἡμέρας. εἴ τι καταλειφθῇ, τραχηλαῖά ἐστιν. ἐκείνη ἡ τραχηλαῖα τηρεῖται εἰς τὴν τραχηλαῖαν τῆς ἐσχάτης ἀναβάσεως εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας. εἴ τι εὑρεθῇ, | μερίζεται f59rV
εἰς τὴν σαγίταν τῆς ἡμέρας. τὸ καταλειφθὲν τραχηλαῖά ἐστι τῆς ἀναβάσεως ἐκείνου τοῦ καίρου.

Διαίρεσις. Εἰς τὸ εἰδέναι εἴ τι παρῆλθεν ἀπὸ τῆς νυκτός

Ἡ ἀνάβασις τοῦ ἀπλανοῦς ἀστέρος κρατεῖται. καὶ ὁμοίως μεθοδεύεται

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1 λέγεται] ἀναλέγεται L ‖ 3 αὕτη] οὕτω L ‖ 13 τὸ καταλειφθὲν] εἴ τι εὑρεθῇ L

ὡς καὶ ἐπὶ τοῦ ἡλίου καὶ ὁ αὐτὸς ἀπαράλλακτος ψῆφος. κἀνταῦθα γὰρ ἡ τραχηλαῖα τῆς ἀναβάσεως ἐκείνης εἰς τὴν σαγίταν τῆς ἡμέρας τηρεῖται, καὶ καθεξῆς γίνεται ψῆφος ὡς ἐκεῖ. καὶ εὑρίσκεται ἡ περιφορὰ ἀπ' ἐκείνης τῆς ὥρας ὅταν ἀνίσχῃ ὁ ἀστὴρ μέχρι καὶ τῆς ὥρας ἡνίκα γίνεται ἡ ζήτησις.

Διαίρεσις. Εἰς τὴν κατάληψιν ἐκείνου πόσαι ὧραι παρῆλθον τῆς ἡμέρας ἀπὸ τῶν μὴ ὀρθῶν ὡρῶν

Ἐκεῖνο καταλαμβάνεται ἀπὸ τῆς ἀναβάσεως τοῦ καιροῦ καὶ τῆς ἀναβάσεως τοῦ | μέσου κύκλου τῆς ἡμέρας. καὶ γὰρ ἡ τραχηλαῖα τῆς f59vV
ἀναβάσεως τοῦ καιροῦ εἰς τὴν τραχηλαῖαν τῆς ἐσχάτης τῆς ἀναβάσεως μερίζεται. εἴ τι εὑρεθῇ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. εἴ τι εὑρεθῇ, τραχηλαῖά ἐστιν. τὸ τόξον ταύτης κρατεῖται καὶ μερίζεται εἰς τὰ $\overline{\iota\epsilon}$. εἴ τι εὑρεθῇ, ἡ μὴ ὀρθή ἐστιν ὥρα. εἰ οὖν ἡ ἀνάβασις ἐκείνη ἡ κρατειθεῖσα πρὸ τοῦ μέσου τῆς ἡμέρας ἐστίν, ἐκείνη ἡ εὑρεθεῖσα ὥρα ἡ μὴ ὀρθή ἐστιν ἀπὸ τῆς ἀρχῆς τῆς ἡμέρας μέχρι τότε. εἰ δέ ἐστιν ἡ ἀνάβασις αὕτη μετὰ τὸ μέσον τῆς ἡμέρας, ἐκείνη ἡ ὥρα | ἀφαιρεῖται ἀπὸ τῶν $\overline{\iota\beta}$. εἴ τι καταλειφθῇ, ἡ ὥρα f113rL
ἡ μὴ ὀρθή ἐστιν ἀπὸ τῆς ἀρχῆς τῆς ἡμέρας μέχρι τότε. εἰ βουληθῶμεν ἀπὸ τῶν μὴ ὀρθῶν ὡρῶν εἰδέναι τὴν ἀνάβασιν, τηροῦνται αἱ ὧραι ἐκεῖναι εἰς τὰ

3 ὡς om Vv ‖ 4 post ἡ ζήτησις LVv habent annotationem tertiam ‖ 5 τὴν κατάληψιν ἐκείνου] τὸ εἰδέναι Vv ‖ 8 τοῦ μέσου κύκλου τῆς ἡμέρας] τοῦ κύκλου τῆς ἡμέρας μέσου L ‖ 10 κρατεῖται ἔλαττον L ‖ 11–12 εἴ τι εὑρεθῇ] τὸ καταλειφθὲν Vv ‖ 12 οὖν] γοῦν v ‖ 14 μετὰ] κατὰ Vv

ιε̅. εἴ τι εὑρεθῇ, ἡ τραχηλαῖα ἐκείνη τηρεῖται εἰς τὴν τραχηλαῖαν τῆς ἐσχάτης ἀναβάσεως. εἴ τι ἐξέλθῃ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. εἴ τι εὑρεθῇ, τραχηλαῖά ἐστιν τῆς ἀναβάσεως τοῦ καιροῦ.

Κεφάλαιον β΄. Εἰς τὴν κατάληψιν τῆς ὥρας ἐκ τῆς περιφορᾶς καὶ ἐξ ἄλλων τινῶν

Ἐπεὶ χρεία γενέσθαι τὴν ἐργασίαν ταύτην, εἰ ⟨ἔστιν⟩ ἡ περιφορὰ ἀπὸ τῆς ἡμέρας, ἑνοῦται τῷ τόπῳ τῆς τύχης τοῦ αὐθημερινοῦ τοῦ ἡλίου εἰς τὸ πλάτος τῆς πόλεως. εἰ δ' ἐστὶν ἡ περιφορὰ τῆς νυκτός, ἑνοῦται ἐκείνη ἡ περιφορὰ τῷ τόπῳ τῆς τύχης τῆς διαμέτρου τοῦ αὐθημερινοῦ τοῦ ἡλίου εἰς τὸ πλάτος τῆς πόλεως. εἴ τι εὑρεθῇ, κατ' ἐναντίον ἐκείνης γίνεται εἰσέλευσις μέσον τοῦ κανονίου τοῦ πλάτους τῶν πόλεων, ὅπερ ἐστὶ καὶ τόπος τῆς τύχης, καὶ κρατοῦνται ἐκεῖθεν ζῴδια καὶ μοῖραι καὶ λεπτὰ μετὰ τῆς μεθόδου τοῦ πολλάκις εἰρημένου ψήφου. εἴ τι εὑρεθῇ, ζῴδια, μοῖραι | καὶ λεπτά εἰσι τῆς f60rV
τύχης εἰς τὸν καιρὸν ἐκεῖνον ἡνίκα ἐκρατήθη ἡ ἀνάβασις. εἰ δέ ἐστι γνώριμος ἡ παρελθοῦσα ὥρα ἀπὸ τῆς ἡμέρας ἢ τῆς νυκτός, [ἐὰν] ἡ ὥρα ἐκείνη | ἀπὸ f289rv
τῶν ὀρθῶν εἰς τὰ ιε̅ τηρεῖται. εἰ δέ ἐστιν ἀπὸ τῶν μὴ ὀρθῶν, ἐκείνη εἰς τὰ

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6 Ἐπεὶ χρεία γενέσθαι τὴν ἐργασιάν ταύτην] ἐπὰν γένηται χρεία τῆς ἐργασίας ταύτης Vv | εἰ] ἐὰν L ‖ 7 τῆς τύχης + τῆς διαμέτρου L ‖ 8–10 εἰ δ' ἐστὶν ... τῆς πόλεως om. L ‖ 446.16–447.1 τὰ τεμμάχια] τὴν τραχηλαῖαν v

τεμμάχια τῆς μὴ ὀρθῆς ὥρας τηρεῖται. εἴ τι εὑρεθῇ, περιφορά ἐστιν αφ' ἧς ἐκβάλλεται | ὁ κλῆρος τῆς τύχης. f113rL

Διαίρεσις. Εἰς τὴν κατάληψιν τῆς τύχης ἀπὸ τῶν μοιρῶν τοῦ ι΄ οἰκήματος

Ὁ τόπος τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς κρατεῖται ἀπὸ τούτων τῶν μοιρῶν, καὶ ἡ ἀρχὴ τούτου ἀπὸ τῆς ἀρχῆς τοῦ Αἰγοκέρωτος. εἴ τι εὑρεθῇ, κατ' ἐναντίον τούτου γίνεται εἰσέλευσις εἰς τὸ μέσον τοῦ κανονίου τοῦ τόπου τῆς τύχης τοῦ πλάτους τῶν πόλεων, καὶ ἐκεῖθεν κρατοῦνται τὰ ζῴδια καὶ αἱ μοῖραι κατὰ τὴν ῥηθεῖσαν μέθοδον. καὶ εἴ τι ἐξέλθῃ, ἐκεῖνό ἐστιν ἡ τύχη.

Κεφάλαιον γ΄. Περὶ τῆς καταλήψεως τῆς περιφορᾶς τῶν ὡρῶν ἀπὸ τῆς τύχης

Ζητεῖται καὶ κρατεῖται τὸ αὐθημερινὸν τοῦ ἡλίου καὶ αἱ μοῖραι τῆς τύχης, καὶ τηροῦνται. ἐὰν τὸ αὐθημερινὸν τοῦ ἡλίου μέσον τοῦ ζ΄ καὶ ι΄ οἰκήματός ἐστιν, ὁ τόπος τῆς τύχης αὐθημερινοῦ τοῦ ἡλίου μετὰ τοῦ ἀπὸ του πλάτους τῆς πόλεως ἀπὸ τοῦ τόπου τῆς τύχης τοῦ πλάτους τῆς πόλεως ἀφαιρεῖται. εἴ τι καταλειφθῇ, περιφορά ἐστιν ἀπὸ τῆς ἀρχῆς τῆς παρελθούσης ἡμέρας ἐκείνης. εἰ δὲ τὸ αὐθημερινὸν τοῦ ἡλίου μέσον τῶν οἰκημάτων τῆς τύχης τοῦ δ΄ καὶ ζ΄ ἐστιν, ὁ τόπος τῆς τύχης τῆς διαμέτρου τοῦ ἡλίου ἀπὸ τοῦ τόπου τῆς

3 ι΄ om. V ‖ 9 τρίτον V ‖ 12 τοῦ ἀπὸ του] τούτου L

τύχης καὶ τοῦ πλάτους τῆς πόλεως ἀφαιρεῖται. εἴ τι καταλειφθῇ, περιφο|ρά f60vV
ἐστιν ἀπὸ τῆς ἀρχῆς τῆς νυκτὸς μέχρι τῆς ὥρας τοῦ καιροῦ τούτου. | ἀπ' f114rL
ἐκείνης τῆς περιφορᾶς ἐκβάλλεται ἡ ὥρα ἡ ὀρθὴ καὶ μὴ ὀρθή.

Κεφάλαιον δ΄ . Περὶ τῆς καταλήψεως τῶν $\overline{\iota\beta}$ οἰκημάτων ἤγουν τῆς ὀρθώσεως
5 αὐτῶν.

Ἐπεὶ χρεία γενέσθαι τὴν μέθοδον ταύτην, αἱ μοῖραι τῶν ὡρῶν καὶ αἱ μοῖραι τῆς τύχης γινώσκονται καὶ διπλασιάζονται. εἴ τι εὑρεθῇ, τοῦτο ὄρθωσις πρώτη ἐστίν, ὅπερ ἀεὶ ἀφαιρεῖται ἀπὸ τῶν $\overline{\xi}$. καὶ δευτέρα γίνεται ὄρθωσις. ταῦτα οὖν καὶ τὰ $\overline{\beta}$ τηροῦνται. ἔπειτα κρατεῖται ὁ τόπος τῆς τύχης καὶ τὸ
10 πλάτος τῆς πόλεως ἐκείνης. τούτῳ ἐτέθη ὄνομα δέκατον. οὗτος ὁ ψῆφος ἐτέθη εἰς τὸ δέκατον οἴκημα. εἶτα ἡ πρώτη ὄρθωσις ἑνοῦται τούτῳ. εἴ τι εὑρεθῇ, τοῦτο τόπος τῆς τύχης τοῦ ἑνδεκάτου οἰκήματος. καὶ αὖθις ἡ πρώτη ὄρθωσις ἑνοῦται τῷ τοιούτῳ τόπῳ τῆς τύχης τοῦ ἑνδεκάτου οἰκήματος. εἴ τι οὖν εὑρεθῇ, τόπος τῆς τύχης τοῦ δωδεκάτου οἰκήματός ἐστιν. εἶτ' αὖθις
15 ἡ πρώτη ὄρθωσις ἑνοῦται τῷ δωδεκάτῳ οἰκήματι, καὶ εὑρίσκεται ὁ τόπος τῆς τύχης. εἶτα ἡ δευτέρα ὄρθωσις ἑνοῦται τῷ τοιούτῳ τόπῳ τῆς τύχης, καὶ γίνεται ὁ τόπος τῆς τύχης τοῦ δευτέρου οἰκήματος. καὶ αὖθις ἡ δευτέρα

14 οὖν omVv | εὑρεθῇ] ἐξέλθῃ Vv ‖ 17 β΄ Vv

ὄρθωσις εἰς τὸν τόπον τῆς τύχης τοῦ δευτέρου οἰκήματος περισσεύεται. καὶ ὁ τόπος τῆς τύχης τοῦ τρίτου οἰκήματος εὑρίσκεται. καὶ αὖθις | ἡ δευτέρα f114vL
ὄρθωσις ἑνοῦται τῷ τόπῳ τῆς τύχης τοῦ τρίτου οἰκήματος. |καὶ τὸ τέταρτον f289vv, f61rV
οἴκημα |εὑρίσκεται τοῦ τόπου τῆς τύχης. εἶτα ὁ τόπος τῆς τύχης τοῦ ι´ οἰκήματος εἰσάγεται εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης τοῦ μετὰ τῆς εὐθείας γραμμῆς ἀπὸ τῆς ἀρχῆς τοῦ Αἰγοκέρωτος. καὶ κατ' ἐναντίον τοῦ εὑρεθέντος ψήφου μέσον τοῦ κανονίου κρατοῦνται τὰ ζῴδια ἄνω καὶ αἱ μοῖραι ἐκ πλαγίου μετὰ τοῦ ψήφου εὑρεθέντος μέσον τῶν δύο κανονίων. εἴ τι εὑρεθῇ, κέντρον ἐστὶ τοῦ ι´ οἰκήματος. ὡσαύτως ὁ τόπος τῆς τύχης τοῦ ια´ οἰκήματος τηρεῖται εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης τοῦ μετὰ τῆς εὐθείας γραμμῆς. καὶ γίνεται εἰς τοῦτο καὶ ἐν τοῖς λοιποῖς οἰκήμασι μέχρι καὶ τοῦ δ´ ὡς ἐρρέθη καὶ ἐπὶ τοῦ ι´ οἰκήματος. καὶ εὑρίσκονται τὰ κέντρα τούτων.

Εἶτα αἱ μοῖραι τοῦ ε´ οἰκήματος κατ' ἐναντίον εἰσὶ τοῦ ια´, καὶ αἱ μοῖραι τοῦ ς´ οἰκήματος κατ' ἐναντίον τοῦ ιβ´. καὶ αἱ τοῦ ζ´ ὡσαύτως τῶν μοιρῶν τοῦ α´ οἰκήματος, καὶ αἱ τοῦ η´ τῶν τοῦ β´ καὶ αἱ τοῦ ἐνάτου οἰκήματος μοῖραι κατ' ἐναντίον τῶν τοῦ γ´ οἰκήματος καὶ οὕτω τελειοῦνται αἱ ὀρθώσεις τῶν $\overline{\iota\beta}$ οἰκημάτων καὶ εὑρίσκονται τὰ κέντρα πάντων.

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2 καὶ αὖθις] ὁμοίως Vv ‖ 3 γ´ L ‖ 4 εὑρίσκεται] γίνεται Vv ‖ 8 τῶν δύο κανονίων] τῶν κανονίων τῶν $\overline{\beta}$ L ‖ 13 πέμπτου L ‖ 14 αἱ om. L | τῶν μοιρῶν] κατ' ἐναντίον Vv ‖ 15 αἱ[1] om. L | δευτέρου v | θ´ L | οἰκήματος[2] om. Vv

Τρυτάνη τοῦ ψήφου τούτου

Ἐὰν ὦσι οἱ ψῆφοι τοῦ ι΄ οἰκήματος καὶ τοῦ δ΄ ἐξισούμενοι κατὰ τὰς μοίρας καὶ τὰ λεπτά, ὁ ψῆφος ὀρθός ἐστιν. | καὶ αὖθις ἐὰν ὁ τόπος τῆς f115rL τύχης ὁ ἐκβληθεὶς πρότερον καὶ ἐν τῷ ι΄ οἰκήματι τεθείς, ἐὰν ἐξισοῦται τῷ ἐκβληθέντι, ἔπειτα ἀπὸ τῶν κανονίων τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς τόπῳ τῆς τύχης, ὁ ψῆφος ὀρθός. τὸ κέντρον δὲ τοῦ ι΄ οἰκήματός ἐστιν, ὅτε ἐστὶν εἰς τὸ ἴδιον οἴκημα, ποτὲ δὲ κλίνει πρὸς τὸ ια΄, ποτὲ δὲ πρὸς τὸ θ΄ οἴκημα. ὅτε οὖν κλίνει | πρὸς τὸ ια΄, λέγεται ὅτι νεύει πρὸς ἐκεῖνο. ὅτε f61vV δὲ κλίνει πρὸς τὸ ἕνατον, λέγεται ὅτι πέπτωκεν. ὅτε δὲ οὔτε πρὸς ἐκεῖνο οὔτε πρὸς τὸ ἕτερον κλίνει, λέγεται ὅτι ἱστᾶται.

Κεφάλαιον ε΄. Περὶ τῆς καταλήψεως τῶν σημείων τῆς ἀναβάσεως

Ἐπεὶ χρεία μεθόδου ταύτης, τηρεῖται ἡ τραχηλαῖα τῆς ἀναβάσεως εἰς τὴν τραχηλαῖαν τοῦ πλάτους τῆς πόλεως ἐκείνης. εἴ τι εὑρεθῇ, ἐκεῖνο μερίζεται εἰς τὴν τετελειωμένην τραχηλαῖαν τοῦ πλάτους τῆς πόλεως. εἴ τι εὑρεθῇ, τὸ σημεῖόν ἐστι τῆς μοίρας τῆς ἀναβάσεως. ἔπειτα τηρεῖται. ἐὰν

8 ἑνδέκατον V ‖ 9 τὸ ἕνατον] τὰ ἐννέα Vv, τὰ ἐννέα καὶ L 9–10 οὔτε — κλίνει] οὐ κλίνει πρὸς ἑκάτερον Vv ‖ 10 κλίνει + καὶ L ‖ 12 τῆς καταλήψεως om. Vv ‖ 13 ἐπεὶ χρεία μεθόδου ταύτης om. Vv

ἡ μετάκλισις τοῦ ἡλίου ἢ τὸ μῆκος τοῦ ἀστέρος νότια, ἡ τραχηλαῖα τοῦ πλάτους τῆς ἀνατολῆς ἑνοῦται μετὰ τοῦ σημείου τῆς μοίρας τῆς ἀναβάσεως. εἰ δὲ ἡ μετάκλισις ἐκείνου καὶ τὸ μῆκος βορεία, ἀπὸ τῶν δύο ψήφων τούτων τὸ ἔλαττον ἀφαιρεῖται ἀπὸ τοῦ πλείονος. εἴ τι εὑρεθῇ, ὄρθωσίς ἐστι τοῦ σημείου.

Διαίρεσις. Εἰς τὴν κατάληψιν τοῦ σημείου

| Ἡ ὄρθωσις τοῦ σημείου μερίζεται εἰς τὴν τραχηλαῖαν τὴν τετελειωμένην f115vL
τῆς ἀναβάσεως. εἴ τι εὑρεθῇ, παρ' ἕνα |βαθμὸν ἔλαττον κρατεῖται ὁ ψῆφος. f290rv
καὶ τὸ εὑρεθὲν ἡ τραχηλαῖά ἐστι τοῦ σημείου. εἴτε δὲ νότιόν ἐστιν ἢ βόρειον τοῦτο τὸ σημεῖον ἀπὸ τούτου καταλαμβάνεται. ὁ ἥλιος ἐὰν οὐκ ἔχῃ μετάκλισιν καὶ ὁ ἀστὴρ μῆκος, τὸ σημεῖον τῆς ἀναβάσεως εἰς τὸ νότιον μέρος. εἰ δὲ ἔχει ὁ ἥλιος μετάκλισιν καὶ ὁ ἀστὴρ μῆκος, καὶ εἰσι νότια καὶ τὸ σημεῖον τῆς ἀναβάσεως νότιον. εἰ δὲ ἡ μετάκλισις καὶ τὸ μῆκος βόρεια, τηρεῖται ἡ μοῖρα τοῦ σημείου. ἐὰν πλείων αὕτη τῆς τραχηλαίας τοῦ πλάτους τῆς ἀνατολῆς, τὸ σημεῖον ἐκεῖνο τῆς ἀναβάσεως νότιον. εἰ δ' ἐλάττων, |εἰς f62rV
τὸ βόρειόν ἐστι μέρος.

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3 $\overline{\beta}$ τούτων ψήφων L ‖ 4 ἀπὸ om. L ‖ 6 τὴν κατάληψιν] τὸ γνώρισμα L ‖ 10 τὸ sup lin v ‖ 11 μετάκλισις L | τὸ σημεῖον sup lin v

Διαίρεσις. Εἰς τὴν κατάληψιν τῆς ἀναβάσεως ἐκείνης τῆς μὴ ἐχούσης σημεῖον

Ἐκείνη ἡ ἀνάβασις εἰς τὰς πόλεις ταύτας τὰς πρὸς τὸ ἀρκτῷον μέρος ἐστίν, ἔνθα ἡ μετάκλισις τοῦ ἡλίου ἢ τὸ μῆκος τοῦ ἀστέρος ἔλαττόν ἐστι τοῦ μήκους τῆς πόλεως ἐκείνης. χρείας δὲ γενομένης γενέσθαι ψῆφον γίνεται οὕτως. κρατεῖται ἡ τραχηλαῖα τῆς α΄ μετακλίσεως ἢ ἡ τραχηλαῖα τοῦ μήκους τοῦ ἀστέρος, καὶ μερίζεται εἰς τὴν τραχηλαῖαν τοῦ μήκους τῆς πόλεως. εἴ τι εὑρεθῇ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται, καὶ τὸ εὑρεθὲν ἐκεῖνο τραχηλαῖά | ἐστι τῆς ἀναβάσεως ἐκείνης τῆς μὴ ἐχούσης σημεῖον. f116rL

Κεφάλαιον ς΄. Εἰς τὴν ἐκβολὴν τῆς γραμμῆς τοῦ μέσου τῆς ἡμέρας τῆς γῆς

Γίνεται ὄρθωσις τῆς ἐπιφανείας τῆς γῆς πρὸς τὸ ἀκριβὲς ὡς ὕδατος ἐν ταύτῃ ἐπιχυθέντος καλυφθῆναι τὴν ἐπιφάνειαν μὴ πρὸς ἕτερον μέρος προχωροῦντος τοῦ ὕδατος. εἶτα ἐν τῇ ὀρθωθείσῃ ταύτῃ ἐπιφανείᾳ τῆς γῆς περιγράφεται διὰ τοῦ διαμέτρου κύκλος ὅσον βούλεταί τις. καὶ εἰς τὸ κέντρον τοῦ κύκλου τίθεται κάθετος ἧς τὰ $\overline{\beta}$ ἄκρα, τὸ μὲν πρὸς τὸ κέντρον στερεὸν καὶ πάχος ἔχον, τὸ δὲ ἄνω λῆγον πρὸς ὀξύ.

Τὸ μῆκος οὖν τῆς καθέτου ἔλαττον ὀφείλει εἶναι τῆς διαμέτρου τοῦ κύκλου τούτου. ἐκ πρωίας οὖν ἀνισχόντος τοῦ ἡλίου, τηρεῖται τὸ σκίασμα τῆς

1 τὴν κατάλψιν] τὸ γνώρισμα L ‖ 4 δὲ om. Vv ‖ 5 πρώτης Vv ‖ 7 τὸ] ὃ V ‖ 14 δύο Vv ‖ 17 ἐκ πρωίας] πρωϊαίτερον Vv

καθέτου εἴτ' ἂν λήξῃ εἰς τὴν περιφέρειαν τοῦ κύκλου. ἡνίκα οὖν φθάσῃ τὸ σκίασμα εἰς τὸν κύκλον, | τίθεται σημεῖον ἐκεῖ. εἶτα τοῦ ἡλίου ἀπὸ τοῦ μέσου f62vV τῆς ἡμέρας κλίναντος, τηρεῖται ἡ κάθετος εἴτ' ἂν φθάσῃ τὸ σκίασμα ταύτης εἰς τὴν περιφέρειαν τοῦ κύκλου, καὶ τίθεται κἀκεῖ σημεῖον. ἀπ' ἐκείνων οὖν τῶν δύο σημείων τῶν τεθέντων εἰς τὸν κύκλον τὴν γραμμὴν γράφεται γραμμὴ κατ' εὐθεῖαν ἀπὸ τοῦ ἑνὸς σημείου μέχρι καὶ τοῦ ἄλλου. εἶτα ἡ γραμμὴ αὕτη τέμνεται ἐπὶ σημείου εἰς δύο, καὶ ἀπὸ τοῦ μέσου τῆς τοιαύτης γραμμῆς μέχρι τοῦ κέντρου | τοῦ κύκλου τέμνεται γραμμή. καὶ αὕτη ἐστὶν ἡ γραμμὴ τοῦ f116vL μέσου τῆς ἡμέρας, ἡ δὲ ἀπὸ τοῦ ἐκ | προτέρου σημείου τοῦ κύκλου εἰς 290vv τὸ ἕτερον σημεῖον γραμμὴ τῆς ἀνατολῆς καὶ τῆς δύσεως. ἔπειτα ἀπὸ τῆς διαμέτρου τοῦ κύκλου μερίζεται ὁ κύκλος εἰς $\overline{\delta}$. γράφεται οὖν ⟨εἰς⟩ ἕκαστον μέρος· εἰς τὸ ἓν ἀνατολή, εἰς δὲ τὸ ἕτερον δύσις, εἰς τὸ ἄλλο ἄρκτος, καὶ εἰς τὸ τέταρτον μεσημβρία. ἕκαστον οὖν τοῦ κύκλου τεταρτημόριον μερίζεται εἰς $\overline{\rho}$ μοίρας.

Κεφάλαιον ζ'. Εἰς τὸ γνώρισμα ἐκεῖνο ὅτι ἡ μιαρὰ προσευχὴ τῶν ἀσεβῶν Περσῶν ἀπὸ τῆς γραμμῆς τοῦ μέσου τῆς ἡμέρας πόσον παρῆλθε τηρεῖται

Τὸ μῆκος τῆς πόλεως καθ' ἣν οἰκοῦσιν οἱ ἀσεβεῖς ἐὰν ᾖ κατ' ἐναντίον τοῦ

7 ἐπὶ σημείου] ἐπὶ σης L ut videtur, ἐπιούσης et verba difficilia visu sup lin v ‖ 8 τέμνεται] σύρεται L ‖ 12 εἰς τὸ sup lin v ‖ 15 ἀσεβῶν om L

μήκους τοῦ Μακκᾶ – ὁ θεὸς ἵνα ἀναστατώσῃ καὶ ἀφανίσῃ τὸν τόπον ἐκεῖνον διὰ τὴν τῶν ἀσεβῶν κακοδαιμονίαν – τὸ σημεῖον τῆς μιαρᾶς εὐχῆς αὐτῶν μετὰ τῆς εὐθείας γραμμῆς ἤγουν τῆς διαμέτρου τοῦ κύκλου ὀρθόν ἐστιν. εἰ δ' ἐστὶ πλέον καὶ ἔλαττον, τηρεῖται ὁ ψῆφος τούτου οὕτως. τηρεῖται τὸ μῆκος τοῦ Μακκᾶ καὶ τὸ μῆκος ἧς βουλόμεθα πόλεως, καὶ τὸ ἔλαττον ἀφαιρεῖται ἀπὸ τοῦ πλείονος. εἴ τι καταλειφθῇ, ἡ τραχηλαῖα ἐκείνου | κρατεῖται, καὶ ἐκείνη f63rV
εἰς τὴν τραχηλαῖαν τὴν τετελειωμένην τοῦ πλάτους τοῦ Μακκᾶ τηρεῖται. εἴ τι εὑρεθῇ, παρ' ἕνα βαθμὸν | ἔλαττον κρατεῖται. καὶ ἐκεῖνο ἡ τραχηλαῖα τοῦ f117rL
μήκους τοῦ τελείου ἐστίν. ἐκεῖνο τηρεῖται. ἔπειτα ἡ τραχηλαῖα τοῦ πλάτους τοῦ Μακκᾶ εἰς τοῦτο μερίζεται. εἴ τι εὑρεθῇ, τραχηλαῖα τοῦ μήκους τοῦ τελείου ἐστίν. τὸ τόξον ἐκείνης κρατεῖται, καὶ ἐκεῖνο εἰς τὸ τετελειωμένον τῆς πόλεως τῆς ζητουμένης πλάτος ἐνοῦται. ἔπειτα εἴ τι εὑρεθῇ, ἐκεῖνο θεμέλιον λέγεται. ἡ τραχηλαῖα ἔπειτα ἐκείνη κρατεῖται, καὶ ἐκεῖνο εἰς τὴν τραχηλαῖαν τὴν τετελειωμένην τοῦ τελείου μήκους τηρεῖται. εἴ τι εὑρεθῇ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. εἴ τι εὑρεθῇ, ἐκεῖνο ἡ τραχηλαῖα τοῦ τετελειωμένου μήκους μέσον τῆς ζητουμένης πόλεως καὶ τοῦ θεομισούσης Μακκᾶ. τὸ τόξον ἐκείνης κρατεῖται καὶ ⟨ἀφαιρεῖται⟩ ἀπὸ τῶν $\overline{\rho}$. εἴ τι καταλειφθῇ, μῆκός ἐστι τῆς πόλεως ἐκείνης μέσον καὶ τοῦ Μακκᾶ.

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1 ἀναστατώσῃ] ἐξεθεμελιώσῃ L ‖ 3 ἐστὶ] -στι sup lin v ‖ 4 τὸ μῆκος + τοῦ μῆκους L ‖ 5 τῆς πόλεως ἧς βουλόμεθα L | ἀπὸ om L ‖ 9 ἐστίν om. Vv 9–11 ἐκεῖνο . . . ἐστιν om L ‖ 12 πλάτος om L ‖ 15 ἡ om Vv ‖ 16 θεομισούσης om L

Ἔπειτα ἐκείνη ἡ τραχηλαῖα τοῦ τελείου μήκους παρ' ἕνα βαθμὸν πλέον κρατεῖται, ἤγουν ἄνω. καὶ ἐκεῖνο εἰς τὴν τραχηλαῖαν τοῦ μήκους τοῦ μέσου τῶν $\overline{\beta}$, τῆς πόλεως καὶ τοῦ Μακκᾶ, μερίζεται. εἴ τι εὑρεθῇ, ἐκεῖνο τραχηλαῖά ἐστι τοῦ τόπου τῆς ἐναγοῦς | προσευχῆς μετὰ τῆς ὀρθῆς γραφῆς. f291rv
πάλιν τηρεῖται. ἐὰν τὸ θεμέλιον ἐκεῖνο ἔλαττόν ἐστι τῶν $\overline{\rho}$, τὸ σημεῖον τῆς θεοστυγοῦς εὐχῆς ἀπὸ τοῦ μεροῦς τῆς μεσημβρίας ἐστὶ πρὸς τὸ μέρος τῆς γραμμῆς τῆς ἀπ' ἀνατολῆς διηκούσης πρὸς δύσιν. εἰ δὲ πλέον τῶν $\overline{\rho}$, τὸ σημεῖον τῆς εὐχῆς τῶν ἀσεβῶν πρὸς τὸ βόρειόν ἐστι μέρος. εἰ δὲ ὁ ψῆφος εἰς αὐτὰ τὰ $\overline{\rho}$ | γένηται, εἰς τὸ σημεῖον τῆς εὐθείας γραμμῆς τῆς ἀπ' ἀνατολῶν f117vL
πρὸς δύσιν διηκούσης ὁ τόπος τῆς μιαρᾶς εὐχῆς τῶν ἀσεβῶν. καὶ μετὰ τούτου τοῦ ψήφου ἐξεβλήθη τὸ σημεῖον τῆς τῶν ἀσεβῶν ἐναγεστάτης εὐχῆς καθ' | ἑκάστην πόλιν, καὶ ἐτέθη εἰς τὸ κανόνιον τοῦτο. οὗτος δὲ ὁ ψῆφος f63vV
τοῦ κανονίου οὕτως ἐτέθη ἀπὸ τῆς εὐθείας γραμμῆς τῆς ἀπὸ τῆς δύσεως ἀρχομένης, οὐκ ἀπὸ τῆς γραμμῆς τοῦ μέσου τῆς ἡμέρας.

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3 δύο Vv ‖ 4 προσευχῆς] πρὸς τὸν Σατανὰν τὸν καὶ παρ' αὐτῶν εὐχῆς Vv ‖ 5 ἐστι om. Vv 5–6 τῆς μιαρᾶς προσευχῆς L ‖ 8 τῆς μιαρᾶς προσευχῆς L ‖ 10 προσευχῆς L | μιαρᾶς om. L ‖ 11 ἐξεβλήθη iter. L | μιαρᾶς προσευχῆς L

pÒleij	de‹xij toà shme…ou		meshmbr…a dÚsij mšroj eÙchj	pÒleij	de‹xij toà shme…ou		meshmbr…a dÚsij mšroj eÙchj	pÒleij	de‹xij toà shme…ou		meshmbr…a dÚsij mšroj eÙchj
	mÁkoj	pl£toj			mÁkoj	pl£toj			mÁkoj	pl£toj	
babulèn	o$	m		ntapere$£n	ne	ƀ		mp£lc	q	k	
mousoÚl	pb	k		ntzil£n	nz	ƀ		catl£n	kz	l	
camat£n	xd	l		ntzourtz£n	mh	m		taure$£n	k$	ƀ	
· a…	na	ne		kirm£n	mg	l		gÒr	kq	ƀ	
ntamag£n	n	l		suntzi$£n	ih	k		cor£smin	n	ƀ	
„pac£n	mh	ƀ		· aou£	iq	k		mpoucer£	m	m	
pers…j	me	ƀ		mpoÚtz	ka	l		samerk£nt	lq	ƀ	
¢oul£z	mq	l		nisaboÚr	mg	n		sir£n	mh	a	
¢nterpaz£n	o	ƀ		m£rro	lh	k		tr£j	mg	a	
¢rmen…a	p	ƀ		cerrš	kq	ƀ		cot£n	l$	l	

| Μοῖρα ἑβδόμη. Περὶ τῆς ἐκβολῆς τῶν μέσων κινήσεων τῶν ἑπτὰ ἀστέρων f118rL

Ὁ Ἀβδουραχμὰν ὁ Χαζανὴς οὕτω φησίν· τέχνην ἐργασώμεθα περὶ τῶν μέσων κινήσεων τῶν ἀστέρων κατὰ τρεῖς μεθόδους. μία ἐκείνη - περὶ τοῦ μήκους τῶν $\overline{\rho}$ ἀπὸ τῆς ἄκρας δυτικῆς θαλάττης εἰς τὴν μέσην κίνησιν τῆς συντάξεως ταύτης. δευτέρα ἐκείνη - τὸ μῆκος ἑκάστης πόλεως | μετὰ τῆς 291vv ὀρθώσεως τῶν $\overline{\beta}$ μηκῶν τῆς συντάξεως καὶ τῆς πόλεως ἐκείνης. ἐκείνη μέση κίνησις | τῆς πόλεως λέγεται, καὶ οἱ ψῆφοι τῶν αὐθημερινῶν ἀπὸ τῆς μέσης f64rV ταύτης κινήσεως γίνονται. καὶ ἡ τρίτη ὅτι ἡ μέση κίνησις μετὰ τῆς ὀρθώσεως τῆς ἡμέρας ὀρθοῦνται χάριν τῶν γενεθλιαλογικῶν καὶ τῆς εἰσελεύσεως.

Καὶ ἡ μοῖρα αὕτη περὶ τῆς ἐκβολῆς τῶν μέσων κινήσεων τῶν ἀστέρων καὶ τῶν ὑψωμάτων καὶ τῶν ὀρθώσεων ἑκάστου καὶ τῆς εἰσελεύσεως τῶν σουλτανικῶν χρόνων ἀπὸ τῶν ἡμερῶν τῆς ἑβδομάδος μετὰ τῶν ἐτῶν εἰς τὴν ἔναρξιν καὶ τελείωσιν τούτων καὶ τοῦ γνωρίσματος τοῦ θεμελίου τοῦ αὐθημερινοῦ δι᾽ ἕνα χρόνον τοῦ ἡλίου. αὕτη δὲ ἡ μοῖρα εἰς $\overline{\delta}$ διαιρεῖται κεφάλαια.

Κεφάλαιον α΄. Περὶ τῆς ἐκβολῆς τῶν μέσων κινήσεων τῶν ἀστέρων εἰς τὸ μῆκος τῶν $\overline{\rho}$

Ἐπεὶ χρεία τῆς μεθόδου ταύτης, πρὸ ταύτης τὸ ἔτος τῶν Ἀράβων | f118vL

1 ζ L ‖ 2 ἀβδουραχμὰν in marg. L ‖ 5 ἐκείνη + ἐστὶ L ‖ 6 δύο v ‖ 8 γ΄ c

ὀρθοῦται μετὰ τοῦ μέσου ψήφου εἰς τὴν ἡμέραν ἣν βουλόμεθα ἀπὸ τῶν ἡμερῶν τῆς ἑβδομάδος καθὼς ἐρρέθη περὶ τούτου πρότερον. ἔπειτα τίθενται εἰς τὴν ταῦλαν εἰς ἓν μέρος οἱ ἀτελεῖς χρόνοι τῶν Ἀράβων, καὶ ὑπὸ τούτου τίθεται ὁ μὴν ὃν βουλόμεθα, καὶ ὑπὸ τὸν μῆνα ἡ ποσότης τῶν ἡμερῶν τοῦ μηνὸς ἐκείνου. ἔπειτα ζητεῖται ψῆφος ὅμοιος ἐκείνοις τοῖς προκαταλημμένοις χρόνοις εἰς τὰς τριακονταετηρίδας τῶν Ἀράβων εἰς τὸ κανόνιον. ἔνθα οὖν εὑρεθῶσιν ὅμοιοι τούτοις χρόνοι, ἐκεῖθεν γίνεται εἰσέλευσις εἰς τὸ κανόνιον. εἰ δὲ οὐχ εὑρεθῶσιν ἐν τῷ κανονίῳ χρόνοι ἐξισούμενοι τούτοις κατὰ τὸν ψῆφον, ζητεῖται ψῆφος ἐλάττων ἐκείνου καὶ ἐγγύτερον, καὶ κατ' ἐναντίον ἐκείνου εἰσέλευσις εἰς τὸ κανόνιον καὶ κρατεῖται. εἴ τι εὑρεθῇ, κατ' ἐναντίον ἐκείνου ἀπὸ τοῦ κανονίου τοῦ ζητουμένου ἀστέρος ζῴδια, μοῖραι, λεπτά, καὶ δεύτερα λεπτὰ ἐὰν ὦσιν, καὶ τίθεται εἰς τὴν ταῦλαν μετὰ | τῆς τάξεως ταύτης· f64vV πρῶτον ζῴδια, ἔπειτα μοῖραι, εἶτα λεπτά, καὶ μετὰ ταῦτα λεπτὰ δεύτερα.

Εἶτα εἴ τι εὑρεθῇ ἀπὸ τῶν ἡμερῶν τῶν ὄπισθεν καὶ ἐκ πλαγίου τούτων, τίθεται ἰδίᾳ εἰς ἓν μέρος τῆς ταύλας. εἶτα οἱ ἐν τῷ κανονίῳ χρόνοι ἀφ' ὧν ἐγένετο εἰσέλευσις εἰς τοῦτο | ἀφαιροῦνται ἀπὸ τῶν κρατουμένων πρότερον f119rL καὶ τεθέντων εἰς τὴν ταῦλαν. εἴ τι οὖν καταλειφθῇ, ζητεῖται ἐκεῖνο εἰς τὸ κανόνιον τῶν ἁπλῶν ἐτῶν τῶν Ἀράβων. ἔνθα εὑρεθῇ ὁ ψῆφος ἐκεῖνος, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον ἐκείνου τοῦ ἀστέρος,

3 τούτους L ‖ 8–10 εἰ δὲ . . . εἰς τὸ κανόνιον om. Vv ‖ 15 τίθενται v

καὶ κρατοῦνται ζῴδια, μοῖραι καὶ λεπτά, καὶ τίθενται εἰς τὴν ταῦλαν ὑπὸ τὴν κρατηθεῖσαν πρότερον μέσην κίνησιν τῶν | τριακονταετηρίδων τὰ ζῴδια ὑπὸ f292rv τὰ ζῴδια καὶ καθεξῆς ὁμοίως κρατοῦνται καὶ αἱ εὑρεθεῖσαι ὄπισθεν ἡμέραι τῆς ἑβδομάδος, καὶ ἑνοῦνται ταῖς εὑρεθείσαις πρότερον ἡμέραις ἀπὸ τῶν τριακονταετηρίδων.

Εἶτα γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν μηνῶν κατ' ἐναντίον τοῦ κρατηθέντος παρ' ἡμῶν μηνός, καὶ κρατεῖται καὶ οὗτος ὁ ψῆφος τῆς μέσης κινήσεως τοῦ ἀστέρος ἐκείνου ὡς ἐρρέθη, καὶ τίθεται ὑπὸ τὸν ψῆφον τῶν ἁπλῶν ἐτῶν – τὰ ζῴδια ὑπὸ τὰ ζῴδια καὶ καθεξῆς ὁμοίως ὡς καὶ ἐπὶ τοῖς ἄλλοις. ἔπειτα κρατοῦνται αἱ ὄπισθεν ἡμέραι, καὶ αὗται ἑνοῦνται ταῖς ἀπὸ τῶν χρόνων καὶ μηνῶν κρατηθείσαις ἡμέραις. εἶτα ζητοῦνται αἱ κρατηθεῖσαι ἡμέραι τοῦ μηνὸς εἰς τὸ κανόνιον τῶν ἡμερῶν. ἔνθα εὑρεθῶσιν, κατ' ἐναντίον ἐκείνων γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν ἡμερῶν | τοῦ ἀστέρος ἐκείνου. f65rV εἴ τι οὖν εὑρεθῇ, | τίθεται ὑπὸ τὸν ψῆφον τῶν μηνῶν — τὰ ζῴδια ὑπὸ τὰ ζῴδια f119vL καὶ ἐφεξῆς ὁμοίως καὶ ἐπὶ τοῖς ἄλλοις.

Ἔπειτα κρατοῦνται αἱ ὄπισθεν ἡμέραι, καὶ αὗται [καὶ] ἑνοῦνται ταῖς ἀπὸ τῶν χρόνων καὶ μηνῶν κρατηθείσαις ἡμέραις. ἐὰν οὖν πλέον τῶν $\overline{\zeta}$ γένηται ὁ ψῆφος, ἀνὰ $\overline{\zeta}$ γίνεται τούτου ἀφαίρεσις. εἴ τι ἔπειτα καταλειφθῇ, ἐὰν ἐξισοῦνται ταῖς πρότερον κρατηθείσαις ἡμέραις τοῦ μηνός, ὁ ψῆφος ὀρθός. εἰ

2 $\overline{\lambda}$ετηρίδων L ‖ 4–5 $\overline{\lambda}$ετηρίδων L ‖ 9–10 ὁμοίως . . . αὗται] εἴ τι εὑρεθῇ ὄπισθεν ἀπὸ τῶν ἡμερῶν τῆς ἑβδομάδος κρατεῖται καὶ L ‖ 11 καὶ μηνῶν om L

δ' οὐκ ἐξισοῦνται, πάλιν ἐξ ἀρχῆς ἀπὸ τῶν ἐτῶν γίνεται ὁ ψῆφος. γενομένου δὲ τοῦ ψήφου ὀρθοῦ, ἑνοῦνται οἱ ψῆφοι πάντες τῶν μέσων κινήσεων. ἐὰν οὖν εἰς τὰ δεύτερα λεπτὰ ὑπερβῇ ὁ ψῆφος τὰ $\overline{\xi}$, τὰ $\overline{\xi}$ ἀφαιροῦνται ἐξ ἐκείνων, καὶ $\overline{\alpha}$ προστίθεται εἰς τὰ α΄ λεπτά. καὶ αὖθις ἐὰν ὁ ψῆφος τῶν α΄ λεπτῶν ὑπὲρ τὰ $\overline{\xi}$ γένηται, τὰ $\overline{\xi}$ ἀφαιροῦνται ἀπὸ τῶν τοιούτων λεπτῶν, καὶ $\overline{\alpha}$ προστίθεται εἰς τὰς μοίρας. εἰ δὲ ὁ ψῆφος τῶν μοιρῶν τὰ $\overline{\lambda}$ ὑπερβῇ, τὰ $\overline{\lambda}$ ἀπὸ τῶν συναχθεισῶν μοιρῶν ἀφαιροῦνται, καὶ $\overline{\alpha}$ προστίθεται εἰς τὰ ζῴδια. εἰ δὲ πάλιν ὁ ψῆφος τῶν ζῳδίων τὸν $\overline{\iota\beta}$ ὑπερβῇ ἀριθμόν, τὰ $\overline{\iota\beta}$ καταλιμπάνονται, καὶ τὸ ἓν ἀπολειφθὲν κρατεῖται. εἴ τι οὖν εὑρεθῇ, ἀπὸ ζῳδίων, μοιρῶν, καὶ λεπτῶν ἡ μέση κίνησίς ἐστι τοῦ ἀστέρος ἐκείνου εἰς τὴν μέσην κίνησιν τῆς συντάξεως εἰς ἐκεῖνο τὸ μέσον τῆς ἡμέρας εἰς τὸ μῆκος τῶν $\overline{\rho}$. εἰ δ' ἐστὶ μεθ' ἡμῶν τεμμάχιον τῆς ὥρας, κατ' ἐναντίον | τῆς ὥρας ταύτης γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν f120rL
ὑπὸ τοὺς μῆνας ὡρῶν. καὶ ἡ κίνησις τοῦ ἀστέρος ἐκείνου κρατεῖται, | καὶ f65vV
ἑνοῦται τῇ μέσῃ κινήσει τῇ πρότερον κρατηθείσῃ.

Διαίρεσις. Περὶ τῆς ὀρθώσεως τοῦ ὑψώματος

| Κρατηθείσης τῆς μέσης κινήσεως κατ' ἐναντίον τοῦ ἔτους ἐκείνου ἀπὸ 292vv
τῶν χρόνων, τῶν μηνῶν, καὶ τῶν ἡμερῶν γίνεται εἰσέλευσις, καὶ κρατεῖται ἡ

4 πρῶτα Vv | πρώτων Vv ‖ 5 ἀπὸ τῶν τοιούτων λεπτῶν] ἐξ ἐκείνων τῶν πρώτων λεπτῶν Vv ‖ 7–8 εἰ δὲ πάλιν . . . ὑπερβῇ] ἐὰν τὸν ιή ὑπερβῶσιν L ‖ 8 δωδέκατον v | δώδεκα v ‖ 16 ἐκείνου] ἐκείνων v

κίνησις τοῦ ὑψώματος ἀπὸ ζῳδίων, μοιρῶν, καὶ λεπτῶν α΄ καὶ β΄. ἔπειτα τὸ ὑπὸ τοὺς μῆνας ὕψωμα τοῦ ἀστέρος ἐκείνου τὸ κατὰ τὴν ἀρχὴν τοῦ χρόνου τῶν Ἀράβων εὑρεθὲν ἑνοῦται τῇ τοιαύτῃ κινήσει τοῦ ὑψώματος. εἴ τι οὖν εὑρεθῇ, ὕψωμά ἐστι τῆς ὀρθώσεως.

Κεφάλαιον β΄. Περὶ τῆς ὀρθώσεως τῶν μέσων κινήσεων τῶν ἀστέρων

Τοῦτο κατὰ $\overline{\beta}$ γίνεται τρόπους. εἷς ἐκεῖνος, ὅτι ἀπὸ τῆς περισσείας τῶν $\overline{\beta}$ μηκῶν ὁ ψῆφος τῆς μέσης κινήσεως τῆς συντάξεως εἰς τὸ μῆκος τῆς ἑτέρας πόλεως διαβιβάζεται. δεύτερος ἐκεῖνος· αὕτη ἡ μέση κίνησις ἡ μετὰ τοῦ μήκους τῆς πόλεως ὀρθωθεῖσα μετὰ τῆς ὀρθώσεως τῆς ἡμέρας γίνεται τελεία. ὁ ἀπὸ τῶν $\overline{\beta}$ πρῶτος ψῆφος κρατεῖται – ἡ περισσεία ἡ μέση τῶν $\overline{\beta}$ τῆς πόλεως ἧς βουλόμεθα καὶ τοῦ μήκους τῶν $\overline{\rho}$. εἴ τι οὖν εὑρεθῇ, ἐκεῖνο μερίζεται εἰς τὰ $\overline{\iota\epsilon}$ | ἢ τηρεῖται εἰς τὰ $\overline{\delta}$ λεπτά. εἴ τι εὑρεθῇ, ὥρα ἐστὶν ἐκεῖνο ἢ τεμμάχιον f120vL
τῆς ὥρας. εἶτα κατ' ἐναντίον τῶν ὡρῶν τούτων γίνεται εἰσέλευσις εἰς τὸ ὑπὸ τοὺς μῆνας κανόνιον τῶν ὡρῶν, καὶ κρατεῖται ἡ μέση κίνησις τοῦ ἀστέρος ἐκείνου, καὶ τηρεῖται. ἔπειτα τηρεῖται εἰς τὸ μῆκος τῆς πόλεως ἐκείνης. εἴπερ ἔλαττόν ἐστι τοῦτο τῶν $\overline{\rho}$, ἐκείνη ἡ μέση κίνησις ἡ ἀπὸ τῶν ὡρῶν κρατηθεῖσα ἑνοῦται τῇ ἀπὸ τῆς συντάξεως μέσῃ κινήσει. εἰ δὲ πλέον τῶν $\overline{\rho}$, ἀφαιρεῖται

1 πρώτων Vv | δευτέρων Vv ‖ 5 δ v ‖ 6 $\overline{\beta}^1$] δύο v ‖ 10 $\overline{\beta}^1$] δύο V | $\overline{\beta}^2$] δύο V ‖ 16 ἐστι post ἔλαττόν L | ἡ μέση om Vv

ἐξ ἐκείνου, καὶ εὑρίσκεται ἡ μέση κίνησις τῆς πόλεως ἐκείνης – περισσεία |εἰς τὴν ὄρθωσιν τῆς μέσης κινήσεως τῆς πόλεως ἐκείνης μετὰ τῆς ὀρθώσεως f66rV τῆς ἡμέρας. κατ' ἐναντίον τῆς μέσης κινήσεως τοῦ ἡλίου γίνεται εἰσέλευσις εἰς τὰ κανόνια τῆς ὀρθώσεως τῶν ἡμερῶν, καὶ κρατεῖται τὸ τεμμάχιον τῆς ὥρας. ἔπειτα κατ' ἐναντίον τοῦ τεμμαχίου τούτου γίνεται εἰσέλευσις εἰς τὰ ὑπὸ τοὺς μῆνας κανόνια τῶν ὡρῶν, καὶ ἡ μέση κίνησις τοῦ ἀστέρος ἐκείνου κρατεῖται. εἴ τι εὑρεθῇ, ἀφαιρεῖται ἀεὶ ἀπὸ τῆς μέσης κινήσεως τῆς πόλεως ἐκείνης, καὶ εὑρίσκεται ἡ τελεία ὄρθωσις τῆς μέσης κινήσεως τῆς πόλεως ἐκείνης.

Διαίρεσις. Ἐὰν ἡ μέθοδος αὕτη τῶν αὐθημερινῶν διὰ τὰ γενεθλιαλογικὰ γένηται, τηρεῖται τὸ μῆκος τῆς πόλεως. ἐὰν ᾖ ἔλαττον τῶν $\overline{\rho}$, ἐκείνη ἡ ὥρα |ἡ f121rL ἐξελθοῦσα ἀπὸ τῶν $\overline{\beta}$ μηνῶν ἑνοῦται τῷ ἔτει ἐκείνῳ εἰς ὃ ἐγένετο ἡ γέννησις. εἰ δ' ἐστὶ πλέον τῶν $\overline{\rho}$ |τὸ μῆκος τῆς πόλεως, ἐκείνη ἡ ὥρα ἀφαιρεῖται ἀπὸ τοῦ f293rv ἔτους ἐκείνου. ἔπειτα τὸ τεμμάχιον τῆς ὀρθώσεως τῶν ἡμερῶν ἀεὶ ἀφαιρεῖται ἀπὸ τοῦ ἔτους, καὶ ὀρθοῦται τὸ ἔτος ὄρθωσιν τελείαν. εἶτα κατ' ἐναντίον τοῦ ἔτους τούτου γίνεται εἰσέλευσις εἰς τὰ κανόνια τῶν μέσων κινήσεων τῶν ἀστέρων, καὶ κρατοῦνται οἱ ψῆφοι τούτων ἀπὸ τῆς συντάξεως. αἱ μέσαι οὖν

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10 αὕτη + τῆς τέχνης L ‖ 11 ἡ sup lin v ‖ 12 δύο Vv ‖ 13 ante τοῦ μῆκος v add et cancell ἀφαιρεῖται ἐξ ἐκείνου ‖ 14 ἔπειτα] εἶτα Vv

αὗται κινήσεις ὀρθαί εἰσι κατὰ τὸν καιρὸν ἐκεῖνον.

Κεφάλαιον γ΄ . Περὶ τῆς εἰσελεύσεως τῶν γνωρίμων χρόνων τῶν Σουλτανικῶν καπισά

Ἴσθι ὡς εἷς χρόνος τοῦ ἡλίου ἐστὶ τόσον· τξε ιδ κζ κ λς μζ . ὁ χρόνος τῶν Ῥωμαίων τόσος καὶ τόσα τεμμάχιά εἰσιν εἰς ἐκεῖνον· περισσσεία ἀπὸ τοῦ χρόνου τοῦ ἡλίου ϛ ϛ λβ λθ κγ ιγ . τὰ τεμμάχια ταῦτα εἰς τοὺς ρι χρόνους μία ἡμέρα γίνεται τετελειωμένη. ὁ χρόνος τῶν Περσῶν ἐλάττων ἐστὶ τοῦ χρόνου τοῦ ἡλίου τόσον· ϛ ιδ κζ κ λς μζ . ὁ χρόνος τῆς σελήνης | τόσος· τνδ κβ α λς να . ὁ χρόνος τοῦ ἡλίου ἀπὸ τοῦ χρόνου τῆς σελήνης f66vV πλείων τόσον· ι νβ κε μγ με νε . ἡ περιφορὰ τῆς ἑβδομάδος περισσὴ γίνεται ἡμέραν μίαν εἰς τὸν | χρόνον τοῦ ἡλίου εἰς τεμμάχια τόσα ὅτι ὁ χρόνος τῶν f121vL Περσῶν ἐλάττων τοῦ χρόνου τοῦ ἡλίου. εἰς τοῦτο ἐτέθη κανόνιον διὰ τὸ ἔτος τὸ Σουλτανικὸν ἐν ᾧ ἐτέθησαν οἱ χρόνοι ἀνὰ κ τοῦ ἡλίου.

Διαίρεσις. Εἰς τὸ γνώρισμα ἐκεῖνο ὅτι οἱ χρόνοι οἱ αἰσθητοὶ ἤγουν οἱ γνώριμοι οἱ σουλτανικοὶ κατὰ ποίαν ἡμέραν εἰσέρχονται ἀπὸ τῶν τριῶν τούτων ἐτῶν καὶ τῶν ἡμερῶν τῆς ἑβδομάδος

1 αὗται om Vv ‖ 2 Περὶ] εἰς τὸ γνώρισμα L ‖ 6 ϛ ϛ δβλθκγιγ v

Γίνεται εἰσέλευσις κατ' ἐναντίον τῶν τετελειωμένων σουλτανικῶν χρόνων εἰς τὸ κανόνιον τῶν εἰκοσαετηρίδων καὶ τῶν ἁπλῶν ἐτῶν. εἴ τι οὖν εὑρεθῇ, κατ' ἐναντίον τῶν $\overline{\beta}$ κανονίων, κρατεῖται ἀπὸ τῶν χρόνων τῶν $\overline{\gamma}$ ἐκείνων ἐτῶν. ὡσαύτως καὶ αἱ ἡμέραι ἐκ πλαγίου τῶν χρόνων καὶ τὰ α΄ καὶ δεύτερα λεπτά. εἶτα τηροῦνται καὶ αἱ ἡμέραι τῆς ἑβδομάδος αἱ κατὰ τὸ τέλος τῶν κανονίων καὶ τὰ τούτων α΄ καὶ β΄ λεπτά, καὶ ὡς ἔστιν ἡ τάξις τηροῦνται. ἐὰν οὖν ὁ ψῆφος τῶν β΄ λεπτῶν πλείων τῶν $\overline{\xi}$, τὰ $\overline{\xi}$ ἀφαιροῦνται ἐξ ἐκείνων, καὶ $\overline{\alpha}$ προστίθεται εἰς τὰ α΄ λεπτά. εἰ δὲ ταῦτ' αὖθις πλείονα τῶν $\overline{\xi}$, ἀπὸ τούτων ἀφαιροῦνται τὰ $\overline{\xi}$, καὶ $\overline{\alpha}$ προστίθεται ταῖς ἡμέραις. εἰ δὲ αἱ ἡμέραι αὗται πλείονες τῶν ἡμερῶν τοῦ χρόνου, αἱ ἡμέραι τοῦ χρόνου καταλιμπάνονται, καὶ $\overline{\alpha}$ προστίθεται τοῖς χρόνοις. ἔπειτα τηρεῖται εἰς τὰ λεπτὰ τῶν ἡμερῶν τῆς |ἑβδομάδος| τὰ κρατηθέντα. ἐὰν ὦσιν ἔλαττον τῶν $\overline{\iota\epsilon}$, ἡ ἀρχὴ τοῦ χρόνου ἀπὸ f122rL, f67rV
τῶν |κρατηθέντων ἡμερῶν ἐστι τῆς ἑβδομάδος. εἰ δὲ πλέον τῶν $\overline{\iota\epsilon}$, ἡ ἀρχὴ f293vv
τοῦ χρόνου ἀπὸ τῆς ἄλλης ἡμέρας· μία ἡμέρα προστίθεται ταῖς εὑρεθείσαις ἡμέραις καὶ εἰς [καθ'] ἕκαστον ἔτος ἀπὸ τῶν $\overline{\gamma}$ μία ἡμέρα προστίθεται.

Διαίρεσις. Περὶ τοῦ γνῶναι ὅτι οὗτος ὁ εἰσερχόμενος χρόνος πασιτά ἐστιν ἢ καπισά

3 τριῶν Vv ‖ 4 πρῶτα Vv ‖ 5 τηροῦνται] κρατεῖται L ‖ 6 πρῶτα Vv | δεύτερα Vv ‖ 7 δευτέρων v ‖ 8 πρῶτα Vv ‖ 15 τριῶν Vv ‖ 16 Περὶ τοῦ γνῶναι] εἰς τὸ γνώρισμα ἐκεῖνο L ‖ 17 καπισὰ + ἤτοι βίσεξτος Vv

Τηρεῖται εἰς τὰ λεπτὰ τῶν ἡμερῶν τῆς ἑβδομάδος τὰ κρατηθέντα. ἐὰν ὦσιν ἔλαττον τῶν τόσων· ϟ $\overline{\mu\epsilon}$ $\overline{\lambda\epsilon}$, οὗτος ὁ εἰσερχόμενος χρόνος πασιτά ἐστιν, καὶ ἡμέραι τοῦ χρόνου ἐκείνου τόσαι· $\overline{\tau\xi\epsilon}$. εἰ δὲ ἐκεῖνα τὰ λεπτὰ πλείονά εἰσι τῶν ϟ $\overline{\mu\epsilon}$ $\overline{\lambda\epsilon}$, οὗτος ὁ εἰσερχόμενος χρόνος καπισά ἐστι. ἡμέραι τούτου τόσαι· $\overline{\tau\xi\varsigma}$. οὗτος ὁ ψῆφος εἰς τὸ μῆκος τῶν $\overline{\rho}$, οὐχὶ εἰς τὸ μῆκος τῶν ἑτέρων πόλεων.

Κεφάλαιον δ΄. Περὶ τοῦ θεμελίου τοῦ αὐθημερινοῦ τοῦ ἡλίου εἰς ἕνα χρόνον τοῦ ἡλίου

Κανόνιον ἐποιήθη διὰ τὴν κίνησιν τῶν ἀστέρων εἰς τὸν ἕνα χρόνον τοῦ ἡλίου καὶ εἰς τοὺς μῆνας τοῦ χρόνου ἐκείνου. καὶ οὗτοι οἱ μῆνες εἰς ἐκεῖνο ἐτέθησαν ὅτι εἰς τὴν ἀρχὴν ἑκάστου μηνὸς ὁ ἥλιος εἰς τὴν ἀρχὴν γίνεται τοῦ ζῳδίου. ἔπειτα αφ' οὗ ἐξέλθῃ ἡ ἀρχὴ τοῦ χρόνου τοῦ ἡλίου κατὰ ποίαν ἡμέραν |ἐστὶ καὶ ποῖον μῆνα καὶ ποῖον χρόνον ἀπὸ τοῦ ἔτους τῶν Ἀράβων, ἐξ ἐκείνου f122vL τοῦ χρόνου καὶ τοῦ μηνὸς καὶ τῆς ἡμέρας γίνεται εἰσέλευσις, καὶ αἱ μέσαι κινήσεις τῶν ἀστέρων κρατοῦνται καὶ τὰ ὑψώματα τούτων ἐκβάλλονται. |καὶ f67vV αἱ ἴδιαι κινήσεις καὶ ἐκεῖναι αἱ μέσαι κινήσεις μετὰ τῆς περισσείας τῶν $\overline{\beta}$ μηκῶν ὀρθοῦνται ὡς ἐρρέθη. καὶ τὸ ὕψωμα ἑκάστου ἀστέρος ἀπὸ τῆς μέσης

4 τούτου om Vv ‖ 7 Περὶ] εἰς τὴν κατάληψιν τῆς ποιήσεως L ‖ 9 $\overline{\alpha}$ L ‖ 15 κρατοῦνται τῶν ἀστέρων Vv ‖ 16 δύο Vv ‖ 17 ὀρθοῦται Vv

κινήσεως τούτου ἀφαιρεῖται. εἴ τι καταλειφθῇ, τοῦτο κέντρον καλεῖται. ταῦτα οὖν πάντα τὰ ἐκβληθέντα ἓν ὄνομα ἔχουσιν – θεμέλιον τῆς ἀρχῆς τοῦ χρόνου. ταῦτα οὖν πάντα τίθενται εἰς τὴν ἀρχὴν τοῦ Φαρβαρδὶν μηνὸς κατὰ τὸ ἔτος τὸ Σουλτανικόν – ἕκαστον εἰς τὸν ἴδιον τόπον καθώσπερ ἦν ἡ τάξις τούτου – καὶ εἰς τὸ κανόνιον ὅπερ ἐγένετο δι᾽ ἐκεῖνο.

Χρὴ οὖν εἰπεῖν καὶ περὶ τῶν κανονίων πόσων ἐστι χρεία. διὰ τὰ ἔτη $\overline{\varepsilon}$ κανόνια ἐτέθησαν καὶ διὰ τὰς ἡμέρας τῆς ἑβδομάδος, καὶ $\overline{\beta}$ κανόνια διὰ τὸ κέντρον καὶ τὸ αὐθημερινὸν τοῦ ἡλίου, κανόνια $\overline{\varepsilon}$ διὰ τὴν σελήνην καὶ τὴν μέσην κίνησιν ἐκείνης καὶ τὴν ἰδίαν κίνησιν καὶ τὸ κέντρον καὶ τὸ αὐθμερινὸν τοῦ καταβιβάζοντος. καὶ ἕκαστος τῶν $\overline{\varepsilon}$ ἀστέρων $\overline{\gamma}$ κανόνια ἔχει· $\overline{\alpha}$ διὰ τὸ κέντρον, $\overline{\alpha}$ διὰ τὴν ἰδίαν κίνησιν, καὶ $\overline{\alpha}$ διὰ τὸ αὐθημερινὸν. καὶ ἕτερα

| κανόνια ἐτέθησαν· ἓν διὰ |τὴν μετάκλισιν τοῦ ἡλίου, ἓν διὰ τὸ πλάτος τῆς f294rv, f123rL
σελήνης, καὶ $\overline{\varepsilon}$ διὰ τὰ πλάτη τῶν ἀστέρων. καὶ ἕτερα $\overline{\beta}$ ἐτέθησαν διὰ τὰς ὥρας τῆς ἀναβάσεως.

Ἐπεὶ γοῦν ἐτέθησαν τὰ κανόνια πάντα τετελειωμένα, ἐκεῖνο τὸ θεμέλιον, ἡ μέση κίνησις καὶ ἡ ἰδία καὶ τὰ ἕτερα, εἰς τὴν ἀρχὴν τοῦ Φαρβαρδὶν μηνὸς γράφεται. ἔπειτα γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς κινήσεως τῶν $\overline{\zeta}$ ἀστέρων καὶ τοῦ καταβιβάζοντος εἰς τοὺς μῆνας τοῦ Σουλτανικοῦ ἕνεκα τοῦ χρόνου τοῦ ἡλίου. καὶ κατ᾽ ἐναντίον ἑκάστου μηνὸς ἡ κίνησις τῶν ἀστέρων

3 οὖν om Vv ‖ 6 χρὴ] χρεῶν Vv ‖ 9 κίνησιν om Vv | τὸ αὐθημερινὸν + καὶ τὸ αὐθημερινὸν L ‖ 10 τριῶν L | ἔχει κανόνια Vv ‖ 12 $\overline{\alpha}$ Vv | $\overline{\alpha}$ Vv ‖ 13 τὰ πλάτη] τὸ πλάτος L

κρατεῖται. εἴ τι οὖν εὑρεθῇ ἀπὸ | τῆς κινήσεως τῶν ἀστέρων, ἑνοῦται ἀεὶ f68rV
τῷ θεμελίῳ ἐκείνῳ τῶν ἀστέρων, ἕκαστον ἑκάστῳ – ἡ κίνησις τοῦ ἡλίου τῷ θεμελίῳ τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ καθεξῆς. καὶ εἰς τὴν ἀρχὴν ἑκάστου φύλλου τίθεται ἡ ἀρχὴ ἑκάστου μηνὸς ἀπὸ τοῦ Φαρβαρδὶν μέχρι τέλους. οἷον ὁ ψῆφος ὁ ἐξερχόμενος κατ' ἐναντίον ἑκάστου μηνὸς ἀπὸ τῶν κινήσεων τῶν ἀστέρων ἀεὶ ἑνοῦται τῷ θεμελίῳ ἐκείνου τοῦ ἀστέρος. καὶ τὸ εὑρισκόμενον τίθεται εἰς τὴν ἀρχὴν τοῦ αὐθημερινοῦ. ἔπειτα γίνεται εἰσέλευσις εἰς τὰ κανόνια τῶν ἡμερῶν. καὶ ὁ ψῆφος τῆς μίας ἡμέρας ἀπὸ τῶν $\overline{\beta}$ κρατεῖται. καὶ ὁ ψῆφος τῶν $\overline{\varepsilon}$ ἡμερῶν ἀπὸ τῶν $\overline{\varsigma}$. καὶ ὁ ψῆφος τῶν $\overline{\iota}$ ἡμερῶν ἀπὸ τῶν $\overline{\iota\alpha}$ κρατεῖται. καὶ ὁ ψῆφος τῶν $\overline{\iota\varepsilon}$ ἡμερῶν ἀπὸ τῶν $\overline{\iota\varsigma}$ κρατεῖται. καὶ ἓν ἕκαστον | εἰς τὸ θεμέλιον ἑκάστου μηνὸς ἑνοῦται, καὶ ὁ ψῆφος τῆς ἡμέρας f123vL
ἐκείνης γράφεται ἀπ' ἐκείνου τοῦ μηνός.

Ἐπεὶ γοῦν ἐγένετο ἄδεια τοῦ ψήφου τῆς μέσης κινήσεως καὶ ἀπὸ τῶν μηνῶν καὶ τῶν ἡμερῶν, ἔπειτα ἓν ἓν αὐθημερινὸν ἐκβάλλεται ἑκάστου ἀστέρος εἰς τὸ μῆκος καὶ τὸ πλάτος· καὶ εἰς τὸ πλάτος τῆς μέσης κινήσεως γράφεται εἰς τὸ κανόνιον τοῦ αὐθημερινοῦ. τούτου δὲ γενομένου, ἔπειτα ὁ ψῆφος τοῦ αὐθημερινοῦ καθ' ἑκάστην ἡμέραν μερίζεται ἀντιλήψει Θεοῦ.

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4 φαρβαδὶν L ‖ 6 τοῦ ἀστέρος] τῶν ἀστέρων v. post quod v add et cancell ἕκαστον ἑκάστῳ κίνησις τοῦ ἡλίου τῷ θεμελίῳ τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ καθεξῆς ‖ 13 $\overline{\alpha}$ διὰ L ‖ 17 ἀντιλήψει Θεοῦ] μετὰ τῆς τοῦ θεοῦ βοηθείας καὶ ἕν τι λεπτόν L

Μοιρα ὀγδόη. Περὶ τοῦ αὐθημερινοῦ τῶν ἀστέρων εἰς τὸ μῆκος καὶ πλάτος καὶ ἑτέρων τινῶν

Ἐκείνων δὲ τῶν ἀστέρων ὧν τὸ αὐθημερινὸν εἰς τὸ μῆκος ἐκβάλλεται ταῦτα· ὁ ἥλιος καὶ ἡ σελήνη καὶ ἡ κίνησις τούτων εἰς τὸ πλέον καὶ ἔλαττον, καὶ εἰς τὴν κατάληψιν τῆς διαμέτρου | τούτων καὶ τοῦ αὐθημερινοῦ τοῦ f68Vv καταβιβάζοντος καὶ τοῦ αὐθημερινοῦ τῶν ε̅ ἀστέρων, καὶ εἰς τὴν κατάληψιν τῆς κατ' ὀρθὸν κινήσεως τῶν ἀστέρων καὶ τοῦ ὑποποδισμοῦ αὐτῶν.

Ἐκείνων δὲ τῶν ἀστέρων ὧν ἐκβάλλεται τὸ αὐθημερινὸν ἀπὸ τοῦ πλάτους, ἡ σελήνη ἐστὶ καὶ οἱ ε̅ ἀστέρες ὧν τὸ πλάτος |ἐκβάλλεται ἢ εἰς τὸ βόρειον 294vv μέρος ἢ εἰς τὸ νότιον. τηρηθέντα δὲ ταῦτα πάντα ἐγράφησαν εἰς τὰ κανόνια τῆς ὀρθώσεως τῶν ἀστέρων. κατ' ἐναντίον οὖν τούτων εἰς τὴν ἀρχὴν τῶν κανονίων | β̅ ἀλληλουχίαι ἐτέθησαν. καὶ ταύταις ταῖς δυσὶν ὄνομα ἐτέθη f124rL μέτρον. καὶ ὁ ψῆφος τοῦ κύκλου (ἤτοι τῆς σφαίρας) τετελειωμένου ἐνταῦθα ἐτέθη.

Ἡ α΄ οὖν ἀλληλουχία εἰς τὸν ψῆφον τῶν ζῳδίων ἀπὸ τοῦ ξ̅ μέχρι τῶν ε̅ ζῳδίων, καὶ ὁ ψῆφος τῶν μοιρῶν ἀπὸ τῆς μίας μοίρας μέχρι καὶ τῶν ρ̅π̅. τῆς δευτέρας δὲ ἀλληλουχίας ὁ ψῆφος ἀντεστραμμένος ἀπὸ τῶν κάτω ποιούμενος τὴν ἀρχὴν πρὸς τὰ ἄνω. ἡ ἔναρξις ἐκείνης ἀπὸ τῶν ς̅ ζῳδίων μέχρι τοῦ Κριοῦ, δι' ὧν πληροῦται καὶ ὁ ψῆφος τῆς σφαίρας πάσης. μετὰ δὲ τοῦ ψήφου τῶν

1 Περὶ τοῦ αὐθημερινοῦ] εἰς τὸ γνώρισμα τῶν αὐθημερινῶν L ‖ 3 δὲ om. Vv ‖ 8 δὲ om L ‖ 12 δύο L ‖ 17 δὲ om. Vv

μοιρῶν ἡ ἔναρξις ἐκείνων ἀπὸ τῶν $\overline{\rho\pi\alpha}$ μέχρι τῶν $\overline{\tau\xi}$ μοιρῶν εἰς τὸν ψῆφον τοῦτον τῆς σφαίρας. καὶ ἕτερος ψῆφος, εἰ γίνεται ὁ ψῆφος εἰς τὰ ζῴδια, ἀπὸ τῆς ἀρχῆς τῶν $\overline{\theta}$ ζῳδίων μετὰ τῆς τάξεως τούτων μέχρι τοῦ ♈ ἤγουν τοῦ Κριοῦ καὶ τῆς ἀρχῆς τῶν $\overline{\gamma}$. ἐκεῖνο ἥμισυ λέγεται ὕψωμα τῆς σφαίρας, καὶ μετὰ τοῦ ψήφου τῶν μοιρῶν ἀπὸ τῶν $\overline{\sigma o}$ μοιρῶν ἕως τῶν $\overline{\tau\xi}$ καὶ μέχρι τῶν $\overline{\rho}$. καὶ ἀπὸ τῶν $\overline{\gamma}$ δὲ ζῳδίων μέχρι τῶν $\overline{\varsigma}$ ζῳδίων καὶ τῆς ἀρχῆς τῶν $\overline{\theta}$ ἐκεῖνο λέγεται ἥμισυ τῆς κάτω σφαίρας, | καὶ μετὰ τοῦ ψήφου τῶν μοιρῶν ἀπὸ τῶν f69rV
$\overline{\rho}$ μοιρῶν μέχρι τῶν $\overline{\rho\pi}$ καὶ εἰς τὰς $\overline{\sigma o}$ μοίρας. αὕτη ἡ μοῖρα εἰς $\overline{\delta}$ κεφάλαια διαιρεῖται.

Κεφάλαιον $\overline{\alpha}$. | Περὶ τῆς καταλήψεως τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ τῆς f124vL
σελήνης καὶ τῶν $\overline{\varepsilon}$ ἀστέρων καὶ τοῦ καταβιβάζοντος. τοῦτο τὸ κεφάλαιον εἰς $\overline{\delta}$ διαιρεῖται.

Διαίρεσις $\overline{\alpha}$. Περὶ τοῦ αὐθημερινοῦ τοῦ ἡλίου

Βουλομένων ἡμῶν ποιῆσαι αὐθημερινὸν του ἡλίου, ποιοῦμεν οὕτως· ἡ μέση κίνησις τοῦ ἡλίου ἐν δυσὶ μέρεσι τίθεται τῆς ταύλας, καὶ τὸ ὕψωμα τοῦ

4 ἐκεῖνο + τὸ v | ὕψωμα et ἥμισυ transpon. Vv ‖ 6 τριῶν Vv ‖ 7 λεγεται + τὸ v ‖ 14 τοῦ ἡλίου om. v ‖ 15 τίθεται om. Vv

ἡλίου ἀφαιρεῖται ἀπὸ τοῦ ἑνὸς μέρους τῆς μέσης κινήσεως. εἴ τι καταλειφθῇ, κέντρον ἐστὶ τοῦ ἡλίου. ἔπειτα κατ' ἐναντίον τοῦ κέντρου τούτου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ὀρθώσεως τοῦ ἡλίου, καὶ ζητεῖται τὸ κέντρον τοῦτο εἰς τὰ $\overline{\beta}$ κανόνια τῆς α΄ καὶ β΄ ἀλληλουχίας. ἔνθα εὑρεθῇ κατ' ἐναντίον τούτου εἰς τὴν γ΄ ἀλληλουχίαν, ἡ ὄρθωσις κρατεῖται, καὶ ἀπὸ τῆς δ΄ ἀλληλουχίας ἡ περισσεία κρατεῖται· καὶ τίθενται καὶ τὰ $\overline{\beta}$ εἰς τὴν ταῦλαν. ἐὰν οὖν ἔχῃ τὸ κέντρον λεπτὰ μετὰ τοῦ ψήφου τῶν $\overline{\beta}$ κανονίων, ὀρθοῦται ὁ ψῆφος τῆς ὀρθώσεως, καὶ γίνεται ἡ τελεία ὄρθωσις. ἔπειτα τηρεῖται. ἐὰν τὸ κέντρον ἐν τῇ α΄ ἀλληλουχίᾳ , ἡ ὄρθωσις ἀπὸ τῆς μέσης κινήσεως ἀφαιρεῖται, ἐὰν δὲ εἰς τὴν δευτέραν ἀλληλουχίαν, ἑνοῦται τὸ κέντρον τῇ μέσῃ κινήσει, | καὶ εὑρίσκεται τὸ αὐθημερινὸν τοῦ ἡλίου. εἰ δὲ ἡ ὄρθωσις ἀφαιρεθῇ ἀπὸ τοῦ 295rv
κέντρου ἢ ἑνωθῇ τούτῳ, ἔπειτα τὸ τέλειον ὕψωμα ἑνωθῇ | τῷ κέντρῳ τούτῳ f69vV
| τῷ εὑρεθέντι ὕστερον πλέον ἢ ἔλαττον ἀπὸ τῆς ἑνώσεως ἢ ἀφαιρέσεως, καὶ f125rL
αὖθις ἐκεῖνο τὸ αὐθημερινὸν τοῦ ἡλίου.

Διαίρεσις β΄. Περὶ τοῦ αὐθημερινοῦ τῆς σελήνης

Τίθενται ἡ μέση κίνησις καὶ ἡ ἰδία καὶ τὸ κέντρον τῆς σελήνης εἰς τὴν ταῦλαν καὶ ἡ μέση κίνησις τοῦ ἀναβιβάζοντος, πάντα ἰδίᾳ. ἔπειτα κατ'

1 $\overline{\alpha}$ L ‖ 3 τὰ κανόνια L ‖ 4 πρώτης Vv | δευτέρας Vv ‖ 5 τρίτην Vv ‖ 6 τετάρτης Vv ‖ 7 δύο v ‖ 9 πρώτῃ V ‖ 14 ἡλίου + ἵν' ἢ L ‖ 15 δευτέρα v | Περὶ] εἰς τὸ γνώρισμα L ‖ 17 ἀναβιβάζοντος] καταβιβάζοντος Vv

ἐναντίον τοῦ κέντρου γίνεται εἰσέλευσις εἰς τὰ κανόνια τῶν ὀρθώσεων τῆς σελήνης, καὶ ζητεῖται ἐκεῖ τὸ κέντρον εἰς τὴν α΄ καὶ β΄ ἀλληλουχίαν. ἔνθα εὑρεθῇ κατ' ἐναντίον ἐκείνου, γίνεται ἐισέλευσις εἰς τὴν γ΄ ἀλληλουχίαν, καὶ ἡ α΄ ὄρθωσις τῆς σελήνης κρατεῖται μετὰ τοῦ μέσου τῶν $\overline{\beta}$ κανονίων ψήφου ἐκείνου. εἶτα τηρεῖται. ἐὰν τὸ κέντρον εἰς τὴν α΄ εὑρεθῇ ἀλληλουχίαν, ἡ ὄρθωσις ἡ α΄ ἑνοῦται τῇ ἰδίᾳ κινήσει. εἰ δὲ εἰς τὴν β΄ ἀλληλουχίαν, ἀφαιρεῖται ταύτης, καὶ εὑρίσκεται ἡ ἰδία τελεία κίνησις. αὕτη τηρεῖται. εἶτα κατ' ἐναντίον τοῦ κέντρου γίνεται ἡ εἰσέλευσις εἰς τὸ κανόνιον τῆς τετάρτης ἀλληλουχίας, καὶ κρατοῦνται τὰ γενικὰ λεπτὰ καὶ τίθενται εἰς ἓν μέρος τῆς ταύλας. ἔπειτα κατ' ἐναντίον τῆς ἰδίας τελείας κινήσεως γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν ὀρθώσεων τῆς σελήνης, καὶ ζητεῖται ἡ ἰδία κίνησις εἰς τὴν α΄ καὶ β΄ ἀλληλουχίαν | τοῦ κέντρου. ἔνθα εὑρεθῇ, κατ' ἐναντίον f125vL
ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς πέμπτης ἀλληλουχίας, καὶ ἡ β΄ ὄρθωσις τῆς σελήνης κρατεῖται μετ' ἐκείνου τοῦ ψήφου τοῦ εὑρισκομένου μέσον τῶν $\overline{\beta}$ κανονίων, καὶ τίθεται εἰς ἓν μέρος τῆς ταύλης. αὕτη δέ ἐστιν ἡ οὐχὶ τελεία ὄρθωσις. ἔπειτα κατ' ἐναντίον τῆς ἰδίας | τελείας κινήσεως f70rV
γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν ὀρθώσεων τῆς σελήνης εἰς τὴν α΄ καὶ β΄ ἀλληλουχίαν. ἔνθα εὑρεθῇ, κατ' ἐνατίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ

1 τῶν ὀρθώσεων om Vv ‖ 2 πρώτην V | δευτέραν Vv ‖ 3 τρίτην Vv ‖ 4 πρώτη Vv ‖ 5 πρώτην V ‖ 6 πρώτη Vv | δευτέραν Vv ‖ 8 κέντρου + τηρεῖται καὶ v ‖ 12 πρώτην Vv | δευτέραν Vv ‖ 14 δευτέρα Vv ‖ 15 μέσον om v ‖ 17 πρώτην Vv ‖ 18 δευτέραν Vv

κανόνιον τῆς ς΄ ἀλληλουχίας, καὶ τὸ ἐγγύτερον μῆκος κρατεῖται— μοῖραι καὶ λεπτά. ἐκεῖνο εἰς τὰ γενικὰ λεπτὰ τηρεῖται. εἴ τι εὑρεθῇ, ἐκεῖνο ἀεὶ ἑνοῦται τῇ β΄ ὀρθώσει, καὶ γίνεται ἡ β΄ ὄρθωσις τελεία.

Ἔπειτα τηρεῖται. ἐὰν ἡ ἰδία τελεία κίνησις εἰς τὴν α΄ ἀλληλουχίαν εὑρίσκηται, ἡ β΄ αὕτη τελεία ὄρθωσις ἀφαιρεῖται ἀπὸ τῆς μέσης κινήσεως. εἰ δὲ εἰς τὴν β΄ ἀλληλουχίαν ἑνοῦται αὕτη τῇ μέσῃ κινήσει, καὶ εὑρίσκεται τὸ αὐθημερινὸν τῆς β΄ σφαίρας τῆς σελήνης. εἰ δὲ βουληθῶμεν ποιῆσαι αὐθημερινὸν εἰς τὴν α΄ σφαῖραν τῆς σελήνης, ἡ μέση κίνησις τοῦ ἀναβιβάζοντος ἑνοῦται τῷ αὐθημερινῷ τῆς σελήνης. εἴ τι εὑρεθῇ, ἐκεῖνο μοῖρά ἐστι | τοῦ πλάτους τῆς σελήνης. εἰ δὲ τὸ αὐθημερινὸν τοῦ f295vv
καταβιβάζοντος ἀφαιρεθῇ | ἀπὸ τοῦ αὐθημερινοῦ τῆς σελήνης, καὶ αὖθις ἡ f126rL
μοῖρα ἐκείνη ἐστὶ ἐκεῖνο τοῦ πλάτους τῆς σελήνης. ἔπειτα κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν ὀρθώσεων τῆς σελήνης, καὶ ζητεῖται τοῦτο εἰς τὴν β΄ ἀλληλουχίαν. ἔνθα εὑρεθῇ, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ἑβδόμης ἀλληλουχίας τῆς σελήνης, καὶ κρατοῦνται τὰ λεπτὰ τῆς γ΄ ὀρθώσεως τῆς σελήνης καὶ τηροῦνται. ἔπειτα τηροῦται ἡ μοῖρα τοῦ πλάτους τῆς σελήνης. ἐὰν ᾖ ἐλάττων τῶν $\bar{\gamma}$ ζῳδίων καὶ πλέων τῶν $\bar{\varsigma}$ ζῳδίων – ἐλάττων δὲ τῶν $\bar{\theta}$ ζῳδίων, ἐκείνη δὲ ἡ γ΄

1 ἕκτης v ‖ 3 δευτέρᾳ Vv | δευτέρα Vv ‖ 4 πρώτην Vv ‖ 5 δευτέρα V ‖ 6 δευτέραν V ‖ 7 δευτέρας Vv ‖ 8 πρώτην Vv ‖ 9 ἀναβιβάζοντος] καταβιβάζοντος Vv ‖ 12 ἐκεῖνο om Vv ‖ 14 δευτέραν Vv ‖ 16 τρίτης Vv ‖ 17 ᾖ] οὖν Vv ‖ 18 τρίτη Vv

ὄρθωσις ἀφαιρεῖται ἀπὸ τοῦ αὐθημερινοῦ τῆς β΄ σφαίρας τῆς σελήνης. εἰ δ' ἐστὶ πλέων τῶν $\overline{\gamma}$ | ζῳδίων καὶ ἐλάττων τῶν $\overline{\varsigma}$ ἢ πλέον τῶν $\overline{\theta}$ ζῳδίων, αὕτη ἡ f70vV γ΄ ὄρθωσις ἑνοῦται τῷ αὐθημερινῷ τῆς σελήνης, καὶ γίνεται τὸ αὐθημερινὸν τῆς α΄ σφαίρας τῆς σελήνης. ἡ α΄ οὖν αὕτη τῆς σελήνης σφαίρας ὀρθή ἐστι μετὰ τῆς σφαίρας τῶν $\overline{\iota\beta}$ ζῳδίων.

Διαίρεσις γ΄. Περὶ τοῦ αὐθημερινοῦ τοῦ καταβιβάζοντος καὶ τοῦ ἀναβιβάζοντος

Μετὰ τὸ ἐκβληθῆναι τὴν μέσην κίνησιν τοῦ καταβιβάζοντος ὡς ἐρρέθη, ἐκείνη ἀπὸ τῶν $\overline{\iota\beta}$ ζῳδίων ἀφαιρεῖται. εἴ τι καταλειφθῇ, τὸ αὐθημερινόν ἐστι τοῦ καταβιβάζοντος. $\overline{\varsigma}$ οὖν ζῴδια ἑνοῦται ἐκείνῳ, καὶ τὸ αὐθημερινὸν τοῦ ἀναβιβάζοντος γίνεται.

Διαίρεσις δ΄. Περὶ τῆς κατλήψεως τοῦ αὐθημερινοῦ τῶν $\overline{\varepsilon}$ ἀστέρων

Τίθενται εἰς τὴν ταῦλαν ἰδίᾳ καὶ ἰδίᾳ ἡ μέση κίνησις, ἡ ἰδία, καὶ τὸ ὕψωμα τοῦ ἀστέρος. ἔπειτα τὸ ὕψωμα ἀεὶ ἀφαιρεῖται ἀπὸ τῆς μέσης κινήσεως, καὶ εὑρίσκεται τὸ κέντρον. εἶτα τὸ κέντρον τοῦτο ζητεῖται εἰς τὰ κανόνια τῶν ὀρθώσεων τῶν ἀστέρων εἰς τὴν α΄ ἢ τὴν β΄ ἀλληλουχίαν τοῦ μέτρου. ἔνθα

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1 δευτέρας Vv ‖ 3 τρίτη Vv ‖ 4 πρώτης Vv | πρώτης Vv ‖ 6 τρίτη v ‖ 12 τῆς καταλήψεως om Vv ‖ 16 πρώτην Vv | δευτέραν Vv

οὖν εὑρεθῇ, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς γ´ ἀλληλουχίας, καὶ κρατεῖται ἡ α´ ὄρθωσις — μοῖραι καὶ λεπτά — μετὰ τοῦ ψήφου τοῦ εὑρεθέντος μέσον τῶν $\overline{\beta}$ κανονίων.

Ἔπειτα τηρεῖται τὸ κέντρον. ἐὰν ᾖ ἀπὸ τῆς α´ ἀλληλουχίας, ἡ α´ ὄρθωσις ἑνοῦται τῇ ἰδίᾳ κινήσει καὶ ἀφαιρεῖται ἀπὸ τοῦ κέντρου. εἰ δ' ἐστὶ τὸ κέντρον ἀπὸ τῆς β´ ἀλληλουχίας, ἡ α´ ὄρθωσις ἑνοῦται τῷ κέντρῷ καὶ ἀφαιρεῖται ἀπὸ τῆς ἰδίας κινήσεως. καὶ γίνονται αἱ $\overline{\beta}$ τέλειοι. ἔπειτα γίνεται εἰσέλευσις κατ' ἐναντίον τοῦ τελείου κέντρου εἰς τὸ κανόνιον τῆς τετάρτης ἀλληλουχίας, καὶ κρατοῦνται τὰ γενικὰ λεπτά. ἐὰν οὖν ὦσιν ἐκεῖνα γεγραμμένα διὰ κοκκίνου, πλεονασμός ἐστιν, εἰ δὲ διὰ μέλανος, ἔλλειψις. ταῦτα τίθενται εἰς ἓν μέρος τῆς ταύλας. ἔπειτα | κατ' ἐναντίον τοῦ ἰδίου τελείου γίνεται εἰσέλευσις εἰς τὰ f71rV κανόνια τῶν ὀρθώσεων εἰς τὴν α´ καὶ β´ ἀλληλουχίαν. ἔνθα οὖν εὑρεθῇ, κατ' |ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ |κανόνιον τῆς ς´ ἀλληλουχίας. καὶ f296rv, f127rL ἡ β´ ὄρθωσις κρατεῖται — μοῖραι καὶ λεπτά — καὶ ὁ μέσον τῶν $\overline{\beta}$ κανονίων ψῆφος. αὕτη οὖν οὐχὶ τελεία λέγεται ὄρθωσις. ἔπειτα πάλιν κατ' ἐναντίον τῆς ἰδίας τελείας κινήσεως γίνεται εἰσέλευσις. ἐὰν τὰ γενικὰ λεπτὰ πλεονασμὸς ὦσιν, κατ' ἐναντίον τοῦ κανονίου τῆς ζ´ ἀλληλουχίας καὶ κρατεῖται τὸ ἐγγύτερον μῆκος. εἰ δὲ τὰ γενικὰ λεπτὰ ἔλλειψίς εἰσιν, εἰς τὸ κανόνιον

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1 τρίτης Vv ‖ 2 πρώτη Vv ‖ 4 πρώτης Vv | πρώτη Vv ‖ 6 δευτέρας Vv | πρώτη Vv ‖ 12 πρώτην Vv | δευτέραν Vv ‖ 13 ἕκτης v ‖ 14 β´] δευτέρα V ‖ 17 ἑβδόμης Vv ‖ 18 ἐγγύτερον] ἕτερον v

γίνεται εἰσέλευσις τῆς ε΄ ἀλληλουχίας, καὶ κρατεῖται τὸ πόρρω μῆκος. ἐκεῖνο οὖν τὸ ἐξελθὸν ἀεὶ τηρεῖται εἰς τὰ γενικὰ λεπτά. εἴ τι εὑρεθῇ, ἐὰν τὰ γενικὰ λεπτὰ διὰ κοκκίνου, τοῦτο ἑνοῦται τῇ β΄ ὄρθωσει. εἰ δὲ διὰ μέλανος, ἀφαιρεῖται ἐξ ἐκείνου, καὶ γίνεται ἡ β΄ ὄρθωσις τελεία. ἔπειτα τηρεῖται. ἐὰν ἡ ἰδία τελεία εἰς τὴν α΄ ἀλληλουχίαν ᾖ, ἡ β΄ αὕτη τελεία ὄρθωσις τῷ τελείῳ κέντρῳ ἑνοῦται. εἰ δὲ εἰς τὴν δευτέραν ἀλληλουχίαν εὑρεθῇ, ἀφαιρεῖται ἐξ ἐκείνου. ἔπειτα ἑνοῦται ἀεὶ τούτῳ τὸ ὕψωμα, καὶ εὑρίσκεται τὸ αὐθημερινὸν τοῦ ἀστέρος. ἡ αὐτὴ μέθοδος καὶ εἰς τοὺς λοιποὺς ἀστέρας.

Κεφάλαιον β΄. Περὶ τῆς κατ' ὀρθῆς κινήσεως τῶν ἀστέρων καὶ τοῦ ὑποποδισμοῦ αὐτῶν

| Ἐπεὶ χρεία εἰδέναι τοῦτο, κατ' ἐναντίον τοῦ τελείου κέντρου τοῦ ἀστέρος f127vL
ἐκείνου γίνεται εἰσέ|λευσις εἰς τὰ κανόνια τῆς ὀρθώσεως τοῦ ἀστέρος εἰς f71vV
τὴν α΄ ἢ β΄ ἀλληλουχίαν. ἔνθα οὖν εὑρεθῇ, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς η΄ ἀλληλουχίας, καὶ κρατεῖται ὁ α΄ στηριγμὸς καὶ φυλάττεται. ἔπειτα οὗτος ἀφαιρεῖται ἀπὸ τῶν $\overline{\iota\beta}$ ζῳδίων, καὶ ὁ β΄ γίνεται στηριγμός. εἶτα τηρεῖται ἡ ἰδία τελεία κίνησις. ἐὰν ἐξισοῦται τῷ α΄ στηριγμῷ,

1 πέμπτης Vv ‖ 3 δευτέρᾳ Vv ‖ 4 δευτέρα Vv ‖ 5 πρώτην Vv | δευτέρα Vv ‖ 14 πρώτην Vv | δευτέραν Vv ‖ 15 πρῶτος v ‖ 17 πρώτῳ Vv

ὁ ἀστὴρ ἵσταται ἤγουν στηρίζει. καὶ ἔπειτα μέλλει ὑποποδίσαι. εἰ δὲ ἡ ἰδία κίνησις ἡ τελεία πλείων τοῦ α΄ στηριγμοῦ καὶ ἐλάττων τοῦ β΄ στηριγμοῦ, ὁ ἀστὴρ ὑποποδίζει. εἰ δ' ἐστὶν ἡ ἰδία αὕτη τελεία κίνησις κατ' ἐναντίον τοῦ β΄ στηριγμοῦ, ὁ ἀστὴρ στηρίζει καὶ μέλλει κινηθῆναι κατ' ὀρθόν. εἰ δὲ πλείων τοῦ β΄ στηριγμοῦ καὶ ἐλάττων τοῦ α΄ στηριγμοῦ, ὁ ἀστὴρ κατ' ὀρθὸν κινεῖται.

Διαίρεσις. Περὶ τοῦ εἰδέναι ἡνίκα κινεῖται κατ' ὀρθὸν ὁ ἀστὴρ καὶ ὅταν ὑποποδίζῃ

Ἐὰν ὁ ἀστὴρ κινῆται κατ' ὀρθόν, καὶ βουλόμεθα εἰδέναι πότε στρέφεται, ἡ ἰδία τελεία κίνησις ἀφαιρεῖται ἀπὸ τοῦ α΄ στηριγμοῦ. εἴ τι καταλειφθῇ, ἐκεῖνο μερίζεται εἰς τὴν κατὰ τὸ νυχθήμερον ἰδίαν κίνησιν|τοῦ ἀστέρος. εἴ τι ἐξέλθῃ, f128rL
ἐκεῖνό ἐστι καιρὸς ὅτι ἄρχει ὑποποδίζειν ὁ ἀστήρ. καὶ ἐὰν βουλώμεθα εἰδέναι πόσας ἡμέρας κινεῖται κατ' ὀρθὸν ὁ ἀστήρ, ὁ β΄ στηριγμὸς ἀφαιρεῖται ἀπὸ τῆς ἰδίας τελείας κινήσεως. εἴ τι καταλειφθῇ, μερίζεται εἰς τὴν ἰδίαν κίνησιν τοῦ ἀστέρος ἐκείνου ἣν κινεῖται καθ' ἓν νυχθήμερον. εἴ τι οὖν ἐξέλθῃ, ἐκεῖνος ὁ καιρὸς ὅσας ἡμέρας κινεῖται |κατ' ὀρθὸν ὁ ἀστήρ. f296vv

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Διαίρεσις. Ἐὰν ὁ ἀστὴρ ὑποποδίζῃ, καὶ ζητῆται πότε κινηθήσεται κατ'

2 πρώτου Vv ‖ 3 δευτέρου Vv ‖ 5 δευτέρου Vv | πρώτου Vv ‖ 9 πρώτου Vv | ἐκεῖνο om Vv ‖ 10–13 εἰς τὴν ... μερίζεται om Vv ‖ 11 βουλώμεθα corr.in βουλόμεθα L ‖ 16 διαίρεσις + καὶ L | ζητῆται] δεήσει γενέσθαι δῆλον L

ὀρθόν, ἡ ἰδία τελεία κίνησις ἀπὸ τοῦ δευτέρου στηριγμοῦ ἀφαιρεῖται. εἴ τι καταλειφθῇ, εἰς τὴν | ἰδίαν κίνησιν ἣν κινεῖται ὁ ἀστὴρ κατὰ τὸ νυχθήμερον f72rV
μερίζεται. εἴ τι καταλειφθῇ, καιρός ἐστιν ὅτι ὁ ἀστὴρ πληρουμένου τούτου κινηθήσεται κατ' ὀρθόν. εἰ δὲ καὶ πόσας ἡμέρας ὑποποδίζει ὁ ἀστὴρ βούλει εἰδέναι, ὁ α΄ στηριγμὸς ἀφαιρεῖται ἀπὸ τῆς ἰδίας τελείας κινήσεως. εἴ τι καταλειφθῇ, ἐκεῖνο μερίζεται εἰς ὅπερ πολλάκις εἴρηται. εἴ τι εὑρεθῇ, ἐκεῖνο καιρός ἐστιν ὅτι ὁ ἀστὴρ ὑποποδίζει. καὶ ἐκείνη δὲ ἡ ἰδία κίνησις τοῦ κατὰ νυχθήμερον κινουμένου ἀστέρος τοῦ Κρόνου τόση· ϛ $\overline{\text{νζ}}$, τοῦ Διὸς τόση· ϛ $\overline{\text{νδ}}$, τοῦ Ἄρεος τόση· ϛ $\overline{\text{κη}}$, τῆς Ἀφροδίτης τόση· ϛ $\overline{\text{λζ}}$, τοῦ Ἑρμοῦ τόση· $\overline{\text{γ}}$ $\overline{\text{ς}}$.

| Κεφάλαιον γ΄. Περὶ τοῦ πλάτους τῶν ἀστέρων τοῦ βορείου καὶ τοῦ νοτίου f128vL

Τοῦτο τριχῶς διῃρέθη.

Διαίρεσις α΄. Περὶ τοῦ πλάτους τῆς σελήνης

Τὸ αὐθημερινὸν τοῦ ἀνάβιβάζοντος ἀφαιρεῖται ἀπὸ τοῦ αὐθημερινοῦ τῆς σελήνης, καὶ ἡ μοῖρα τοῦ πλάτους καταλιμπάνεται, ἣ ἑνοῦται ἡ μέση κίνησις

3 καιρός ἐστιν] ἡ ὥρα Vv | πληρουμένης ταύτης Vv ‖ 4 βούλει] δεήσει γενέσθαι δῆλον L ‖ 5 πρῶτος Vv ‖ 14 καταβιβάζοντος L

τοῦ ἀναβιβάζοντος τῷ αὐθημερινῷ τῆς σελήνης, καὶ ἡ μοῖρα τοῦ πλάτους γίνεται δήλη. ἔπειτα κατ' ἐναντίον τῆς μοίρας τοῦ πλάτους γίνεται εἰσέλευσις εἰς τὰ κανόνια τῆς ὀρθώσεως τῆς σελήνης εἰς τὴν α΄ καὶ β΄ ἀλληλουχίαν. ἔνθα οὖν εὑρεθῇ ἡ μοῖρα τοῦ πλάτους, κατ' ἐναντίον ἐκείνης γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς η΄ ἀλληλουχίας, καὶ τὸ πλάτος κρατεῖται τῆς σελήνης μετὰ τοῦ εὑρεθέντος ψήφου μέσον τῶν $\overline{\beta}$ κανονίων. ἔπειτα τηρεῖται ἡ μοῖρα τοῦ πλάτους. εἴπερ ἐστὶν εἰς τὴν α΄ ἀλληλουχίαν τὸ πλάτος βόρειον, εἰ δὲ εἰς τὴν β΄ τὸ πλάτος εἰς τὸ | νότιον μέρος. καὶ εἰ ἔστιν ἀπὸ τοῦ ϛ μέχρι τῶν $\overline{\gamma}$ ζῳδίων f72vV βορεία ἐστὶν ἀνάβασις, εἰ δὲ ἀπὸ τῶν $\overline{\gamma}$ μέχρι τῶν $\overline{\varsigma}$ βορεία κατάβασις, εἰ δὲ ἀπὸ τῶν $\overline{\varsigma}$ ζωδίων ἐστὶ μέχρι καὶ τῶν $\overline{\theta}$ νοτία κατάβασις, εἰ δὲ ἀπὸ τῶν $\overline{\theta}$ ζῳδίων ἐστὶ μέχρι τοῦ ϛ νοτία ἀνάβασις.

Διαίρεσις β΄. | Περὶ τοῦ πλάτους τῶν ἀστέρων τῶν ἄνω τοῦ ἡλίου — τοῦ f129rL Κρόνου, τοῦ Διός, καὶ τοῦ Ἄρεος

Τὸ κέντρον τὸ τέλειον ζητεῖται εἰς τὰ κανόνια τῶν ὀρθώσεων τῶν ἀστέρων εἰς τὴν α΄ καὶ τὴν β΄ ἀλληλουχίαν εἰς τὸν Κρόνον καὶ τὸν Δία. ἐὰν οὖν τὸ κέντρον εὑρεθῇ εἰς τὴν α΄ ἀλληλουχίαν, κατ' ἐναντίον τῆς θ΄ ἀλληλουχίας γίνεται εἰσέλευσις, καὶ κρατοῦνται τὰ γενικὰ λεπτά. εἰ δὲ τὸ κέντρον εἰς τὴν

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3 πρώτην Vv | δευτέραν Vv ‖ 5 ὀγδόης Vv ‖ 7 πρώτην Vv ‖ 8 δευτέραν Vv ‖ 11 ἐστὶ om Vv ‖ 14 τὸ τέλειον κέντρον Vv ‖ 15 πρώτην Vv | δευτέραν Vv ‖ 16 πρώτην Vv | ἐνάτης Vv ‖ 478 .17 –479.2 εἰ δὲ τὸ κέντρον . . . τὰ γενικὰ λεπτὰ in marg v

β΄ ἀλληλουχίαν εὑρεθῇ, κατ' ἐναντίον τοῦ κανονίου τῆς ι΄ ἀλληλουχίας γίνεται εἰσέλευσις, καὶ κρατοῦνται τὰ γενικὰ λεπτά. ἔπειτα τῆρειται. ἐὰν τὰ γενικὰ λεπτὰ διὰ κοκκίνου τὸ πλάτος βόρειον, εἰ δὲ διὰ μέλανος τὸ πλάτος νότιον. ἐκεῖνο τίθεται ἰδίᾳ εἰς ἓν μέρος τῆς ταύλας. ἔπειτα ἡ ἰδία τελεία κίνησις ζητεῖται ἐν τοῖς κανονίοις τῶν ὀρθώσεων |εἰς τὴν α΄ καὶ β ἀλληλουχίαν. ἔνθα 297rv εὑρεθῇ, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις, καὶ κρατεῖται τὸ πλάτος τὸ νότιον.

Εἰς δὲ τὸν Ἄρεα κατ' ἐναντίον τοῦ τελείου κέντρου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς θ΄ ἀλληλουχίας, καὶ κρατοῦνται τὰ γενικὰ λεπτά. ἐὰν ὦσι διὰ κοκκίνου τὸ πλάτος βόρειον, εἰ δὲ διὰ μέλανος τὸ πλάτος νότιον. ἔπειτα κατ' ἐναντίον τοῦ ἰδίου | τελείου γίνεται εἰσέλευσις. ἐὰν τὰ γενικὰ λεπτὰ f73rV διὰ κοκκίνου, εἰς τὸ κανόνιον τῆς ι΄ |ἀλληλουχίας, καὶ τὸ βόρειον κρατεῖται f129vL πλάτος. εἰ δὲ διὰ μέλανος, ταῦτα εἰς τὸ κανόνιον τῆς ια΄ ἀλληλουχίας, καὶ κρατεῖται ἐκεῖθεν τὸ νότιον πλάτος. ἔπειτα τὰ γενικὰ λεπτὰ τηροῦνται εἰς τὸ πλάτος, καὶ εὑρίσκεται τὸ τέλειον πλάτος εἴτε νότιον εἴτε βόρειόν ἐστιν.

Εἰ δὲ καὶ δεήσει δῆλον γενέσθαι ὅτι ἀνάβασίς ἐστιν ἢ κατάβασις, τηρεῖται. ἐὰν τὸ ἴδιον τέλειον ἔλαττον τῶν $\overline{\varsigma}$ ζῳδίων καὶ τὸ πλάτος βόρειον, ἐκεῖνο ἀνάβασίς ἐστι βορεία. εἰ δὲ τὸ πλάτος νότιον, κατάβασις νοτία. εἰ δὲ τὸ ἴδιον τέλειον πλέον τῶν $\overline{\varsigma}$ ζῳδίων καὶ τὸ πλάτος βόρειον, κατάβασίς ἐστι

1 β΄] δευτέραν v | τοῦ κανονίου om v | δεκάτης V ‖ 5 πρώτην Vv | δευτέραν Vv ‖ 9 θ΄ om. Vv ‖ 12 δεκάτης Vv 12–13 καὶ τὸ βόρειον. . . τῆς ια΄ ἀλληλουχίας in marg v ‖ 13 ἑνδεκάτης V

βορεία. εἰ δὲ τὸ πλάτος νότιον, ἀνάβασις νοτία.

Διαίρεσις τρίτη. Περὶ τοῦ πλάτους τῆς Ἀφροδίτης

Αὕτη τρία πλάτη ἔχει.

Πλάτος α΄. Γίνεται εἰσέλευσις εἰς τὰ κανόνια τῆς Ἀφροδίτης ὡς ἐρρέθη ἄνω. καὶ κατ' ἐναντίον τοῦ τελείου κέντρου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ιγ΄ ἀλληλουχίας, καὶ κρατοῦνται τὰ λεπτὰ τοῦ πλάτους. τοῦτο δὲ τὸ πλάτος ἀεὶ βόρειον. καὶ τηροῦνται εἰς ἓν μέρος τῆς ταύλας.

Πλάτος β΄. Ἔπειτα κατ' ἐναντίον τοῦ ἰδίου τελείου γίνεται εἰσέλευσις εἰς τὰ κανόνια τῆς θ΄ ἀλληλουχίας, καὶ τὰ γενικὰ λεπτὰ κρατοῦνται καὶ τηροῦνται εἰς ἓν μέρος τῆς ταύλας. καὶ τὸ σημεῖον τούτου κρατεῖται οὕτως· ἐὰν τὸ κέντρον εἰς τὴν α΄ ἀλληλουχίαν ἐστὶ τὸ σημεῖον ἐκεῖνο $\overline{\alpha}$, εἰ δὲ εἰς τὴν β΄ | ἀλληλουχίαν | τὸ κέντρον τὸ σημεῖον ἐκεῖνο $\overline{\beta}$. ἐκεῖνο τὸ σημεῖον f73vV,f130rL κρατεῖται. ἔπειτα κατ' ἐναντίον τοῦ ἰδίου τελείου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ι΄ ἀλληλουχίας, καὶ κρατεῖται τὸ πλάτος.

Εἶτα καὶ τοῦτο κρατεῖται οὕτως· ἐὰν τὸ ἴδιον εἰς τὸ ἄνω ἡμισφαίριον τὸ σημεῖον ἐκείνου $\overline{\alpha}$, εἰ δὲ εἰς τὸ κάτω ἡμισφαίριον τὸ σημεῖον ἐκείνου $\overline{\beta}$. τὸ σημεῖον τοῦτο κρατεῖται. ἔπειτα τὸ πλάτος τοῦτο τηρεῖται εἰς τὰ γενικὰ

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9 ἐνάτης Vv ‖ 10 post καὶ v add et cancell πλάτος ‖ 11 πρώτην Vv ‖ 12 δευτέραν V ‖ 14 ι΄] δεκάτης Vv ‖ 15 καὶ om. Vv

λεπτὰ τὰ κρατηθέντα δι᾽ αὐτό, καὶ εὑρίσκεται τὸ πλάτος τὸ τέλειον. καὶ ἐκεῖνο φυλάττεται | καὶ τηρεῖται. ἔπειτα ἐὰν τὰ δύο σημεῖα $\overline{\beta\beta}$ ἢ καὶ τὰ δύο 297vv $\overline{\alpha\alpha}$ τὸ πλάτος βόρειον, εἰ δὲ τὸ ἓν $\overline{\beta}$ καὶ τὸ ἕτερον $\overline{\alpha}$ τὸ πλάτος νότιον.

Πλάτος γ΄. Κατὰ τὸ γ΄ γίνεται εἰσέλευσις κατ᾽ ἐναντίον τοῦ τελείου κέντρου εἰς τὸ κανόνιον τῆς ια΄ ἀλληλουχίας, καὶ τὰ γενικὰ λεπτὰ κρατοῦνται. καὶ τὸ σημεῖον ἐκείνου – ἐὰν εἰς τὸ ἄνω ἡμισφαίριον – $\overline{\alpha}$, εἰ δὲ εἰς τὸ κάτω ἡμισφαίριον $\overline{\beta}$. ταῦτα τηροῦνται. ἔπειτα κατ᾽ ἐναντίον τοῦ ἰδίου τελείου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ιβ΄ ἀλληλουχίας, καὶ τὸ πλάτος κρατεῖται. τὸ σημεῖον ἐκείνου τοῦτο. ἐὰν τὸ ἴδιον εἰς τὴν α΄ ἀλληλουχίαν ἐστὶ $\overline{\alpha}$, εἰ δὲ εἰς τὴν β΄ $\overline{\beta}$.

Εἶτα τούτου τὸ πλάτος εἰς τὰ γενικὰ λεπτὰ τούτου κρατεῖται. καὶ τὸ τέλειον | εὑρίσκεται πλάτος. ἔπειτα τηρεῖται. ἐὰν τὰ $\overline{\beta}$ σημεῖα ἐξισοῦνται τὸ f130vL πλάτος εἰς τὸ βόρειον μέρος, εἰ δ᾽ οὐκ ἐξισοῦνται τὸ πλάτος εἰς τὸ νότιον.

Εἶτα καὶ τὰ $\overline{\gamma}$ πλάτη τίθενται ἰδίᾳ καὶ ἰδίᾳ εἰς τὴν ταῦλαν. ἐὰν οὖν ὦσι καὶ τὰ $\overline{\gamma}$ βόρεια, καὶ τὰ $\overline{\gamma}$ ἐνοῦνται. καὶ | εὑρίσκεται τὸ πλάτος τῆς Ἀφροδίτης. εἰ f74rV δὲ ἄλλο μὲν πλάτος εἰς νότιον, ἄλλο δὲ βόρειον, κρατεῖται ἰδίᾳ τοῦ βορείου καὶ ἰδίᾳ τοῦ νοτίου. ἔπειτα τηρεῖται. ὁποῖόν ἐστιν ἔλαττον ἀφαιρεῖται τοῦ πλείονος. εἴ τι καταλειφθῇ, πλάτος ἐστὶ τῆς Ἀφροδίτης εἰς ἐκεῖνο τὸ μέρος ἔνθα ἦν τὸ πλάτος πλέον. εἰ δ᾽ εἰσὶ καὶ τὰ δύο ἐξισούμενα ἢ βόρεια ἢ νότια,

2 $\overline{\beta}$ VL ‖ 4 τρίτον Vv ‖ 5 ἑνδεκάτης Vv ‖ 9 πρώτην Vv ‖ 10 δευτέραν Vv ‖ 12 δύο Vv ‖ 14 τρία Vv ‖ 15 τρία Vv | τρία Vv

ἡ Ἀφροδίτης πλάτος οὐκ ἔχει.

Διαίρεσις γ΄. Περὶ τοῦ πλάτους τοῦ Ἑρμοῦ

Οὗτος τρία πλάτη ἔχει.

Πλάτος α΄. Κατ' ἐναντίον τοῦ τελείου κέντρου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῶν ὀρθώσεων τοῦ Ἑρμοῦ. καὶ ἔνθα εὑρεθῇ εἰς τὴν β΄ ἢ τὴν α΄ ἀλληλουχίαν, κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ιγ΄ ἀλληλουχίας, καὶ κρατοῦνται τὰ γενικὰ λεπτὰ τοῦ πλάτους καὶ φυλάττονται. ταῦτα ἀεὶ εἰς τὸ νότιον μέρος εἰσίν.

Πλάτος β΄. Κατ' ἐναντίον τοῦ τελείου κέντρου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς θ΄ ἀλληλουχίας, καὶ κρατοῦνται τὰ γενικὰ λεπτὰ καὶ τηροῦνται. καὶ τὸ σημεῖον ἐκείνου | τοῦτο· ἐὰν τὸ κέντρον εἰς τὴν α΄ ἀλληλουχίαν $\overline{\beta}$, f131rL
εἰ δὲ εἰς τὴν β΄ ἀλληλουχίαν $\overline{\alpha}$. ταῦτα τηροῦνται. ἔπειτα κατ' ἐναντίον τοῦ ἰδίου τελείου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ί ἀλληλουχίας, | καὶ f298rv
κρατεῖται τὸ πλάτος. τὸ σημεῖον ἐκείνου τοῦτο· ἐὰν τὸ ἴδιον εἰς τὸ ἄνω ἡμισφαίριον $\overline{\alpha}$, εἰ δὲ εἰς τὸ κάτω ἡμισφαίριον $\overline{\beta}$. ἔπειτα τὸ πλάτος εἰς τὰ γενικὰ λεπτὰ τούτου τηρεῖται, καὶ εὑρίσκεται τὸ τέλειον πλάτος.

Εἶτα τηρεῖται. ἐὰν καὶ τὰ $\overline{\beta}$ σημεῖα ἐξισοῦνται τὸ πλάτος βόρειον, εἰ δ' οὐκ

2 περὶ + τοῦ γνωρίσματος L ‖ 5 δευτέραν Vv | πρώτην Vv ‖ 9 β΄] κατὰ τὸ β΄ L ‖ 10 ἐνάτης Vv ‖ 11 πρώτην Vv ‖ 12 δευτέραν Vv ‖ 13 δεκάτης Vv ‖ 14 τοῦτο om. v ‖ 16 λέπτα post τούτου V ‖ 17 δύο Vv 17–483.1 τὸ πλάτος ... ἐξισοῦνται τὸ in marg v

ἐξισοῦνται πλάτος νότιον.

Πλάτος γʹ. Αὖθις γίνεται εἰσέλευσις κατ᾽ ἐναντίον τοῦ τελείου κέντρου | f74vV
εἰς τὸ κανόνιον τῆς ιαʹ ἀλληλουχίας, καὶ τὰ γενικὰ λεπτὰ κρατοῦνται. τὸ σημεῖον ἐκεῖνο· ἐὰν εἰς τὸ ἄνω ἡμισφαίριον $\overline{\alpha}$, εἰ δὲ εἰς τὸ κάτω ἡμισφαίριον τὸ κέντρον $\overline{\beta}$. ταῦτα κρατοῦνται. ἔπειτα κατὰ τὸ βʹ κατ᾽ ἐναντίον τοῦ ἰδίου τελείου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ιβʹ ἀλληλουχίας, καὶ κρατεῖται τὸ γʹ πλάτος τοῦ Ἑρμοῦ. τοῦτο πλάτος οὐχὶ τέλειον λέγεται.

Ἐπεὶ δὲ χρεία εἰδέναι τὴν ὄρθωσιν τούτου, ἐκεῖνο τὸ πλάτος εἰς $\overline{\beta}$ μέρη τίθεται, καὶ τὸ ἓν τηρεῖται. τὸ δὲ ἕτερον τηρεῖται εἰς τὰ $\overline{\varsigma}$ λεπτά. εἴ τι εὑρεθῇ, ὄρθωσίς ἐστι τοῦ πλάτους ἐκείνου. ἔπειτα τηρεῖται. ἐὰν τὸ τέλειον κέντρον τοῦ Ἑρμοῦ εἰς τὸ ἄνω ἡμισφαίριον, ἡ ὄρθωσις αὕτη ἀπὸ τοῦ τρίτου τούτου πλάτους τοῦ | τηρηθέντος ἀφαιρεῖται. εἰ δὲ εἰς τὸ κάτω ἡμισφαίριον, ἑνοῦται f131vL
τούτῳ, καὶ τὸ πλάτος γίνεται τέλειον εἰς τὴν ὄρθωσιν ταύτην.

Τοῦτο τὸ πλάτος τηρεῖται. εἶτα τηρεῖται. ἐὰν τὸ ἴδιον εἰς τὴν αʹ ἀλληλουχίαν τὸ σημεῖον τούτου $\overline{\beta}$, εἰ δὲ εἰς τὴν βʹ ἀλληλουχίαν $\overline{\alpha}$. ἔπειτα τοῦτο τὸ πλάτος τηρεῖται εἰς τὰ γενικὰ λεπτὰ τούτου, καὶ εὑρίσκεται τὸ πλάτος τὸ τέλειον.

Τηρεῖται δὲ ἔπειτα. ἐὰν ὦσι καὶ τὰ $\overline{\beta}$ σημεῖα ἐξισούμενα τὸ πλάτος βόρειον,

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3 ἑνδεκάτης Vv ‖ 5 δεύτερον Vv ‖ 6 δυοδεκάτης Vv ‖ 7 τρίτον Vv ‖ 8 εἰδέναι τὴν ὄρθωσιν] τῆς ὀρθώσεως Vv | δύο Vv ‖ 9 τὸ δὲ ἕτερον τηρεῖται om Vv ‖ 12 τηρηθέντος] ῥηθέντος Vv ‖ 14 πρώτην Vv ‖ 15 δευτέραν Vv ‖ 16–17 τὸ τέλειον πλάτος Vv ‖ 18 δύο Vv

εἰ δ' οὐκ ἐξισοῦνται τὸ πλάτος νότιον. αὖθις δὲ καὶ τὰ $\overline{\gamma}$ πλάτη τίθενται ἰδίᾳ εἰς τὴν ταῦλαν καὶ τηροῦνται. ἐὰν καὶ τὰ $\overline{\gamma}$ ὦσι νότια, ἑνοῦται τὰ $\overline{\gamma}$, καὶ εὑρίσκεται τὸ τέλειον πλάτος τοῦ Ἑρμοῦ εἰς τὸ νότιον μέρος. εἰ δ' ἐστί τι εἰς τὸ βόρειον μέρος καί τι εἰς τὸ νότιον, οἷόν ἐστιν ἔλαττον ἀφαιρεῖται τοῦ πλείονος, καὶ εὑρίσκεται τὸ πλάτος τοῦ Ἑρμοῦ εἰς τὸ πλέον μέρος. | εἰ δ' f75rV ἐξισοῦνται τὸ βόρειον καὶ τὸ νότιον, ὁ Ἑρμῆς ὅλως πλάτος οὐκ ἔχει.

Ἐπεὶ δὲ χρεία εἰδέναι τὴν ἀνάβασιν καὶ κατάβασιν τῆς Ἀφροδίτης καὶ τοῦ Ἑρμοῦ εἰς τὸ πλάτος, τὸ πλάτος ἐκείνων ἐκβάλλεται εἰς μίαν ὥραν. ἔπειτα ἀπ' ἐκείνης τῆς ἡμέρας μετὰ παρέλευσιν ἱκανῶν ἡμερῶν αὖθις ἐκβάλλεται τὸ πλάτος τούτων. ἐὰν οὖν τὸ πλάτος βόρειον καὶ τὸ ἐκβληθὲν ἔπειτα πλέον ἀνάβασίς ἐστι τοῦ πλάτους, εἴ δ' ἔλαττον κατάβασις. εἰ δὲ τὸ | πλάτος νότιον, f132rL | τὸ ἐκβλθὲν εἰς τὸ β΄ ἐὰν ᾖ πλέον κατάβασίς ἐστιν, εἰ δὲ ἔλαττον ἀνάβασις. εἰ 298vv δὲ τὸ ἐκβληθὲν α΄ πλάτος βόρειον καὶ τὸ ἐκβληθὲν ἔπειτα νότιον ὁ ἀστὴρ τῆς βορείας καταβάσεως, εἰ δὲ τὸ ἐκβληθὲν πρότερον νοτίον καὶ τὸ β΄ βόρειον ἡ ἀνάβασις νοτία.

Κεφάλαιον δ΄. Περὶ τῆς καταλήψεως τῆς μεταβάσεως ἡλίου καὶ σελήνης καὶ τῆς διαμέτρου – τούτων μετὰ τοῦ ψήφου καὶ διὰ τῶν κανονίων

1 τρία Vv ‖ 2 τρία Vv | νότια] ς sup o v | τρία Vv ‖ 7 Ἐπεὶ δὲ χρεία εἰδέναι] χρείας γενομένης εἰς τὸ εἰδέναι Vv ‖ 12 δευτέραν Vv ‖ 13 πρώτον Vv ‖ 14 δεύτερον Vv

Ἡ κίνησις τῶν ἀστέρων εἰς τὸ αὐθημερινὸν ἀπὸ τοῦ μέσου τῆς ἡμέρας μέχρι καὶ τοῦ ἑτέρου μέσου τῆς ἡμέρας μετάβασις λέγεται. εἰ γοῦν δεήσει τὴν μετάβασιν τοῦ ἀστέρος εἰς τὴν μίαν ὥραν καταληφθῆναι, μερίζεται ἡ τοιαύτη τοῦ ἀστέρος μετάβασις εἰς τὰ $\overline{\text{κδ}}$.

Διαίρεσις. Ἐπεὶ χρέων εἰδέναι τὴν διάμετρον τοῦ ἡλίου διὰ τὴν ἔκλειψιν, ἡ μετάβασις ἐκείνου τηρεῖται εἰς τὰ $\overline{\text{νη}}$. εἴ τι εὑρεθῇ, μερίζεται ἐκεῖνο εἰς τὰ $\overline{\text{ρε}}$ ἤγουν | $\overline{\text{α}}$ με´ μοίρας καὶ λεπτά. εἴ τι ἐξέλθῃ, διάμετρός ἐστι τοῦ ἡλίου. f75vV
ἄλλως· ἡ μετάβασις τοῦ ἡλίου τηρεῖται εἰς τὴν μίαν ὥραν εἰς τὰ νγ´ λεπτά. εἴ τι εὑρεθῇ, μερίζεται εἰς τὰ $\overline{\text{δ}}$ καὶ ἡ διάμετρος γίνεται τοῦ ἡλίου.

Διαίρεσις. Εἰς τὴν σελήνην

Ἐπεὶ δεῖ εἰδέναι τὴν διάμετρον τῆς σελήνης διὰ τὰς ἐκλείψεις, ἡ μετάβασις ταύτης τηρεῖται εἰς τὰ $\overline{\text{ε}}$. εἴ τι εὑρεθῇ, μερίζεται εἰς τὰ $\overline{\text{ρκα}}$ ἤγουν $\overline{\text{β}}$ α´ μοίρας καὶ λεπτά, καὶ ἡ διάμετρος τῆς σελήνης γίνεται. εἰ δὲ βουλῶμεν | ἀπὸ f132vL
τῆς διαμέτρου ταύτης εἰς κατάληψιν ἐλθεῖν τῆς διαμέτρου τοῦ σκιάσματος, ἡ διάμετρος τῆς σελήνης τηρεῖται εἰς τὰ $\overline{\text{ιγ}}$. εἴ τι εὑρεθῇ, μερίζεται εἰς τὰ $\overline{\text{ε}}$, καὶ εὑρίσκεται ἡ διάμετρος τοῦ σκιάσματος. τοῦτο δὲ εἰς τὴν ἔκλειψιν τῆς

5 Ἐπεὶ χρέων εἰδέναι τὴν διάμετρον] περὶ τῆς διαμέτρου Vv ‖ 6 ἐκεῖνο om Vv ‖ 11 Ἐπεὶ δεῖ εἰδέναι τὴν διάμετρον] χρείας γενομένης τῆς διαμέτρου Vv

σελήνης λυσιτελεῖ.

Διαίρεσις. Εἰς τὴν κατάληψιν τῆς μεταβάσεως τοῦ ἡλίου καὶ τῆς σελήνης καὶ τῆς διαμέτρου τούτων ἀπὸ τοῦ κανονίου διὰ τὸν ἥλιον

Γίνεται εἰσέλευσις κατ' ἐναντίον τοῦ κέντρου ἐκείνου εἰς τὸ κανόνιον τῆς μεταβάσεως ἡλίου καὶ σελήνης καὶ τῆς διαμέτρου καὶ τοῦ σκιάσματος, καὶ ζητεῖται τὸ τοιοῦτον κέντρον ἐκεῖ εἰς τὸ κανόνιον τῶν μέτρων. ἔνθα εὑρεθῇ, κατ' ἐναντίον ἐκείνου κρατεῖται ἡ μετάβασις τοῦ ἡλίου εἰς τὸ ἓν νυχθήμερον καὶ εἰς τὴν μίαν ὥραν, καὶ ἡ διάμετρος ἐκείνου μετὰ τῆς ὀρθώσεως τοῦ σκιάσματος, καὶ τίθενται ἕκαστον ἰδίᾳ. καὶ πλείονος ἐργασίας οὐ δεῖται. διὰ τὴν σελήνην· κατ' ἐναντίον τῆς ἰδίας κινήσεως τῆς σελήνης γίνεται εἰσέλευσις εἰς τὸ τοιοῦτον κανόνιον. ἔνθα οὖν εὑρεθῇ ἐν τοῖς κανονίοις τῶν μέτρων, κατ' ἐναντίον ἐκείνου κρατεῖται ἡ μετάβασις τῆς σελήνης εἰς τὸ ἓν νυχθήμερον | καὶ εἰς τὴν μίαν ὥραν, καὶ ἡ διάμετρος ταύτης μετὰ τοῦ σκιάσματος. f76rV καὶ φυλάττονται πάντα. ἔπειτα ἡ ὄρθωσις τοῦ σκιάσματος ἐκείνου ἀπὸ τῆς διαμέτρου τοῦ σκιάσματος ἀφαιρεῖται. καὶ εἴ τι καταλειφθῇ, διάμετρός ἐστι τοῦ σκιάσματος τελεία.

8–13 καὶ[1] — νυχθήμερον om. Vv

| Μοῖρα θ΄. Περὶ τῆς καταλήψεως τοῦ πλείονος καὶ ἐλάττονος ἀπὸ τῆς ὄψεως. f299rv, f133rL

πρὸ τούτου ζητεῖται μετὰ ψήφων τόσων διὰ τὴν τέχνην ταύτην μετὰ τοῦ ψήφου καὶ διὰ τῶν κανονίων. τοῦτο εἰς $\overline{\gamma}$ διαιρεῖται κεφάλαια.

Κεφάλαιον α΄. Περὶ τῶν ψήφων ἐκείνων τῶν τόσων. καὶ τοῦτο εἰς $\overline{\varepsilon}$ διαιρεῖται κεφάλαια.

Διαίρεσις α΄. Εἰς τὴν κατάληψιν τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων τῆς σφαίρας τῶν ζῳδίων ἤγουν τῶν ἄκρων τῆς κερκίδος δι᾽ ἧς κινεῖται ἡ σφαῖρα. ὁ ψῆφος τούτου τοιοῦτος· μερίζεται ἡ τραχηλαῖα τῆς ἀναβάσεως τοῦ ι΄ οἰκήματος τῆς τύχης τοῦ καιροῦ εἰς τὴν τραχηλαῖαν τοῦ τόξου ἐκείνου ἥτις ἐστὶν μεταξὺ τοῦ ι΄ οἰκήματος καὶ τῆς τύχης τοῦ καιροῦ. εἴ τι ἐξελθῇ παρ᾽ ἕνα βαθμὸν ἔλαττον κρατεῖται, καὶ εὑρίσκεται ἡ τραχηλαῖα ἡ τετελειωμένη τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων τῆς κερκίδος. τὸ τόξον ἐκείνης κρατεῖται, καὶ ἀφαιρεῖται τοῦτο ἀπὸ τῶν $\overline{\rho}$. εἴ τι καταλειφθῇ, ἡ ἀνάβασίς ἐστι τοῦ τόπου τῶν ἄκρων.

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1 τῆς καταλήψεως om Vv | ἀπὸ] καὶ L ‖ 3 τρία Vv ‖ 8 δεκάτου L

Διαίρεσις β΄. Περὶ τῆς ἀναβάσεως οἵας βουλόμεθα μοίρας καὶ τῆς|ἀναβάσεως f76vV
τῆς σελήνης ἡνίκα πλάτος οὐκ ἔχῃ

Ὁ ψῆφος τοιοῦτος· ἡ τραχηλαῖα τοῦ μήκους ἥτις ἐστὶ μεταξὺ | τῆς τύχης f133vL
τοῦ καιροῦ καὶ τῆς μοίρας ἐκείνης ἣν βουλόμεθα τηρεῖται εἰς τὴν τραχηλαῖαν
5 τοῦ τόξου ἐκείνου ἥτις ἐστὶ μεταξὺ τῆς τύχης καὶ τοῦ ι΄ οἰκήματος. εἴ τι
ἐξέλθῃ, τραχηλαῖά ἐστι τῆς ἀναβάσεως τῆς μοίρας ἐκείνης ἣν βουλόμεθα.

Διαίρεσις γ΄. Περὶ τῆς καταλήψεως τῶν $\overline{\gamma}$ γωνιῶν ἀπὸ τοῦ πλείονος καὶ
ἐλάττονος καὶ τῆς ὄψεως

Περὶ τῆς α΄ γωνίας οὕτω ἐστίν· ἐὰν ᾖ ἡ σελήνη εἰς τὴν μοῖραν τῆς τύχης
10 καὶ ἡ τύχη τοῦ καιροῦ τοῦτο· $\overline{\varsigma}$ ♋ ♋, ἡ ἀνάβασίς ἐστι ♋ ἀπὸ τοῦ Καρκίνου
εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας. ἡ γωνία τοῦ μήκους τετελειωμένη εἰς
τὰ $\overline{\rho}$, καὶ τοῦτο ἡ γωνία τοῦ πλάτους. εἰ δὲ ἡ τύχη τοῦ καίρου τοῦτο· ♋ ♋ ♋
– τὸ ♋ ὁ Κριός, ἡ ἀνάβασίς ἐστιν εἰς τὸ ♋ τοῦ Αἰγοκέρωτος εἰς τὸν κύκλον
τοῦ μέσου τῆς ἡμέρας. ἡ γωνία τοῦ μήκους τετελειωμένη εἰς τὰ $\overline{\rho}$, καὶ τοῦτο
15 ἡ γωνία τοῦ πλάτους. εἰ δὲ ἡ τύχη τοῦ καιροῦ οὐκ ἔστιν εἰς τὸ ♋ τοῦ Κριοῦ
καὶ τοῦ Ζυγοῦ, ἡ ἀνάβασις τοῦ τόπου τῶν ἄκρων ἡ γωνία τοῦ πλάτους ἐστὶ
τετελειωμένη, καὶ τοῦτο γωνία τοῦ μήκους.

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5 δεκάτου v ‖ 6 ἐξέλθῃ + ἡ Vv ‖ 7 τῆς καταλήψεως om Vv | τριῶν Vv ‖ 9 πρώτῆς Vv

Περὶ τῆς β′ γωνίας οὕτως ἐστίν, ὅτι ἡ σελήνη εἰς τὴν μοῖραν τοῦ ι′ οἰκήματος ᾗ εἰς τὴν ἀρχὴν τοῦ Κριοῦ ἢ τοῦ Ζυγοῦ εἰς τὴν μετάκλισιν τοῦ ὅλου τοῦ μήκους, τῆς γωνίας τετελειωμένης τοῦ πλάτους ⟨...⟩ τῆς γωνίας. ἐὰν ᾗ ἡ σελήνη εἰς τὴν ἀρχὴν τοῦ Καρκίνου ἢ τοῦ Ἀιγοκέρωτος, | ἡ γωνία f134rL
5 τοῦ μήκους οὐκ ἔστιν ἐκεῖ. | εἰ δὲ ἡ σελήνη εἰς τοὺς $\overline{\delta}$ τούτους τόπους οὐκ f77rV
ἂν γένηται, τηρεῖται ἡ ἀρχὴ τοῦ Κριοῦ ἢ τοῦ Ζυγοῦ ποία | ἐστὶν ἐγγύτερον f299vv
τοῦ ι′ οἰκήματος. καὶ τὸ μῆκος τὸ μεταξὺ ἢ τοῦ Κριοῦ ἢ τοῦ Ζυγοῦ καὶ τοῦ ι′ οἰκήματος κρατεῖται μετὰ τῶν ὀρθῶν μοιρῶν τοῦ ζῳδίου, καὶ αὖθις κρατεῖται τὸ μῆκος τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς. ἔπειτα κρατεῖται ἡ
10 τραχηλαῖα τῶν $\overline{\beta}$ μηκῶν. εἶτα ἡ τραχηλαῖα τοῦ τόπου τῆς τύχης μερίζεται εἰς τὴν τραχηλαῖαν τῶν μηκῶν. εἴ τι ἐξέλθῃ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται, καὶ τὸ εὑρεθὲν τραχηλαῖά ἐστιν. κρατεῖται οὖν τὸ τόξον ἐκείνου. εἴ τι εὑρεθῇ, γωνία τοῦ πλάτους ἐστίν, καὶ τὸ πλήρωμα ταύτης γωνία ἐστὶ τοῦ μήκους.

15 Περὶ τῆς γ′ γωνίας. ἐὰν ἡ σελήνη εἰς τὴν τύχην ἢ εἰς τὸ ι′ οἴκημα οὐκ ἔστιν ἢ μεταξὺ τῆς τύχης ἐστὶ καὶ τοῦ ι′ ἢ μέσον τοῦ ι′ καὶ τοῦ ζ′ ἐστὶν οἰκήματος, ἡ τραχηλαῖα τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων κρατεῖται. καὶ ἐκεῖνος μερίζεται εἰς τὴν τραχηλαῖαν τῆς τετελειωμένης ἀναβάσεως τῆς σελήνης. εἴ τι οὖν ἐξέλθῃ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. εἴ τι εὑρεθῇ, τραχηλαῖά

1 δευτέρας Vv | τὴν + ι′ v ‖ 2 ᾗ] ἢ LVv ‖ 5 τέσσαρες Vv | τούτους geminavit v ‖ 10 δύο Vv ‖ 15 τρίτης v

ἐστιν. τὸ τόξον ἐκείνης κρατεῖται. εἴ τι εὑρεθῇ, γωνία ἐστὶ τοῦ πλάτους. καὶ τοῦτό ἐστιν ἡ τετελειωμένη γωνία τοῦ πλάτους.

Διαίρεσις δ΄. Εἰς τὸ γνώρισμα τοῦ πλείονος καὶ ἐλάττονος | τῆς ὄψεως εἰς τὸν κύκλον τῆς ἀναβάσεως ὧν ἐστι χρεία εἰς τὴν ἔκλειψιν τοῦ ἡλίου μετὰ τοῦ κανονίου f134vL

Κανόνιον ἐτέθη διὰ τὸ πλέον καὶ ἔλαττον | τῆς ὄψεως διὰ τὸν ἥλιον καὶ τὴν σελήνην. γίνεται οὖν εἰσέλευσις εἰς ἐκεῖνο τὸ κανόνιον κατ' ἐναντίον τῆς τετελειωμένης ἀναβάσεως τοῦ ἡλίου καὶ τῆς σελήνης, καὶ κρατεῖται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως – διὰ τὸν ἥλιον ἀπὸ τῆς β΄ ἀλληλουχίας καὶ διὰ τὴν σελήνην ἀπὸ τῆς γ΄ καὶ δ΄ ἀλληλουχίας. καὶ τίθενται πάντα εἰς τὴν ταῦλαν. ἔπειτα κατ' ἐναντίον τοῦ ἰδίου τῆς σελήνης ἢ κατ' ἐναντίον τῆς μεταβάσεως σελήνης γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς μεταβάσεως ἡλίου καὶ σελήνης. καὶ κατ' ἐναντίον τούτου κρατοῦνται τὰ λεπτὰ τοῦ αὐθημερινοῦ. ἐκεῖνα τηροῦνται εἰς ἐκεῖνον τὸν ψῆφον τὸν ἐξελθόντα ἀπὸ τῆς δ΄ ἀλληλουχίας. εἴ τι οὖν εὑρεθῇ, ἑνοῦται εἰς ἐκεῖνον τὸν ψῆφον τὸν ἐξελθόντα ἀπὸ τῆς γ΄ ἀλληλουχίας, καὶ τὸ ἀναφανὲν τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τῆς σελήνης ἐστὶν εἰς τὸν κύκλον τῆς ἀναβάσεως. f77vV

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3 ἐλάττονος + καὶ LVv ‖ 9 δευτέραν Vv ‖ 10 τρίτης Vv | τετάρτης Vv ‖ 11 τοῦ ἰδίου sup lin L ‖ 15 τετάρτης Vv 15–16 εἴ τι. . . γ΄ ἀλληλουχίας in marg v ‖ 16 τρίτης Vv ‖ 490 .17 –491.2 ἐστὶν εἰς . . . τῆς σελήνης om. Vv

Ἔπειτα τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ ἡλίου ἀπὸ τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως τῆς σελήνης ἀφαιρεῖται, καὶ τὸ καταλειφθὲν τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τῆς σελήνης τετελειωμένον ἐστὶν οὗ χρεία διὰ τὴν ἔκλειψιν τοῦ ἡλίου.

Διαίρεσις ε΄. Περὶ τοῦ πλείονος | καὶ ἐλάττονος τῆς ὄψεως τῆς σελήνης μετὰ τοῦ ψῆφου εἰς τὸ μῆκος καὶ πλάτος f135rL

Τηρεῖται ἡ τραχηλαῖα ἑκάστου ἰδίᾳ, τῆς γωνίας τοῦ μήκους καὶ τοῦ πλάτους, εἰς τὴν τραχηλαῖαν τοῦ πλείνονος καὶ ἐλάττονος τῆς ὄψεως τῆς σελήνης τοῦ κύκλου τῆς ἀναβάσεως. τὸ γοῦν εὑρεθὲν παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται, καὶ τὸ καταλειφθὲν τραχηλαῖα τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεώς ἐστιν. | τὸ τόξον ἐκείνης κρατεῖται, καὶ εὑρίσκεται f300rv, f78rV τὸ |ἐκτλῆφι μανδὰρ ἤτοι τὸ πλέον καὶ ἔλαττον τῆς ὄψεως. ἐὰν οὖν ᾖ ἡ τραχηλαῖα τῆς γωνίας τοῦ μήκους, καὶ τοῦτο τοῦ μήκους·εἰ δὲ τοῦ πλάτους ἦν ἐκείνη, καὶ τοῦτο τοῦ πλάτους.

Κεφάλαιον δεύτερον. Περὶ τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως εἰς τὸ μῆκος καὶ πλάτος διὰ τοῦ κανονίου ὅπερ ἐστὶν εὐκαταληπτότερον

12 ᾖ om. Vv ‖ 15 δεύτερον v

Ἴσθι ὅτι ὁ Θαβὰν ἐκεῖνος ὁ Ἀλεξανδρηνὸς κανόνιον τέθεικεν εἰς τὰ $\overline{\zeta}$ κλίματα εἰς τὴν περισσείαν τῆς ἡμισείας ὥρας μετ' ἐκείνου τοῦ ψήφου ἡνίκα ἐστὶν ἡ σελήνη εἰς τὴν ἀρχὴν ἑκάστου ζῳδίου. οὗτος οὖν ὁ ψῆφος ὁ τεθεὶς παρ' ἐκείνου οὕτως ἐγένετο ὅτι τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ ἡλίου ἀφαιρεῖται ἀπὸ τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως. καὶ ὁ ψῆφος οὗτος διὰ τὴν ἔκλειψιν μόνην ἐστὶ τοῦ ἡλίου.

Εἰ οὖν γένηται χρεία δι' ἕτερον ψῆφον τῆς σελήνης οὐχὶ | διὰ ἔκλειψιν, 135vL ἕκαστον ἐκείνων τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως τοῦ μήκους καὶ πλάτους τηρεῖται εἰς τὰ $\overline{\iota\eta}$, καὶ τὸ ἐξελθὸν μερίζεται εἰς τὰ $\overline{\iota\zeta}$. εἴ τι οὖν ἐξέλθῃ ἀπὸ τοῦ μήκους ἢ ἀπὸ τοῦ πλάτους, διὰ τούτου ὀρθοῦται ὁ τόπος τῆς σελήνης ἤγουν τὸ αὐθημερινόν. καὶ τοῦτο τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τῆς σελήνης κατ' ἐναντίον τῆς ὥρας τοῦ μήκους τοῦ μέσου τῆς ἡμέρας κρατεῖται. γενομένης εἰσελεύσεως ἐν τοῖς κανονίοις τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως, ἐκείνη οὖν ἡ ὥρα τοῦ μήκους πρότερόν πως ὀφείλει καταλειφθῆναι. ἡ ὥρα τοῦ μέσου τῆς ἡμέρας ἐκείνης ἡνίκα μέλλει ἐκλιπεῖν ὁ ἥλιος κρατεῖται καὶ τίθεται εἰς τὴν ταῦλαν. ἔπειτα ἡ ὥρα τῆς συνόδου καὶ αὕτη τίθεται εἰς τὴν ταῦλαν. καὶ τηρεῖται ἀπὸ τῶν $\overline{\beta}$ | ποία πλείων, καὶ ἡ f78vV ἐλάττων ἀφαιρεῖται τῆς πλείονος. εἴ τι οὖν καταλειφθῇ, ἐκεῖνο ἡ ὥρα ἐστὶ τοῦ μήκους. τοῦτο τηρεῖται. ἔπειτα τηρεῖται. ἐὰν ἡ ὥρα τοῦ μέσου τῆς

14 τῆς ὄψεως om. Vv | πως] περα L ‖ 17 δύο Vv

ἡμέρας πλείων, ἡ ὥρα τοῦ μήκους πρὸ τοῦ μέσου τῆς ἡμέρας ἐστίν· εἰ δὲ ἡ ὥρα τοῦ μέσου τῆς ἡμέρας ἐλάττων, ἡ ὥρα τοῦ μήκους μετὰ τὸ μέσον τῆς ἡμέρας ἐστίν.

Διαίρεσις. Περὶ τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως τῆς σελήνης εἰς τὸ μῆκος καὶ πλάτος μετὰ τοῦ ψήφου τοῦ πλάτους τῆς πόλεως

Ἐπεὶ χρεία γενέσθαι ψῆφον, ζητεῖται κανόνιον ἀπὸ τῶν κανονίων τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως ὅτι τὸ πλάτος ἐκεῖνο τοῦ κανονίου | ἵν' f136rL
ᾖ ἐξισούμενον τῷ πλάτει τῆς πόλεως. ἐκεῖνο τὸ κανόνιον ὅπερ εὑρεθῇ, εἰς ἐκεῖνο τὸ κανόνιον ζητεῖται τὸ ζῴδιον ἐν ᾧ ἐστιν ἡ σελήνη. καὶ κατ' ἐναντίον τοῦ κανονίου ἐκείνου τοῦ ζῳδίου κατὰ βάθος ζητοῦνταψαὶ ὧραι τοῦ μήκους. f300vv
ἐὰν οὖν ἡ ὥρα πρὸ τοῦ μέσου τῆς ἡμέρας, εἰς τὸ ἄνω μέρος τοῦ κανονίου ἀπὸ τοῦ μέσου τῆς ἡμέρας ζητοῦνται αἱ ὧραι τοῦ μήκους· εἰ δὲ μετὰ τὸ μέσον τῆς ἡμέρας, εἰς τὸ κάτω. εἰ δὲ ἡ ὥρα εἰς τὸ μέσον τῆς ἡμέρας, ἐξ ἐκείνου γίνεται εἰσέλευσις. ἔνθα οὖν εὑρεθῇ ἡ ὥρα τοῦ μήκους, κατ' ἐναντίον ἐκείνου κρατεῖται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως εἰς τὸ μῆκος καὶ πλάτος. εἰ δὲ ἔχει ἡ ὥρα λεπτά, ἐκεῖνο μετὰ τοῦ ψήφου τοῦ μέσου τῶν $\overline{\beta}$ κανονίων γίνεται τέλειον.

10 v habet annotationem quartam in marg. L habet annotationem quartam in marg f136v, V habet annotationem quartam in marg f79r ‖ 12 εἰς τὸ ἄνω μέρος τοῦ κανονίου add et cancell v ‖ 16 δύο Vv ‖ 17 L habet annotationem quintam in marg f137r, V habet annotationem quintam in marg f79r

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Διαίρεσις κατὰ πολὺ λυσιτελοῦσα εἰς τὸ πλέον καὶ ἔλαττον τῆς ὄψεως.

Εἰ γένηται λήθη, οὕτως· ἀπὸ τῆς ὥρας ἐκείνης ἀφ' ἧς γίνεται εἰσέλευσις εἰς τὸ κανόνιον μέσον τῆς ὥρας ἐκείνης καὶ τῆς μετ' ἐκείνην ἐρχομένης, ἐκεῖ ἐτέθησαν σημεῖα στιγμαί· ○ ○ ○○. ἐκεῖ οὖν ἔνθα | εὑρεθῶσιν αἱ στιγμαὶ αὗται f79rV
5 μέσον τῶν $\overline{\beta}$ ψηφῶν, περισσεία οὐ κρατεῖται, ἀλλὰ οἱ $\overline{\beta}$ ψῆφοι κρατοῦνται καὶ ἑνοῦνται καὶ τίθενται εἰς τὴν ταῦλαν εἰς δύο μέρη· τὸ ἓν μέρος φυλάττεται, καὶ τὸ ἕτερον εἰς τὰ λεπτὰ τοῦ μήκους τῆς ὥρας ἐκείνης τῆς πρώτης μέσον τῆς ἡμέρας ἢ μετὰ τὸ μέσον τῆς ἡμέρας τηρεῖται. | τὸ γοῦν εὑρεθὲν τηρεῖται. f136vL
ἐὰν ᾖ ἐξισούμενον ἐκείνῳ τῷ μέρει τῷ φυλαττομένῳ, ἤδη φανερὸν ἐγένετο
10 ὅτι πλέον καὶ ἔλαττον τῆς ὄψεως οὐκ ἔστιν· εἰ δὲ οὐκ ἐξισοῦται, ἡ μέση τῶν $\overline{\beta}$ περισσεία ἐκβάλλεται, ἤγουν τὸ ἔλαττον ἀφαιρεῖται τοῦ πλείονος. εἴ τι οὖν καταλειφθῇ, ἐκεῖνο πλέον καὶ ἔλαττόν ἐστι τῆς ὄψεως εἰς τὸ μῆκος.

Διαίρεσις. Περὶ τῆς ὀρθώσεως τῶν μοιρῶν τῶν ζῳδίων

Εἴπερ δὲ ἡ σελήνη εἰς τὴν ἀρχὴν τοῦ ζῳδίου, εἴ τι εὑρεθῇ κατ' ἐναντίον
15 τοῦ ζῳδίου ἐκείνου εἰς τὸ κανόνιον τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως, τοῦτο τὸ πλέον καὶ ἔλαττον τέλειον οὐκ ἔστιν. ἐπεὶ οὖν χρεία ὀρθωθῆναι

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1 κατὰ πολὺ om Vv ‖ 5 δύο Vv | δύο Vv ‖ 9 τῷ μέρει τῷ φυλαττομένῳ] τῷ φυλαττομένῳ μέρει L ‖ 11 δύο v ‖ 494 .13 –495.9 Διαίρεσις. . . ἑνοῦται τούτῳ om Vv

τοῦτο ἀπὸ τοῦ ἄλλου ζῳδίου τοῦ μετ' ἐκεῖνο, κατ' ἐναντίον ἐκείνου κρατεῖται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως. ἔπειτα ἡ περισσεία ἡ μέση τῶν $\overline{\beta}$ πλειόνων καὶ ἐλαττόνων τῶν ὄψεων τῶν μέσων τῶν $\overline{\beta}$ ζῳδίων κρατεῖται. ἐκείνη ἡ περισσεία τηρεῖται εἰς τὰς μοίρας τῆς σελήνης, καὶ εἰς τὰ $\overline{\lambda}$ μερίζεται τὸ ἐξελθόν. εἴ τι οὖν καταλειφθῇ, ὄρθωσίς ἐστιν. ἔπειτα ἀπὸ τῶν $\overline{\beta}$ πλειόνων ἐκείνων καὶ ἐλαττόνων τῆς ὄψεως τῶν μεταξὺ τῶν $\overline{\beta}$ ζῳδίων ἐὰν τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τὸ ἀπὸ τοῦ α΄ ζῳδίου πλέον ἐστὶ τοῦ β΄ πλείονος καὶ ἐλάττονος, ἡ ὄρθωσις αὕτη ἀφαιρεῖται ἐξ ἐκείνου· εἰ δ' ἔλαττον, ἡ ὄρθωσις | ἑνοῦται τούτῳ. f137rL

Διαίρεσις. Περὶ τῆς ὀρθώσεως τῶν $\overline{\beta}$ πλατῶν

Ἐὰν τὸ πλάτος τοῦ κανονίου τούτου τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως ἐξισοῦται τῷ πλάτει τῆς πόλεως ἧς βουλόμεθα, ὁ ψῆφος ἀπὸ τοῦ κανονίου τούτου κρατεῖται· εἰ δ' οὐκ ἐξισοῦται τὸ πλάτος τοῦ κανονίου μετὰ τοῦ πλάτους τῆς πόλεως, ζητεῖται πλάτος εἰς τὸ κανόνιον τοῦτο ἔλαττον τῆς πόλεως καὶ ἐγγύτερον ταύτης. εἶτα ζητεῖται ἐν τῷ κανονίῳ ἕτερον πλάτος πλείον τοῦ πλάτους τοῦ α΄. καὶ ἡ μέση τῶν δύο πλατῶν τοῦ πλείονος καὶ ἐλάττονος περισσεία κρατεῖται. ἔπειτα κρατεῖται καὶ ἡ μέση τοῦ πλάτους τῆς πόλεως καὶ τοῦ ἐλάττονος πλάτους τοῦ κανονίου περισσεία ἥτις καὶ τηρεῖται

10 δύο Vv ‖ 11 τοῦ τούτου v ‖ 16 πρώτου Vv

εἰς ἐκείνην τὴν περισσείαν. εἴ τι οὖν εὑρεθῇ, μερίζεται εἰς τὴν περισσείαν τῶν $\overline{\beta}$ πλατῶν τῶν κανονίων. εἴ τι καταλειφθῇ, ὄρθω|σίς ἐστιν. ἔπειτα ἀπὸ τῶν $\overline{\beta}$ f79vV πλατῶν τῶν ἐν τῷ κανονίῳ κρατηθέντων ἀφ' ὧν ἐκρατήθη ἡ περισσεία ἐκείνη, ἐὰν ᾖ ὁ ψῆφος |τοῦ α΄ πλάτους πλέον τοῦ β΄, ἡ ὄρθωσις αὕτη ἀφαιρεῖται ἀπὸ f301rv τοῦ α΄ πλάτους· εἰ δ' ἐστὶν τὸ α΄ πλάτος ἔλαττον τοῦ β΄, ἡ ὄρθωσις ἑνοῦται τούτῳ, καὶ τὸ εὑρεθὲν πλέον καὶ ἔλαττον τῆς ὄψεώς ἐστιν. ὁ ψῆφος δὲ οὗτός ἐστιν ὅταν ἡ σελήνη εἰς τὸ ὕψωμα τοῦ μικροῦ κύκλου ἐκείνου ᾖ.

Διαίρεσις. Περὶ τῆς ὀρθώσεως τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως μετὰ τοῦ τόπου τῆς σελήνης

|Γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς μεταβάσεως ἡλίου καὶ σελήνης τῆς f137vL διαμέτρου καὶ τοῦ σκιάσματος. καὶ κατ' ἐναντίον τοῦ ἰδίου τῆς σελήνης ἢ τῆς ἀναβάσεως ταύτης γίνεται εἰσέλευσις εἰς τὰ κανόνια ἢ τοῦ ἰδίου ἢ τῆς ἀναβάσεως τῆς σελήνης, καὶ κατ' ἐναντίον ἐκείνου κρατοῦνται τὰ λεπτὰ τὰ εὑρεθέντα ἐν τῷ κανονίῳ τοῦ πλείονος καὶ ἐλάττονος τοῦ ἰδίου τῆς σελήνης. εἴ τι οὖν εὑρεθῇ, εἰς τοῦτο τηρεῖται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως καὶ τοῦ μήκους καὶ τοῦ πλάτους ἰδίᾳ καὶ ἰδίᾳ. ἔπειτα τὸ εὑρεθὲν τὸ πλέον καὶ ἔλαττον τῆς ὄψεώς ἐστιν τετελειωμένον. τοῦτο φυλάττεται διὰ τὴν ἔκλειψιν

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2 δύο Vv | δύο Vv ‖ 4 πρώτου Vv | δευτέρου v ‖ 5 πρώτου Vv | πρῶτον Vv | δευτέρου Vv ‖ 7 ᾖ] ἐστίν L ‖ 10 τὰ κανόνια Vv

τοῦ ἡλίου.

Κεφάλαιον γ΄. Περὶ τῆς ἀσφαλοῦς ποιήσεως τοῦ τόπου τῆς σελήνης εἰς τὸ μῆκος καὶ πλάτος

Ἐπεὶ χρεία γενέσθαι ἐργασίαν, τηρεῖται. ἐὰν τὸ μῆκος τῆς σελήνης ἀπὸ τῆς τύχης ἔλαττον τῶν $\overline{\rho}$ μοιρῶν, ἐνοῦται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως ἐκείνης εἰς τὸ μῆκος, εἰς τὸ αὐθημερινὸν ἐκείνης ἤγουν τῆς σελήνης· εἰ δὲ πλέον, ἀφαιρεῖται ἐξ ἐκείνου τοῦ αὐθημερινοῦ. εἴ τι εὑρεθῇ, ὁ τόπος | ἐστὶ f80rV τῆς ὄψεως τῆς σελήνης.

Διαίρεσις. Περὶ τῆς στερεᾶς ποιήσεως τοῦ τόπου τῆς σελήνης εἰς τὸ πλάτος

Πρὸ τοῦ ἐργάσασθαι τὴν τέχνην ταύτην δεῖ γνῶναι τὸ πλέον καὶ ἔλαττον τῆς ὄψεως εἴτε βόρειον εἴτε νότιον. ἐκεῖνο οὖν ἀπὸ τῆς ἀναβάσεως τοῦ ι΄ οἰκήματος τῆς τύχης τοῦ καιροῦ καταλαμβάνεται οὕτως. ἐὰν ἡ ἀνάβασις τοῦ ι΄ οἰκήματος ἄνω οὖσα τῆς κεφαλῆς ἡμῶν νοτία, τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ πλάτους εἰς τὸ νότιον μέρος· εἰ δὲ | βορεία, εἰς τὸ βόρειον μέρος. f138rL

Ἄλλως τὸ αὐτὸ δι᾽ ἑτέρας μεθόδου. τηρεῖται τὸ πλάτος τῆς πόλεως ἧς βουλόμεθα. εἴπερ ἐστὶ πλέον τῆς μετακλίσεως, ὅλως τὸ πλέον καὶ ἔλαττον

τῆς ὄψεως τοῦ πλάτους ἐκεῖνο ἀεὶ νότιον· εἰ δὲ τὸ πλάτος τῆς πόλεώς ἐστι τόσον ὅτι ἡ μετάκλισις ὅλη μετὰ τοῦ πλάτους τῆς σελήνης ἑνωθεῖσα ἐξισοῦται τῷ πλάτει τῆς πόλεως, τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ πλάτους ἔστιν ὅτε βόρειον ὑπάρχει καὶ ἄλλοτε νότιον.

Εἰς ἐκείνην οὖν τὴν πόλιν ἥτις ἔχει οὕτως τηρεῖται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ πλάτους καὶ τὸ πλάτος τῆς σελήνης. εἴπερ ἐστὶ οὕτως ὅτι καὶ τὰ $\overline{\beta}$ εἰς τὸ μέρος τὸ βόρειον ἢ εἰς τὸ νότιόν εἰσιν, ἑνοῦται καὶ τὰ $\overline{\beta}$· εἰ δέ ἐστι τὸ ἓν βόρειον καὶ τὸ ἕτερον νότιον, τὸ ἔλαττον ἀφαιρεῖται τοῦ πλείονος. εἴ τι καταλειφθῇ, ἐκεῖνο πλάτος τῆς ὄψεως τῆς σελήνης λέγεται | ἢ καὶ πλάτος f301vv
στερεόν. δεῖ τῷ βουλομένῳ ποιεῖν αὐθημερινὸν ποιεῖν κανόνια διὰ τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τῆς σελήνης εἰς τὸ πλάτος τῆς πόλεως ἐκείνης ἐν ᾗ ἐγένετο τὸ | αὐθημερινόν. f80v V

Οὕτω καθὼς ἡμεῖς ἐποιήσαμεν τοῦτο. τῆς πόλεως ἡμῶν τὸ πλάτος ἦν τόσον· $\overline{\lambda\eta}$. τοῦτό ποθεν ἐξεβλήθη παρ' ἡμῶν ἀπὸ τῶν $\overline{\beta}$ κανονίων ἀφ' ὧν τοῦ ἑνὸς τὸ πλάτος ἦν τόσον· $\overline{\lambda\varsigma}$, καὶ τοῦ ἑτέρου τὸ πλάτος τόσον· $\overline{\mu\alpha}$.

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6 τὸ πλάτος] τοῦ πλάτους LVv ‖ 7 δύο Vv | τὸ μέρος τὸ βόρειον] τὸ βόρειον μέρος Vv | εἰσίν om L | δύο Vv ‖ 9–10 ἢ καὶ πλάτος στερεόν om. L ‖ 13 ἡμεῖς ἐποιήσαμεν τοῦτο] ἐποιήθη τοῦτο παρ' ἡμῶν Vv ‖ 14 δύο Vv

Μοῖρα ι΄. Περὶ τῆς καταλήψεως τῆς συνόδου τοῦ ἡλίου καὶ τῆς σελήνης καὶ τῆς διαμέτρου τούτων

Τοῦτο εἰς τρεῖς ψήφους ἐτέθη.

Ψῆφος α΄. Περὶ τῆς συνόδου τοῦ ἡλίου καὶ τῆς σελήνης καὶ τῆς διαμέτρου τούτων καὶ τοῦ μήκους τῆς τούτων μεταβάσεως f138vL

Τηρεῖται τὸ αὐθημερινὸν τοῦ ἡλίου καὶ σελήνης ὅτι κατὰ ποίαν ἡμέραν συνέρχονται ἢ κατὰ σύνοδον ἢ κατὰ διάμετρον εἰς ἓν ζῴδιον καὶ μίαν μοῖραν καὶ ἓν λεπτόν. ἐὰν οὖν εὑρεθῇ οὕτως, κατὰ τὴν ὥραν τοῦ μέσου τῆς ἡμέρας ἐκείνης ἐγένετο ἢ κατὰ σύνοδον ἢ κατὰ διάμετρον καὶ κατὰ τὴν μοῖραν ἐκείνην ἐν ᾗ ἐστι τηνικαῦτα ὁ ἥλιος διαμετρῶν ἢ συνοδεύων τῇ σελήνῃ.

Εἰ δὲ τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης οὐκ εἰσι κατ' ἐναντίον εἰς τὸ μέσον ἐκείνης τῆς ἡμέρας $\overline{\beta}$ τηροῦνται μέσα τῆς ἡμέρας ἵνα κατὰ τὸ ἓν μέσον τῆς ἡμέρας τὸ αὐθημερινὸν τῆς σελήνης ἔλαττον ᾗ τοῦ αὐθημερινοῦ τοῦ ἡλίου, εἰς δὲ τὸ μετ' ἐκεῖνο μέσον τῆς ἡμέρας πλέον τοῦ αὐθημερινοῦ τοῦ ἡλίου. ἔπειτα τηρεῖται ποῖον μέσον τῆς ἡμέρας ἐστὶ ἐγγύτερον. κατ' ἐκεῖνο οὖν τὸ μέσον τῆς ἡμέρας κρατοῦνται καὶ ἀμφοτέρων τοῦ ἡλίου καὶ τῆς σελήνης τὰ μήκη καὶ τηροῦνται. εἶτα ἀπὸ τῶν $\overline{\beta}$ μέσων τῆς ἡμέρας f81rV ἐκβάλλεται ἑκάστου ἡ μετάβασις ἡλίου καὶ σελήνης. ἔπειτα ἡ μετάβασις τοῦ

1 συνόδου] συνδου ut videtur v ‖ 4 ψῆφος] μοῖρα LVv ‖ 12 ἐκεῖνης] ἐκεῖνο V | δύο Vv ‖ 17 δύο Vv

ἡλίου ἀφαιρεῖται ἀπὸ τῆς μεταβάσεως τῆς σελήνης. εἴ τι καταλειφθῇ, ἐκεῖνο μετάβασις λέγεται τελεία.

Εἶτα ἐκεῖνο τὸ μῆκος τὸ μέσον ἡλίου καὶ σελήνης τηρεῖται εἰς τὰ $\overline{\text{κδ}}$. εἴ τι ἐξέλθῃ, μερίζεται εἰς τὴν τελείαν ἐκείνην μετάβασιν. εἴ τι οὖν καταλειφθῇ, ἡ ὥρα ἐστὶ τοῦ μήκους. αὕτη φυλάττεται. εἶτα τηρεῖται τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης εἰς ἐκεῖνο τὸ μέσον τῆς ἡμέρας. ἐὰν οὖν τὸ αὐθημερινὸν τῆς σελήνης ἔλαττον | ᾖ τοῦ αὐθημερινοῦ τοῦ ἡλίου, ἡ ὥρα τοῦ f139rL μήκους μετὰ τῆς ὥρας τοῦ μέσου τῆς ἡμέρας ἑνοῦται. εἴ τι εὑρεθῇ, εἴπερ ἐστὶν ἔλαττον τῶν ὡρῶν τῆς ἡμέρας ἐκείνης πάσης, ἐκείνη ἡ ὥρα ἡ ὥρα ἐστὶ τῆς συνόδου ἢ τῆς διαμέτρου εἰς ἐκείνην τὴν ἡμέραν· εἰ δ' ἐστὶ πλέον τὸ εὑρεθὲν τῆς ὥρας πάσης τῆς ἡμέρας, ἡ ὥρα αὕτη τῆς ἡμέρας ἀφαιρεῖται ἐξ ἐκείνου. εἴ τι ἐναπολειφθῇ, ἡ ὥρα ἐστὶ τῆς συνόδου ἢ τῆς διαμέτρου ἀπὸ τῆς ἐρχομένης νυκτός. εἰ δὲ τὸ αὐθημερινὸν τῆς σελήνης πλέον ἐστὶ τοῦ αὐθημερινοῦ τοῦ ἡλίου, τηρεῖται ἡ ὥρα τοῦ μήκους. εἴπερ ἐστὶ ἐλάττων τῆς ὥρας τοῦ μέσου τῆς ἡμέρας, ἐκείνη ἀφαιρεῖται ἀπὸ τῆς ὥρας ταύτης | τοῦ μέσου τῆς ἡμέρας. εἴ τι f302rv καταλειφθῇ, ὥρα ἐστὶ τῆς συνόδου ἢ τῆς διαμέτρου εἰς ἐκείνην τὴν ἡμέραν. εἰ δὲ ἡ ὥρα τοῦ μήκους πλείων ἐστὶ τῆς ὥρας τοῦ μέσου τῆς ἡμέρας, ἑνοῦνται καὶ αἱ $\overline{\beta}$, καὶ τὸ εὑρεθὲν ἀφαιρεῖται ἀπὸ τῶν $\overline{\text{κδ}}$.| εἴ τι καταλειφθῇ, ὥρα ἐστὶ f81vV τῆς συνόδου ἢ τῆς διαμέτρου ἀπὸ τῆς παρελθούσης νυκτός.

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9 ἡ^2 om. Vv ‖ 12 ἡ om. Vv ‖ 18 δύο Vv ‖ 19 συνόδου et διαμέτρου transpond L

Οὗτος οὖν ὁ ψῆφος τότε ἵν' ᾗ ἀνεπισφαλὴς ἡνίκα τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης ἐγένοντο τέλεια μετὰ τῆς ὀρθώσεως τῆς ἡμέρας. εἰ δὲ οὐκ ἐγένοντο τέλεια, κατ' ἐναντίον τοῦ αὐθημερινοῦ τοῦ ἡλίου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ὀρθώσεως τῶν ἡμερῶν, καὶ κρατεῖται ἡ ὄρθωσις τῆς ἡμέρας κατὰ τὰ α΄ καὶ τὰ β΄ λεπτὰ τῆς ὥρας. εἴ τι οὖν εὑρεθῇ,, ἐκεῖνο ἀεὶ εἰς τὴν ὥραν τῆς συνόδου ἢ τῆς διαμέτρου ἑνοῦται, καὶ γίνεται ἡ ὥρα τελεία.

| Διαίρεσις. Εἰ βουληθῶμεν τὸν ψῆφον τοῦτον λεπτότερον ποιῆσαι, γίνεται τὸ f139vL
αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης εἰς ἐκείνην τὴν ὥραν ἡνίκα γίνεται ἡ σύνοδος ἢ ἡ διάμετρος. ἐὰν ὦσι κατὰ τὰς μοίρας καὶ τὰ λεπτὰ ἐξισούμενα καὶ ἀμφότερα ταῦτα, ἡ ὥρα ἐκείνη ὀρθή ἐστιν· εἰ δ' οὐκ ἐξισοῦνται, αὖθις τὸ μέσον τούτων μῆκος κρατεῖται, καὶ γίνεται ὡς ἐρρέθη εἰς τὸν α΄ ψῆφον ὅπως εὑρεθῇ ἡ ὥρα ὀρθή.

Διαίρεσις. Περὶ τῆς καταλήψεως τῆς μοίρας ἐκείνης ἐν ᾗ συνέρχονται ὁ ἥλιος καὶ ἡ σελήνη ἢ κατὰ σύνοδον ἢ κατὰ διάμετρον

Ἐκεῖνο τὸ μῆκος ὅπερ ἐκρατήθη μέσον τοῦ ἡλίου καὶ σελήνης τίθεται εἰς

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3 οὐκ difficile visu v ‖ 6 κατὰ] ἤτοι Vv | πρῶτα Vv | δεύτερα Vv ‖ 7 ἡ om v ‖ 11 ἐκείνη difficile visu v ‖ 12 πρῶτον Vv ‖ 15 ἢ om L

$\overline{\beta}$ τόπους ἐν τῇ ταύλᾳ· τὸ ἓν τηρεῖται ἀσφαλῶς καὶ τὸ ἕτερον τηρεῖται εἰς τὰ $\overline{\varepsilon}$ λεπτά. εἴ τι οὖν εὑρεθῇ, ὄρθωσίς ἐστι τῆς μοίρας τοῦ ἡλίου. ἐκεῖνο τηρεῖται ἰδίᾳ, καὶ τοῦτο αὖθις ἑνοῦται τῷ τηρηθέντι | ἀσφαλῶς μήκει. εἴ τι f82rV
εὑρεθῇ, ὄρθωσίς ἐστι τῆς μοίρας τῆς σελήνης.

Ἔπειτα τὸ αὐθημερινὸν ἡλίου καὶ σελήνης – ἅτινα εὑρέθησαν εἰς τὸ μέσον ἐκείνης τῆς ἡμέρας – τίθενται εἰς τὴν ταῦλαν ἰδίᾳ καὶ ἰδίᾳ. καὶ ὑπὸ ταῦτα τίθεται ἑκατέρα ἡ ὄρθωσις. εἶτα τηρεῖται. ἐὰν τὸ αὐθημερινὸν τῆς σελήνης ἔλαττον τοῦ αὐθημερινοῦ τοῦ ἡλίου, ἡ ὄρθωσις τῆς μοίρας τῆς σελήνης ἑνοῦται τῷ ταύτης αὐθημερινῷ, καὶ ἡ ὄρθωσις ὡσαύτως τοῦ ἡλίου ἑνοῦται τῷ τούτου αὐθημερινῷ. ἐὰν δὲ τὸ αὐθημερινὸν τῆς σελήνης πλέον τοῦ αὐθημερινοῦ τοῦ ἡλίου, | ἑκατέρου ἡ ὄρθωσις ἀφαιρεῖται ἀπὸ τοῦ ἰδίου f140 rL
αὐθημερινοῦ.

Εἴ τι οὖν ἔπειτα καταλειφθῇ, τηρεῖται. ἐὰν ἐξισοῦνται καὶ ἀμφότερα κατὰ τὰς μοίρας καὶ τὰ λεπτά, ὁ ψῆφος τῆς σελήνης ὀρθός ἐστιν· εἰ δ' οὐκ ἐξισοῦνται, οὐκ ἔστιν ὀρθός. εἰ οὖν ὀρθός ἐστιν ὁ ψῆφος εἰς τὴν σύνοδον ἢ τὴν ἡμέραν ἢ τὴν νύκτα, ἡ μοῖρα ἐκείνη ἀεὶ μία ἐστίν· ἐκεῖνος ὁ ψῆφος γράφεται εἰς τὸ αὐθημερινόν. εἰ δ' ἐστὶ διάμετρος εἰς τὴν ἡμέραν ἡ μοῖρα τοῦ ἡλίου κρατεῖται, καὶ τὴν νύκτα ἡ μοῖρα τῆς σελήνης. εἰ γένηται χρεία ἐκβληθῆναι τὴν τύχην | τῆς συνόδου ἢ τῆς διαμέτρου, ὁ ψῆφος τοιοῦτος f302vv

1 δύο Vv ‖ 3 τηρηθέντι] ῥηθέντι Vv ‖ 6 ἐκείνης] ἐκεῖνο L ‖ 7 ἑκατέρα + Δ v | ἡ sup lin v ‖ 15 ὀρθός ἐστιν ὁ ψῆφος] ὁ ψῆφος ὀρθός ἐστιν Vv

οἷος ἐρρέθη πρότερον.

Ψῆφος β΄. Περὶ τοῦ ψήφου τῆς ἐκλείψεως τῆς σελήνης καὶ μετὰ τοῦ ψήφου καὶ διὰ τοῦ κανονίου. τοῦτο εἰς $\overline{\beta}$ διαιρεῖται κεφάλαια.

Κεφάλιον α΄. Περὶ τοῦ εἰδέναι ὅτι ἡ σελήνη μέλλει ἐκλιπεῖν ἢ οὔ, καὶ μετὰ τοῦ ψήφου. τοῦτο εἰς $\overline{\varepsilon}$ διαιρέσεις ἐτέθη.

| Διαίρεσις α΄. Ὅτι ἡ σελήνη ἐκλείψει ἢ οὔ f82vV

Ἐνταῦθά εἰσι τόσα ἃ ὀφείλουσι κρατηθῆναι. ἓν ἐκεῖνο, ὅτι ἡ διάμετρος ἡλίου καὶ σελήνης κατὰ νύκτα ὀφείλει εἶναι ἢ ἐγγὺς τῆς νυκτὸς οὕτως ὅτι $\overline{\beta}$ ὧραι ἢ ἔλαττον ἵν' ὦσι μέσον τῆς ἡμέρας καὶ τῆς νυκτὸς τῆς ἀρχῆς καὶ τῆς τελειώσεως ἡνίκα διαμετρεῖ ὁ ἥλιος τὴν σελήνην. β΄ δὲ ἐκεῖνο, ὅτι μέσον τῶν κόμπων καὶ τῶν μοιρῶν τῆς σελήνης ἔλαττον ὀφείλει εἶναι | τῶν $\overline{\iota\beta}$ μοιρῶν, ἢ f140vL τὸ πλάτος τῆς σελήνης εἴπερ ἐστὶν ἔλαττον τῶν $\overline{\xi\gamma}$ λεπτῶν ἢ εἰς τὸ βόρειον ἢ εἰς τὸ νότιον μέρος, ἡ σελήνη ἐκλείπει· εἰ δὲ πλέον τούτων, οὐκ ἐκλείπει. εἰ οὖν μέλλει ἐκλείψειν ἡ σελήνη, ἡ ὥρα τῆς συνόδου ἡ ὥρα τῆς μέσης ἐκλείψεως

3 δύο Vv ‖ 6 περὶ τῆς σελήνης ἐκλείψει ἤ οὔ Vv ‖ 7 κρατηθῆναι] ληφθῆναι Vv ‖ 8 δύο v ‖ 10 διαμετρεῖ] διαμετρῇ v | δεύτερον Vv | ἐκεῖνο om Vv

λέγεται.

Διαίρεσις β΄. Περὶ τοῦ εἰδέναι ὅτι ἡ σελήνη μέλλει ἐκλείψειν ἢ οὐ μετὰ τοῦ ψήφου

Ἐπεὶ χρεία μετὰ τοῦ ψήφου εἰπεῖν περὶ τῆς ἐκλείψεως τῆς σελήνης, ἡ διάμετρος τοῦ ἡλίου καὶ τῆς σελήνης καὶ τὸ σκίασμα — καὶ τὰ $\overline{\gamma}$ ἐκβάλλονται. ἔπειτα ἡ διάμετρος τοῦ ἡλίου ἑνοῦται τῇ διαμέτρῳ τῆς σελήνης. εἴ τι εὑρεθῇ, μερίζεται εἰς $\overline{\beta}$. τὸ καταλειφθὲν ἐκεῖνο ἥμισυ λέγεται τῶν $\overline{\beta}$ διαμέτρων. τοῦτο τηρεῖται. ἔπειτα τὸ πλάτος τῆς σελήνης κατὰ τὴν ὥραν τῆς διαμέτρου τηρεῖται. εἴπερ οὖν ἐστι τοῦτο ἐξισούμενον τούτῳ τῷ ἡμίσει τῶν $\overline{\beta}$ διαμέτρων ἢ πλέον, ἡ σελήνη οὐκ ἐκλείπει· εἰ δὲ ἔλαττον, ἐκλείπει.

Διαίρεσις γ΄. Περὶ τοῦ εἰδέναι ὅτι πόσον τῆς σελήνης μέλλει ἐκλιπεῖν, μέρος ταύτης ἢ ἅπασα, καὶ εἰ μέρος ταύτης μέλλει ἐκλιπεῖν πόσοι δάκτυλοι, καὶ εἰ ἐκλείψει πᾶσα μέλλει περὶ τὴν ἔκλειψιν ἀργῆσαι ἢ εὐθὺς πάλιν ἄρξασθαι πρὸς τὴν ταύτης ἐπαναστρέφειν ἀποκατάστασιν.

Ἀφαιρεῖται | τὸ πλάτος τῆς σελήνης ἀπὸ τῆς ἡμισείας τῶν $\overline{\beta}$ διαμέτρων. f83rV

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4 ἐπεὶ . . . σελήνης om v ‖ 5 τρία Vv ‖ 7 δύο Vv | καταλειφθὲν] εὑρεθὲν L | ἐκεῖνο om Vv | δύο Vv ‖ 8–9 ἔπειτα . . . τῆς διαμέτρου τηρεῖται om Vv ‖ 9 δύο Vv ‖ 11 ἐκλειπεῖν v ‖ 13 πάλιν] πάλαι v | ἄρξασθαι] ἄρξηται L ‖ 14 ἐπαναστροφὴν καὶ Vv

εἴ τι καταλειφθῇ, ἐκεῖνα λεπτὰ λέγεται τῆς ἐκλείψεως. ἔπειτα τηρεῖται. ἐὰν τὰ λεπτὰ τῆς ἐκλείψεως τῆς σελήνης ἐξισοῦνται τῇ διαμέτρῳ τῆς σελήνης, | ἡ f141rL
σελήνη τελεία ἐκλείπει καὶ εὐθὺς ἐπαναστρέφεται.

Εἰ δὲ τὰ λεπτὰ τῆς ἐκλείψεως πλείονά εἰσι τῆς διαμέτρου τῆς σελήνης, ἡ
5 σελήνη πᾶσα ἐκλείπει καὶ ὀλίγην ὥραν ἵσταται εἰς τὴν ἔκλειψιν. εἰ δὲ τὰ λεπτὰ τῆς ἐκλείψεως ἐλάττονά εἰσι τῆς διαμέτρου τῆς σελήνης, ὀλίγον τῆς σελήνης ἐκλείπει.

Ἐπεὶ οὖν χρὴ εἰδέναι πόσον τῆς σελήνης ἐκλείψει, τὰ λεπτὰ τῆς ἐκλείψεως τῆς σελήνης τηροῦνται εἰς τὰ $\overline{\iota\beta}$. εἴ τι εὑρεθῇ, μερίζεται ἐκεῖνο εἰς τὴν
10 διάμετρον τῆς σελήνης. εἴ τι ἐξέλθῃ, δάκτυλοί εἰσι τῆς διαμέτρου τῆς σελήνης ἀπὸ τῶν $\overline{\iota\beta}$ δακτύλων τῆς διαμέτρου ταύτης.

Διαίρεσις δ΄. Περὶ τῆς ὥρας τῆς ἐκλείψεως τῆς σελήνης

Τὸ πλάτος τῆς σελήνης τηρεῖται αὖθις εἰς ἐκεῖνο. οἷον ἐὰν ᾖ τυχὸν $\overline{\kappa\varepsilon}$ τὸ πλάτος, ταῦτα τηροῦνται εἰς τὰ $\overline{\kappa\varepsilon}$ πάλιν, καὶ εὑρίσκεται τὸ τετράγωνον
15 τοῦ πλάτους τῆς σελήνης. | ἐκεῖνο ἀπὸ τοῦ πλάτους τῶν ἥμισυ διαμέτρων 303rv
ἀφαιρεῖται. εἴ τι καταλειφθῇ, ὁ πολυπλασιασμὸς τούτου κρατεῖται, καὶ τὸ εὑρεθὲν ἐκεῖνα λεπτὰ λέγονται τῆς ἐκλείψεως τῆς σελήνης. ταῦτα τηροῦνται εἰς τὰ $\overline{\kappa\delta}$, καὶ τὸ ἐξελθὸν μερίζεται εἰς τὴν τελείαν μετάβασιν τῆς σελήνης

1 λέγεται] λέγονται Vv

τὴν κατὰ τὸ νυχθήμερον. εἴ τι γένηται, ὥρα ἐστὶν ἥτις λέγεται ὥρα πεσοῦσα.

Εἶτα ἡ ὥρα τῆς | διαμέτρου τίθεται εἰς τρεῖς τόπους τῆς ταύλας. ἐκείνη f83vV
οὖν ἡ πεσοῦσα ὥρα ἀπὸ τῆς ὥρας τῆς διαμέτρου τῆς τεθείσης πρότερον ἐν τῇ ταύλᾳ ἀφαιρεῖται καὶ ἑνοῦται τῇ τεθείσῃ ἐν τῷ τρίτῳ τόπῳ. εἴ τι οὖν καταλειφθῇ, ἀπὸ τοῦ α΄ ἡ ὥρα τῆς ἀρχῆς τῆς ἐκλείψεως τῆς σελήνης. | εἴ τι f141vL
δὲ εὑρεθῇ, εἰς τὸν β΄ τόπον ἡ μέση ὥρα τῆς ἐκλείψεως τῆς σελήνης. τὸ δὲ γενόμενον εἰς τὸν γ΄ τόπον ἡ ὥρα τῆς τελείας ἀποκαταστάσεως τῆς σελήνης. οὗτος ὁ ψῆφος τότε γίνεται ἡνίκα ἐκλείπει μέρος τῆς σελήνης.

Διαίρεσις ε΄. Ὅταν ἐκλείπῃ ἡ σελήνη πᾶσα, ἡ διάμετρος τῆς σελήνης ἀπὸ τοῦ ἡμίσεος τῶν $\overline{\beta}$ διαμέτρων ἀφαιρεῖται. εἴ τι καταλειφθῇ, ἀπὸ τοῦ τετραγώνου ἐκείνου τὸ τετράγωνον τοῦ πλάτους τῆς σελήνης ἀφαιρεῖται, καὶ τοῦ καταλειφθέντος ὁ πολυπλασιασμὸς κρατεῖται, καὶ εὑρίσκονται τὰ λεπτὰ τῆς στάσεως. ἐκεῖνα τηροῦνται εἰς τὰ $\overline{\text{κδ}}$, καὶ τὸ γενόμενον μερίζεται εἰς τὴν τελείαν μετάβασιν τοῦ νυχθημέρου. εἴ τι οὖν ἔπειτα εὑρεθῇ, ὧραί εἰσι τῆς στάσεως. εἶτα ἡ ὥρα τῆς διαμέτρου εἰς $\overline{\varepsilon}$ τόπους τίθεται. καὶ ἡ πεσοῦσα ὥρα ἀπὸ τῆς α΄ μοίρας ἀφαιρεῖται καὶ τῇ ε΄ ἑνοῦται. καὶ αὖθις αἱ ὧραι τῆς στάσεως ἀπὸ τῆς β΄ μοίρας ἀφαιροῦνται καὶ τῇ δ΄ ἑνοῦται.

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1 κατὰ τὸ νυχθήμερον] τοῦ νυχθημέρου Vv ‖ 5 πρώτου Vv 5–6 εἴ... σελήνης in marg v ‖ 6 δεύτερον V ‖ 7 τρίτον Vv ‖ 9 ἐκλίπῃ Vv ‖ 10 δύο V ‖ 11 σελήνης om v ‖ 16 πρώτης Vv | πέμπτῃ V ‖ 17 δευτέρας V | τετάρτῃ V

Ὁ α΄ οὖν τόπος ἀπὸ τῶν ε̅ γίνεται ἀρχὴ τῆς ἐκλείψεως τῆς σελήνης, ὁ β΄ ἡ ὥρα τῆς τελείας ἐκλείψεως, ὁ γ΄ ἡ ὥρα τῆς μέσης ἐκλείψεως, ὁ δ΄ ἡ ἀρχὴ τῆς ὥρας τῆς ἀποκαταστάσεως τῆς σελήνης, καὶ ὁ ε΄ τόπος ἡ τετελειωμένη ὥρα καθ' ἣν ἀποκαθίσταται ἡ σελήνη.| ἔπειτα αἱ πεσοῦσαι ὧραι διπλασιάζονται. f84rV
εἴ τι οὖν εὑρεθῇ, ὥρα ἐστὶν ἀπὸ τῆς ἀρχῆς τῆς ἐκλείψεως τῆς σελήνης μέχρι τῆς τελείας ἀποκαταστάσεως.

Κεφάλαιον β΄. Περὶ τῆς ἐκλείψεως τῆς σελήνης διὰ τῶν κανονίων

Τὸ πλάτος τῆς σελήνης ἐκβάλλεται | εἰς τὸν καιρὸν τῆς διαμέτρου ἡλίου f142rL
καὶ σελήνης καὶ φυλάττεται. ἔπειτα γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς μεταβάσεως ἡλίου καὶ σελήνης. καὶ κατ' ἐναντίον τοῦ πλάτους κρατοῦνται τὰ λεπτὰ τοῦ αὐθημερινοῦ καὶ τηροῦνται. εἶτα αὖθις γίνεται εἰσέλευσις κατ' ἐναντίον τοῦ εἰρημένου πλάτους τῆς σελήνης εἰς τὸ κανόνιον τῆς κρύψεως τῆς σελήνης εἰς τὸ πορρώτερον μῆκος εἰς τὰ γ̅ κανόνια, καὶ κρατοῦνται οἱ δάκτυλοι | τῆς πεσούσης ὥρας. ἐκείνη οὖν ἡ ὥρα τῆς στάσεως καὶ ἡ ὄρθωσις f303vv
ἑκάστου ἰδίᾳ καὶ ἰδίᾳ φυλάττονται. εἶτα ἡ ὄρθωσις ἑκάστου εἰς τὰ λεπτὰ τοῦ αὐθημερινοῦ τηρεῖται. εἴ τι εὑρεθῇ, ἑνοῦται εἰς ἕκαστον τῶν φυλαχθέντων ὀρθώσεων ἐκείνων ἰδίᾳ καὶ ἰδίᾳ. ὅπερ οὖν εὑρεθῇ γίνεται τέλειον.

1 πρῶτος Vv | δεύτερος V ‖ 2 τρίτος Vv | τέταρτος V ‖ 3 πέμπτος v ‖ 13 τρία Vv

Ἔπειτα τηροῦνται οἱ δάκτυλοι τῆς ἐκλείψεως. εἴπερ πλείονές εἰσι τῶν $\overline{\iota\beta}$, τελεία γίνεται ἔκλειψις τῆς σελήνης, καὶ πρὸς καιρὸν εἰς τὴν ἔκλειψιν ἵσταται. εἰ δὲ $\overline{\iota\beta}$ δάκτυλοί εἰσιν, ἡ σελήνη πᾶσα ἐκλείπει ἀλλ' οὐχ ἵσταται εἰς τὴν ἔκλειψιν. εἰ δὲ οἱ δάκτυλοι ἐλάττονες τῶν $\overline{\iota\beta}$ ἐκλείπει μέρος τῆς σελήνης ὅσον ἀναφανῇ εἰς τοὺς δακτύλους τῆς διαμέτρου.

Ἐκεῖνο τοίνυν χρὴ εἰδέναι πόσον ἐστὶν ἀπὸ τῆς σελήνης. γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς διαμέτρου τῆς σελήνης. καὶ κατ' ἐναντίον τῶν δακτύλων κρατεῖται ὁ ψῆφος τῶν δακτύλων τῆς | ἐπιφανείας τῆς σελήνης. f84vV
εἴ τι οὖν εὑρεθῇ, ἐκεῖ δάκτυλοί εἰσιν ἀπὸ τῆς ἐπιφανείας τῶν δακτύλων τῆς σελήνης πάσης.

Διαίρεσις. Περὶ τοῦ εἰδέναι τὸν καιρὸν τῆς ἐκλείψεως τῆς σελήνης

Οὕτως ἐστὶν ὡς ἐρρέθη | ἐν τῇ δ΄ καὶ ε΄ διαιρέσει τοῦ α΄ κεφαλαίου. f142vL

Διαίρεσις. Περὶ τοῦ καιροῦ τῆς ἐκλείψεως τῆς σελήνης εἴπερ μέρος ταύτης ἐκλείπει κατὰ τὴν νύκτα καὶ μέρος κατὰ τὴν ἡμέραν

Εἰ γίνεται ἡ ἔκλειψις κατὰ τὴν ἡμέραν, ἐὰν ἡ ὥρα τῆς ἐκλείψεως τῆς σελήνης ἀπὸ τῆς ἡμέρας πλείων ᾖ, ἡ ὥρα τῆς ἡμέρας ἀφαιρεῖται ἐξ ἐκείνης.

2–3 εἰς τὴν ἔκλειψιν ἵσταται] ἐκλείπουσα γίνεται L ‖ 3 πᾶσα post ἐκλείπει V ‖ 12 τετάρτῃ Vv | πέμπτῃ Vv | πρώτου Vv ‖ 13 ταύτης om L ‖ 15 γίνεται] γένηται L ‖ 16 ἀπὸ τῆς ἡμέρας πλείων ᾖ] ἡ ὥρα L

εἴ τι καταλειφθῇ, ἀπὸ τῆς νυκτός ἐστιν. εἰ δὲ ἡ ἔκλειψις πᾶσα γένηται κατὰ τὴν νύκτα, ἡ ὥρα τῆς νυκτὸς τῆς ἐκλείψεως πλείων ἐστὶν ἀπὸ τῆς ὥρας τῆς νυκτὸς ἥτις καὶ ἀφαιρεῖται ἐξ ἐκείνης. εἴ τι καταλειφθῇ, ὥρα ἐστὶν ἀπὸ τῆς ἡμέρας.

Ψῆφος γ΄. Περὶ τῆς ἐκλείψεως τοῦ ἡλίου. τοῦτο εἰς $\overline{\gamma}$ διαιρεῖται κεφάλαια.

Κεφάλαιον α΄. Περὶ τῆς καταλήψεως τοῦ καλλίστου καὶ ὡραίου κανονίου τῆς ἐκλείψεως τοῦ ἡλίου

Καὶ γὰρ ὁ ψῆφος τῆς ἐκλείψεως τοῦ ἡλίου μετὰ τοῦ κανονίου ὀφείλει γενέσθαι διὰ τὴν εὐκολίαν διότι ἐὰν γένηται ψηφοφορία κατὰ πολὺ αὕτη ἐκτέταται εἰς μῆκος, καὶ ἔστιν δυσκατάληπτος. ἡμεῖς δὲ τὸ κανόνιον τοῦτο κατὰ πολὺ τεθείκαμεν πρὸς σαφήνειαν. εἰς τοῦτο δὲ τρεῖς ψῆφοι ἐτέθησαν· ὁ α΄ ψῆφος – αἱ ὧραί εἰσι τοῦ μήκους πρὸ τοῦ μέσου τῆς ἡμέρας καὶ μετὰ τὸ μέσον τῆς ἡμέρας, ὁ β΄ – τὸ πλέον καὶ ἔλαττον τῆς ὄψεως εἰς τὸ μῆκος, καὶ ὁ γ΄ – τὸ πλέον καὶ ἔλαττον τῆς ὄψεως εἰς τὸ πλάτος. ἡ ποίησις οὖν τούτου τοῦ κανονίου εἰς τὰς $\overline{\gamma}$ πληροῦνται διαιρέσεις.

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1 γένηται om v ‖ 5 τρίτος v | τρία v ‖ 13–14 εἰς τὸ μῆκος . . . τῆς ὄψεως in marg v ‖ 14 τρίτος v ‖ 15 τρεῖς Vv

| Διαίρεσις α΄. Περὶ τῆς ποιήσεως τοῦ κανονίου τοῦ πλείονος καὶ ἐλάττονος f85rV
| τῆς ὄ|ψεως μετὰ τοῦ πλάτους τῆς πόλεως ἧς τὸ κανόνιον ἐν τῇ τοιαύτῃ οὐκ f143rL, f304rv
ἔστι συντάξει.

Τὸ κανόνιον οὖν τοῦτο ἀπὸ $\overline{\beta}$ γίνεται κανονίων. ἓν ἐκεῖνο ἵνα τὸ πλάτος ἐκείνου ᾗ ἔλαττον τῆς πόλεως ταύτης, καὶ ἕτερον ἵν' ᾗ τὸ πλάτος πλέον. ὁ ψῆφος δὲ τούτου ἐρρέθη πρότερον εἰς τὸ β΄ κεφάλαιον τῆς θ΄ μοίρας. ἡμεῖς δὲ τοῦτο τὸ κανόνιον τεθείκαμεν εἰς τὸ πλάτος τῶν $\overline{\lambda\eta}$.

Διαίρεσις β΄. Περὶ τῆς ἐκβολῆς τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως εἰς τὴν μοῖραν τοῦ ἡλίου καὶ τῆς σελήνης ἡνίκα γίνωνται κατὰ σύνοδον

Ἐκείνη οὖν ἡ μοῖρα ὅταν οὐκ ᾗ εἰς τὴν ἀρχὴν τοῦ ζῳδίου, ὁ ψῆφος μετὰ τῶν $\overline{\beta}$ ζῳδίων γίνεται. καὶ ὁ ψῆφος οὗτος ἐρρέθη ἐν τῇ θ΄ μοίρᾳ εἰς τὸ β΄ κεφάλαιον.

Διαίρεσις γ΄. Περὶ της ὀρθώσεως τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως μετὰ τοῦ τόπου τῆς σελήνης ἤγουν μετὰ τῆς ἐν τῷ μικρῷ κύκλῳ ἰδίᾳ καὶ ἰδίᾳ ταύτης κινήσεως

2 –13 -ψέως μετὰ τοῦ πλάτους... τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως in marg v ‖ 4 δύο Vv ‖ 5 ᾗ[1] om v ‖ 6 δεύτερον V | ἐνάτης V v ‖ 8 τῆς ἐκβολῆς om Vv ‖ 11 δύο Vv | ἐνάτῃ V | δεύτερον V ‖ 14 ἰδίᾳ[2]] ἰδίας V

Καὶ οὗτος ὁ ψῆφος ἐρρέθη εἰς τὸ β΄ κεφάλαιον τῆς θ΄ Μοίρας καθεξῆς τῶν ἄλλων.

Τοῦτο οὖν τὸ κανόνιον ἐποιήθη παρ' ἡμῶν ὅτι ἐξέλειπεν ὁ ἥλιος εἰς τὰς $\overline{\text{κε}}$ μοίρας τοῦ Λέοντος. οὗτος ὁ ψῆφος ἐγένετο μέσον τοῦ Λέοντος ξ καὶ τῆς Παρθένου ξ. ὁ ἥλιος δὲ μετὰ τὸ μέσον τῆς ἡμέρας ἐξέλειπεν. διὰ τοῦτο ἐγένετο καὶ τὸ κανόνιον μετὰ τὸ μέσον τῆς ἡμέρας ἐπεὶ οὐκ ἦν χρεία τοῦ πρὸ τοῦ μέσου τῆς ἡμέρας ψήφου τοῦ κανονίου ὥσπερ οὐδὲ τῆς ἐκλείψεως γενομένης πρὸ τοῦ μέσου | τῆς ἡμέρας ἦν χρεία τοῦ μετὰ τὸ μέσον τῆς f143vL ἡμέρας ψήφου τοῦ κανονίου. τὸ πλάτος οὖν τῆς πόλεως ἦν τόσον· $\overline{\text{λη}}$. ταῦτα ἐξεβλήθησαν ἀπὸ τῶν κανονίων τῶν $\overline{\beta}$ τούτων πλατῶν | $\overline{\text{λς}}$ $\overline{\text{μα}}$. εἴ τι ἐξῆλθεν, f85vV ἐτηρήθη εἰς τὰ λεπτὰ τοῦ πλείονος καὶ ἐλάττονος τοῦ ἰδίου. τὸ γοῦν ἐξελθὸν ἐτέθη ἐν τῷ τοιούτῳ κανονίῳ.

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1 δεύτερον Vv | ἐνάτης Vv ‖ 3 ἐξέλιπεν v ‖ 10 δύο Vv

	prîton ™ke‹no ¹ ¢rc¾ toà Lšontoj kaˆ tÁj Parqšnou													deÚteron ™ke‹no[a] ke mo‹rai toà Lšontoj		tÔ plšon kaˆ œlatton tÁj Ôyewj toà „d…ou tÁj sel»nhj			
	ïrai[b]	di¦ t¾n ¢rc¾n toà Lšontoj						di¦ t¾n ¢rc¾n tÁj Parqšnou								ïrai	ærą‹on kanÒnion		tÕ ¼misu toà kanon…ou oÙk ™yhf…qh ™peid¾ ¹ œkleiyij prÒ toà mšsou tÁj ¹mšraj Ãn[g]
		l$[d]		ma		lh		l$		ma		lh		h[i]	l$[i]				
		mÁkoj[d]	pl£toj	mÁkoj	pl£toj	mÁkoj	pl£toj	mÁkoj	pl£toj	mÁkoj	pl£toj	mÁkoj	pl£toj	mÁkoj	pl£toj		mÁkoj	pl£toj	
prÒ toà mšsou tÁj ¹mšraj[g]	z[h]															z			
	$[h]															$			
	e[h]															e			
	d[h]															d			
	g[h]															g			
	b[h]															b			
	a[h]															a			
mšson tÁj ¹mšraj	ƀ	g	id	d	ih	g	ie	h	k	q	kg	h	ka	z	k	ƀ	h	kg	
metà mšsou tÁj ¹mšraj	a	h	i$	$	k	$	iz	b	kd	ƀ	kz	b	kq	g	kd	a	d	kh	
	b	iz	k	ie	kd	iz	ka	ib	kq	q	la	ia	l	ib	kh	b	id	lg	
	g	kd	kd	kb	kh	kd	ke	iq	lg	i$	l$	ih	ld	iq	lb	g	kb	lz	
	d	la	kh	kz	lb	l	kq	kd	lz	ka	lq	kg	lh	kd	l$	d	kh	mb	
	e	le	lg	l	le	lg	ld	kz	m	kd	mb	k$	ma	kz	m	e	la	mb	
	$	ld[c]	lz	la	lh[e]	lb	lg	kh	mb	kz	mg[f]	kz	mg	kh	mb	$	lg	mq	
	z	lg	m	kh	mb	la	m	kh	mg	kh	me	kh	md	kh	mg	z	ld	n	

a ™ke‹nou v | b not in v | c not in V | d these two rows reversed in v from column 3 to column 16 | e lb v | f md v | g this sentence not in L | h this row not in L | i not in L

Κεφάλαιον β΄. Περὶ τοῦ ψήφου τῆς ἐκλείψεως τοῦ ἡλίου καὶ διὰ τοῦ κανονίου τούτου καὶ διὰ τοῦ ψήφου. τοῦτο εἰς $\overline{\gamma}$ ἐτέθη διαιρέσεις.

Ἐπεὶ χρεία γενέσθαι τὴν μέθοδον ταύτην πρὸ τούτου, ἀεὶ γίνεται τὸ αὐθημερινὸν | τοῦ ἡλίου καὶ τῆς σελήνης καὶ τοῦ ἀναβιβάζοντος εἰς $\overline{\alpha}$ χρόνον, f304vv ἡμέραν παρ' ἡμέραν. ἔπειτα ἐκβάλλονται καὶ πᾶσαι αἱ σύνοδοι. εἶτα ζητεῖται | σύνοδος ὅτι συμβαίνει αὕτη κατὰ τὴν ἡμέραν ἢ ἐγγὺς τῆς ἡμέρας τοσοῦτον 144rL ἵν' ᾖ ἐξ ἐκείνου μέχρι τῆς ἡμέρας ἔλαττον τῆς μίας ὥρας.

Τὸ πλάτος οὖν τῆς σελήνης ἐκβάλλεται εἰς τὴν ὥραν τοῦ συνόδου. ἐὰν οὖν τὸ πλάτος | τῆς σελήνης νότιον, ἔλαττον ὀφείλει εἶναι τῶν $\overline{\lambda\epsilon}$ λεπτῶν· f86rV εἰ δὲ εἰς τὸ βόρειον, ἔλαττον ὀφείλει εἶναι τῶν $\overline{\rho\gamma}$ λεπτῶν. καὶ ἐν τούτῳ γίνεται ἡ ἔκλειψις. εἰ δ' ἐστὶ πλέον τούτων, ἔκλειψις οὐ γίνεται.

Πρῶτον τοίνυν πρὸ τοῦ εἰσελθεῖν εἰς τὸν ψῆφον τοῦτον δεῖ εἰπεῖν τίσι μεθόδοις χρῆσθαι χρή. πρῶτον δεῖ εἰδέναι τὴν σύνοδον ἐκείνην καθ' ἣν μέλλει

3 τρεῖς Vv ‖ 5 ἀεὶ om Vv ‖ 6 καὶ[1] om. Vv | ἕνα Vv ‖ 7 καὶ om. Vv ‖ 12 ὀφείλει εἶναι om. Vv ‖ 13 τούτων] τούτου Vv

γενέσθαι ἡ ἔκλειψις, εἶτα καὶ τὰς μέχρι τῆς συνόδου ὥρας, ἔπειτα κατὰ ποίαν μοῖραν γίνεται ἡ σύνοδος. καὶ τὸ αὐθημερινὸν τοῦ ἀναβιβάζοντος τηνικαῦτα καταλαμβάνεται. τούτων δὲ καταληφθέντων καταλαμβάνεται καὶ ἡ διάμετρος τοῦ ἡλίου καὶ ἡ μετάβασις τοῦ ἡλίου ὡσαύτως εἰς μίαν ὥραν. καὶ ἡ διάμετρος τῆς σελήνης καὶ αὕτη ἐκβάλλεται καὶ ἡ μετάβασις αὐτῆς εἰς τὴν μίαν ὥραν. ἔπειτα καὶ ἡ τελεία μετάβασις τῆς σελήνης εἰς μίαν ὥραν καταλαμβάνεται καὶ ἡ ὥρα τοῦ μέσου τῆς ἡμέρας.

Ταῦτα πάντα καταλαμβάνονται καὶ τηροῦνται. εἶτα καὶ ἡ τύχη τοῦ καιροῦ ἐκείνου ἡνίκα γίνεται ἡ σύνοδος ἡλίου καὶ σελήνης κρατεῖται. εἶτα τὸ ζῴδιον, αἱ μοῖραι καὶ τὰ λεπτὰ τῆς συνόδου ἡλίου καὶ σελήνης ἀφαιροῦνται ἀπὸ τῆς τύχης τοῦ καιροῦ. εἴ τι οὖν | καταλειφθῇ, μῆκός ἐστι τῶν μοιρῶν τῆς συνόδου. f144vL

Τοῦτο φυλάττεται. ἔπειτα τηρεῖται. ἐὰν τὸ μῆκος ἐκεῖνο $\overline{\rho}$ μοῖραι ὦσι, ἐκείνη ἡ ὥρα ἡ ἐκβληθεῖσα τῆς συνόδου ἡ μέση ὥρα ἐστὶ τῆς ἐκλείψεως. ἐκείνη δὲ ἡ μοῖρα καθ' ἣν ὁ ἥλιος συνοδεύει τῇ σελήνῃ ὁ τόπος ἐστὶ τῆς θεωρίας τῆς σελήνης. ἐνταῦθα δὲ οὐ χρεία ταύτης γενέσθαι τὴν ὥραν τῆς συνόδου ὀρθήν. ἐκεῖνο οὖν τὸ μῆκος εἴπερ ἐστὶ ἔλαττον τῶν $\overline{\rho}$ μοιρῶν, ἐκείνη ἡ μοῖρα καθ' ἣν ὁ ἥλιος συνοδεύει τῇ σελήνῃ εἰς τὸ μέρος τῆς ἀνατολῆς· εἰ δὲ | τὸ μῆκος πλέον τῶν $\overline{\rho}$, ἐκείνη ἡ μοῖρα τῆς συνόδου εἰς τὸ μέρος τῆς δύσεως. f86vV

Μέσον οὖν τῶν $\overline{\beta}$ τούτων ἐστὶ χρεία τῆς ὀρθώσεως τῆς ὥρας ἐκείνης ὅπερ

1 ἡ sup lin v ‖ 2 αὐθημερινὸν + δὲ L ‖ 9 ἡ σύνοδος sup lin v ‖ 19 δύο Vv | χρεία + μετὰ LVv

ἐστὶν εἰς $\overline{\gamma}$ διαιρέσεις.

Διαίρεσις α΄. Περὶ τῆς ὀρθώσεως τῆς ὥρας τῆς μέσης ἐκλείψεως

Ἐκεῖνο οὖν εἰς δύο τινά ἐστιν· ἓν μετὰ τοῦ ψήφου καὶ ἓν διὰ τοῦ κανονίου. τὸ γοῦν διὰ τοῦ ψήφου $\overline{\varepsilon}$ τινῶν δεῖται. ἓν ἐκεῖνο ἵνα καταλειφθῇ ἡ ὥρα τῆς συνόδου· ἀπ' ἐκείνης δὲ τῆς ὥρας ἡ τύχη ὀφείλει καταλειφθῆναι καὶ τὸ ι΄ οἴκημα καὶ ἡ ἀνάβασις τοῦ ί οἰκήματος. τοῦτο τηρεῖται. β΄ ἡ ἀνάβασις τῆς σελήνης καταλαμβάνεται. τρίτον τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ ἡλίου καὶ τῆς σελήνης εἰς τὸν κύκλον τῆς ἀναβάσεως | γινώσκεται. ἔπειτα 305rv ἀφαιρεῖται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ ἡλίου ἀπὸ τῆς σελήνης. τὸ οὖν κατα|λειφθὲν κρατεῖται. δ΄ εἰς ἐκεῖνο ὅπως καταλειφθῇ ἡ γωνία τοῦ πλάτους f145rL καὶ τοῦ μήκους. τὸ ε΄ ἡ κατάληψις τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως τῆς σελήνης εἰς τὸ μῆκος καὶ πλάτος. εἰς τοῦτον δὲ τὸν ψῆφον ἡμεῖς ἀπὸ τῶν $\overline{\varepsilon}$ τούτων οὐκ ἔσμεν ἐν χρείᾳ. οὗτοι δὲ οἱ $\overline{\varepsilon}$ ψῆφοι ἀνὰ τριῶν ὀφείλουσι μεθοδευθῆναι.

Ὁ ψῆφος τῆς ἐκλείψεως τοῦ ἡλίου διὰ τοῦ κανονίου. τηρεῖται ἡ ὥρα τῆς σονόδου καὶ ἡ ὥρα τοῦ μέσου τῆς ἡμέρας. ἐὰν οὖν ἐξισοῦνται καὶ αἱ $\overline{\beta}$ κατὰ τοὺς ψήφους, εἰς τὸ ὡραῖον κανόνιον κατ' ἐναντίον τοῦ μέσου τῆς ἡμέρας

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1 τρεῖς Vv ‖ 3 οὖν om. v ‖ 4 πέντε Vv ‖ 6 δεύτερα v ‖ 7 τοῦ om. v ‖ 8 τῆς om. Vv ‖ 10 τέταρτον Vv ‖ 11 πέμπτον v ‖ 16 δύο V

γίνεται εἰσέλευσις, καὶ κρατεῖται τὸ πλέον καὶ ἔλαττον τῆς | ὄψεως εἰς τὸ f87rV
μῆκος. ἐὰν οὖν ἡ ὥρα τῆς συνόδου ἀπὸ τῆς ὥρας τοῦ μέσου τῆς ἡμέρας ἐλάττων, ἐκείνη ἀφαιρεῖται ἀπὸ τῆς ὥρας ταύτης. εἴ τι καταλειφθῇ, ἡ ὥρα τοῦ μήκους ἐστὶ πρὸ τοῦ μέσου τῆς ἡμέρας. εἰ δὲ ἡ ὥρα τῆς συνόδου πλείων τῆς ὥρας τοῦ μέσου τῆς ἡμέρας, ἡ ὥρα τοῦ μέσου τῆς ἡμέρας ἐξ ἐκείνης ἀφαιρεῖται. εἴ τι καταλειφθῇ, ἡ ὥρα τοῦ μήκους ἐστὶ μετὰ τὸ μέσον τῆς ἡμέρας.

Τοῦτο οὖν εἴτε πρὸ τοῦ μέσου εἴτε μετὰ τὸ μέσον τῆς ἡμέρας ἐστίν, ἡ ὥρα τοῦ πρώτου μήκους λέγεται. ἔπειτα κατ' ἐναντίον τῆς ὥρας ἐκείνης γίνεται εἰσέλευσις εἰς τὸ ὡραῖον κανόνιον, καὶ κρατεῖται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως εἰς τὸ μῆκος, ὅπερ λέγεται πλέον καὶ ἔλαττον τῆς ὄψεως α΄.

Τοῦτο οὖν | τὸ πλέον καὶ ἔλαττον τῆς ὄψεως μερίζεται εἰς τὴν τελείαν f145vL
μετάβασιν τῆς σελήνης εἰς μίαν ὥραν. εἴ τι εὑρεθῇ, ἐκεῖνο ὥρα τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως τοῦ α΄. αὕτη ἡ ὥρα μετὰ τῆς ὥρας τοῦ μήκους τοῦ α΄ ἀεὶ ἑνοῦται, καὶ ἡ ὥρα τοῦ β΄ μήκους εὑρίσκεται. ἔπειτα κατ' ἐναντίον τῆς ὥρας ταύτης τοῦ β΄ μήκους κρατεῖται τὸ πλέον καὶ ἔλαττον τῆς ὄψεως εἰς τὸ μῆκος, καὶ τοῦτο αὖθις εἰς τὴν τελείαν μετάβασιν τῆς σελήνης εἰς τὴν μίαν ὥραν μερίζεται. εἴ τι οὖν εὑρεθῇ, ὥρα ἐστὶ τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως εἰς τὸ μῆκος τὸ β΄. καὶ αὕτη ἡ ὥρα μετὰ τῆς ὥρας ἐκείνης τοῦ

3 ἐκείνη + ἡ V ‖ 4 τῆς iter. v ‖ 11 πρώτον Vv ‖ 14 πρώτου Vv ‖ 15 πρώτος Vv | δευτέρου Vv ‖ 16 δευτέρου Vv ‖ 18 οὖ om. Vv ‖ 19 δεύτερον Vv

μέσου τῆς ἡμέρας ἑνοῦται. καὶ εἴ τι ἐξέλθῃ, ἐκεῖνο ὥρα ἐστὶ τοῦ γ΄ μήκους. καὶ αὖθις κατ' ἐναντίον τῆς ὥρας ταύτης γίνεται εἰσέλευσις εἰς τὸ ὡραῖον κανόνιον.

Καὶ γίνεται ὁ ψῆφος πολλάκις οὕτως | καὶ τετράκις καὶ ἑξάκις μέχρι ἂν f87vV
τὰ $\overline{\beta}$ πλείονα καὶ ἐλάττονα τῆς ὄψεως, ἅπερ ἐκρατήθησαν, ἐξισωθῶσι κατὰ τοὺς ψήφους. ἐκεῖνο οὖν τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τὸ ὕστερον τέλειόν ἐστιν, καὶ ἐκείνη ἡ ὥρα τοῦ ὑστέρου μήκους τελεία. ἔπειτα τηρεῖται ἡ μοῖρα ἐκείνη ἡνίκα γίνεται ὁ ἥλιος κατὰ σύνοδον τῆς σελήνης. ἐὰν ᾖ εἰς τὸ μέρος τῆς ἀνατολῆς, τοῦτο τὸ πλέον καὶ ἔλαττον | τῆς ὄψεως τοῦ μήκους ὅπερ f305vv
ἐξῆλθεν ὕστερον ἀφαιρεῖται | ἀπὸ τῆς μοίρας ἐκείνης· εἰ δὲ εἰς τὸ μέρος τῆς f146rL
δύσεως, ἑνοῦται ἐκείνῃ. εἴ τι οὖν εὑρεθῇ, τόπος ἐστὶ τῆς θεωρίας τῆς σελήνης εἰς τὸ μέσον τῆς ἐκλείψεως. ἔπειτα ἐὰν ἡ μοῖρα ἐκείνη εἰς τὸ μέρος ᾖ τῆς ἀνατολῆς, ἐκείνη ἡ ὥρα τοῦ τελείου μήκους ἀφαιρεῖται ἀπὸ τῆς ὥρας τοῦ μέσου τῆς ἡμέρας· εἰ δὲ πρὸς τὸ μέρος τῆς δύσεως, ἑνοῦται ταύτῃ. εἴ τι εὑρεθῇ, ὥρα ἐστὶ τῆς μέσης ἐκλείψεως.

Διαίρεσις β΄. Περὶ τοῦ εἰδέναι εἰ γένηται ἔκλειψις ἢ οὔ, καὶ εἰ γένηται πόση μέλλει εἶναι

Ἐπεὶ βουλόμεθα ποιῆσαι τὸν ψῆφον τοῦτον, τὸ αὐθημερινὸν τοῦ κατα-

1 τρίτου Vv ‖ 4 δ΄ L, τετετράκις V ‖ 5 δύο Vv ‖ 12 ᾖ post ἀνατολῆς v ‖ 16 δευτέρα v

βιβάζοντος ἐκ τοῦ τόπου τῆς θεωρίας τῆς σελήνης ἀφαιρεῖται ἀεί, καὶ ἐξέρχεται ἡ μοῖρα τοῦ πλάτους τῆς σελήνης. κατ' ἐναντίον οὖν τῆς μοίρας τοῦ πλάτους τούτου τῆς σελήνης γίνεται εἰσέλευσις εἰς τὸ κανόνιον, καὶ κρατεῖται τὸ πλάτος τῆς σελήνης. καὶ ἐκεῖνο πλάτος λέγεται τέλειον.

Εἶτα τηρεῖται εἰ βόρειόν ἐστι ἢ νότιον. ἐκεῖνο φυλάττεται. ἔπειτα κατ' ἐναντίον τῆς ὥρας ἐκείνης τοῦ τελείου μήκους γίνεται εἰσέλευσις εἰς τὸ ὡραῖον κανόνιον, καὶ τὸ πλέον καὶ ἔλαττον τῆς ὄψεως τοῦ πλάτους κρατεῖται καὶ φυλάττεται. ἔπειτα τηρεῖται εἰ βόρειον ἢ νότιον. ἐὰν οὖν τὸ τέλειον πλάτος τῆς σελήνης μετὰ τοῦ πλείονος καὶ ἐλάττονος τούτου τῆς ὄψεως τοῦ πλάτους βόρεια | ἢ νότια, ἑνοῦνται καὶ τὰ $\overline{\beta}$. εἰ δὲ τὸ ἓν βόρειον καὶ τὸ ἕτερον f146vL
νότιον, τὸ ἔλαττον ἀφαιρεῖται τοῦ πλείονος. εἴ τι καταλειφθῇ, πλάτος ἐστὶ τῆς σελήνης στερεόν. τοῦτο τηρεῖται. ἔπειτα ἡ | διάμετρος τοῦ ἡλίου ἑνοῦται f88rV
τῇ διαμέτρῳ τῆς σελήνης, καὶ τὸ εὑρεθὲν μερίζεται εἰς $\overline{\beta}$. εἴ τι εὑρεθῇ, ἐκεῖνο ἥμισυ λέγεται τῶν $\overline{\beta}$ διαμέτρων. τοῦτο τίθεται εἰς τὴν ταῦλαν. καὶ ἐκεῖνο τὸ στερεὸν πλάτος τῆς σελήνης πλησίον τούτου τίθεται καὶ τηρεῖται. ἐὰν τὸ στερεὸν πλάτος ἐξισοῦται τῷ ἡμίσει τῶν $\overline{\beta}$ διαμέτρων ἢ πλέον τούτου, ἔκλειψις οὐ γίνεται· εἰ δ' ἔλαττον, ἐκλείπει.

Ἔπειτα εἰ γένηται χρεία εἰδέναι πόσον ἐκλείψει τοῦ ἡλίου, τὸ στερεὸν ἐκεῖνο πλάτος ἀπὸ τοῦ ἡμίσεος τῶν $\overline{\beta}$ διαμέτρων ἀφαιρεῖται. εἴ τι καταλειφθῇ,

2–4 κατ' ... σελήνης om Vv ‖ 5–8 ἐκεῖνο ... νότιον om. Vv ‖ 10 δύο V ‖ 13 δύο Vv | εὑρεθῇ] ἐξέλθῃ Vv ‖ 14 δύο V ‖ 16 δύο V ‖ 19 δύο V

ἐκεῖνο λεπτὰ λέγονται τῆς ἐκλείψεως. εἶτα τηρεῖται. ἐὰν τὰ λεπτὰ ταῦτα τῆς ἐκλείψεως ἐξισοῦνται τῷ ἡμίσει τῶν $\overline{\beta}$ διαμέτρων, τελεία γίνεται ἔκλειψις τοῦ ἡλίου· εἰ δ' ἐλάττονα τὰ λεπτὰ τῆς ἐκλείψεως τοῦ ἡμίσεος τῶν $\overline{\beta}$ διαμέτρων, μέρος ἐκλείπει τοῦ ἡλίου.

Ἔπειτα τηρεῖται ἡ τελεία ἐκείνη ἔκλειψις μετὰ τῆς διαμέτρου ἡλίου καὶ σελήνης. ἐὰν οὖν καὶ αἱ $\overline{\beta}$ διάμετροι ἴσαι, ὁ ἥλιος τέλειον ἐκλείψει καὶ οὐ βραδύνει ἐν τῇ ἐκλείψει. εἰ δὲ ἡ διάμετρος τῆς σελήνης πλείων, ὁ ἥλιος ὅλος ἐκλείψει καὶ καιρὸν ἱκανὸν σταθήσεται ἐν τῇ ἐκλείψει. εἰ δὲ ἡ διάμετρος τοῦ ἡλίου πλείων, τὸ μέσον τοῦ ἡλίου ἐκλείψει, ἡ δὲ περιφέρεια | οὐκ ἐκλείψει. f147rL

Εἶτα τηρεῖται ἡ ἔκλειψις ἐκείνη ἡ κατὰ μέρος γινομένη καὶ οὐχὶ τελεία πόσοι δάκτυλοί εἰσιν ἀπὸ τῆς διαμέτρου τοῦ ἡλίου μετὰ τοῦ ψήφου ἐκείνου, τῆς τελείας διαμέτρου τοῦ ἡλίου $\overline{\iota\beta}$ δακτύλων οὔσης. ἐπεὶ οὖν χρεία γενέσθαι τὸν ψῆφον τοῦτον, τὰ λεπτὰ ἐκεῖνα τῆς ἐκλείψεως τὰ εὑρεθέντα πρὸ τούτου τηροῦνται | εἰς τὰ $\overline{\iota\beta}$. εἴ τι εὑρεθῇ, ἐκεῖνο εἰς τὴν διάμετρον τοῦ ἡλίου f88vV
μερίζεται, καὶ εὑρίσκονται οἱ δάκτυλοι τῆς ἐκλείψεως ἀπὸ τῆς διαμέτρου τοῦ ἡλίου.

Διαίρεσις. Περὶ ἐκείνου ὅτι ἀπὸ τοῦ ἡλίου πόσον ἐκλείψει καὶ τῆς καταλήψεως τοῦ καιροῦ διὰ τοῦ κανονίου

2 δύο V ‖ 3 δύο Vv ‖ 6 δύο V

| Ὅταν ἡ ὥρα τῆς μέσης ἐκλείψεως ἐκβληθῇ μετὰ τοῦ στερεοῦ πλάτους f306rv
τῆς σελήνης, ἔπειτα κατ' ἐναντίον τοῦ ἰδίου τῆς σελήνης ἢ τῆς μεταβάσεως
ἐκείνης γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς μεταβάσεως ἡλίου καὶ σελήνης,
καὶ τὰ λεπτὰ τοῦ αὐθημερινοῦ κρατοῦνται ἐκεῖθεν καὶ φυλάττονται. ἔπειτα
5 κατ' ἐναντίον τοῦ στερεοῦ πλάτους τῆς σελήνης γίνεται εἰσέλευσις εἰς τὸ
κανόνιον τῆς ἐκλείψεως τοῦ ἡλίου, καὶ κρατοῦνται οἱ δάκτυλοι καὶ ὄρθωσις
ἐκείνων καὶ ἡ πεσοῦσα ὥρα μετὰ τῆς ὀρθώσεως ταύτης. καὶ τηρεῖται ἕκαστον
ἰδίᾳ καὶ ἰδίᾳ. ἔπειτα τὰ λεπτὰ τοῦ αὐθημερινοῦ τηροῦνται εἰς τὴν ὄρθωσιν
ἑκάστου. καὶ εἴ τι ἐξέλθῃ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. καὶ ἐκεῖνο
10 ἀεὶ ἑνοῦται εἰς ἐκεῖνα εἰς τοὺς δακτύλους καὶ εἰς τὴν ὥραν, καὶ γίνονται οἱ
δάκτυλοι τέλειοι καὶ ἡ | πεσοῦσα ὥρα τελεία. f147vL

Εἶτα τηρεῖται. ἐὰν οἱ δάκτυλοι ἐκεῖνοι $\overline{\iota\beta}$ ἢ πλείονες, ὁ ἥλιος ὅλος ἐκλείψει·
εἰ δὲ ἔλαττον τῶν $\overline{\iota\beta}$, ὅλος οὐκ ἐκλείψει. τηρεῖται οὖν πόσον ἀπὸ τῶν $\overline{\iota\beta}$
δακτύλων ἐκλείψει. εἶτα ἐξ ἐκείνου γίνεται ὁ ψῆφος. καὶ οὗτοι οἱ δάκτυλοι
15 διάμετρος τοῦ ἡλίου γίνονται.

Εἰ οὖν χρεία καταλειφθῆναι τοὺς δακτύλους τῆς ἐπιφανείας τοῦ ἡλίου κατ'
ἐναντίον τῶν δακτύλων τῆς διαμέτρου τοῦ ἡλίου, γίνεται εἰσέλευσις εἰς τὸ
κανόνιον, καὶ κρατεῖται ὁ εὑρεθεὶς ψῆφος τῆς ἐπιφανείας τῶν δακτύλων τοῦ
ἡλίου. καὶ τοῦτό ἐστιν οἱ δάκτυλοι | τῆς ἐκλείψεως. ἐπεὶ οὖν ἡ πεσοῦσα ὥρα f89rV

12 πλείονες] πλέον δὲ v ‖ 13 εἰ δὲ... οὐκ ἐκλείψει in marg v ‖ 16 καταλειφθῆναι χρεία Vv

ἡ τελεία ἐγένετο δήλη, ἡ ὥρα τῆς μέσης ἐκλείψεως εἰς $\overline{\gamma}$ τόπους τίθεται ἐν τῇ ταύλᾳ. καὶ ἡ πεσοῦσα ὥρα ἀπὸ τοῦ α΄ ἀφαιρεῖται καὶ τῷ τρίτῳ ἑνοῦται, καὶ εὑρίσκονται οἱ καιροὶ τῆς ἐκλείψεως ὡς ἐρρέθη πρὸ τούτου.

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1 τρεῖς Vv ‖ 2 πρώτου Vv

Μοιρα ια΄. Περὶ τῆς καταλήψεως ἐκείνης ὅτι ἡ σελήνη πότε ἵνα φανῇ νέα ὡσαύτως καὶ οἱ ἀστέρες πότε ἵνα φανῶσι μετὰ τὴν σύνοδον τοῦ ἡλίου

Ἐκεῖνο τοίνυν ῥηθήσεται περὶ τῆς σελήνης ὃ θεωρεῖται παρ' ἡμῶν. καὶ ὁ ψῆφος δὲ οὗτος λίαν ἐστὶ δυσχερὴς διὰ τοῦτο ὅτι οἱ ἀρχαῖοι ἐκεῖνοι περὶ τούτου οὐκ εἶπόν τι. διὰ τί οὖν οὐκ εἶπόν τι; δι' ἐκεῖνο ὅτι ἡ ἀρχὴ τῶν μηνῶν ἀπὸ τῆς σελήνης ἀπὸ τοῦ καιροῦ ἐκρατεῖτο ἐκείνου παρ' αὐτοῖς | ἡνίκα f148rL μετὰ σύνοδον ἐγένετο ἡ διάστασις τῆς σελήνης ἀπὸ τοῦ ἡλίου. ἐπεὶ οὖν χρεία ἦν τῶν Περσῶν εἰς τοῦτο διὰ τὴν νηστείαν καὶ τὰ πάσχα καὶ τὰς μεγάλας τούτων ἡμέρας, αὗται δὲ αἱ μεγάλαι τούτων ἡμέραι διὰ τῆς θεωρίας τῆς σελήνης νέας γίνονται δῆλαι, ἡμεῖς τοίνυν τεθείκαμεν ἐν τῇ βίβλῳ ταύτῃ ὅπερ οἱ ἀστρονόμοι ἐκεῖνοι ἐν ταῖς βίβλοις τούτων τεθείκασιν. καὶ μετὰ τοῦ ψήφου καὶ διὰ τοῦ κανονίου καὶ ἄλλα τινὰ ὧν ἦν τούτοις χρεία, οὐκ ἀπ' ἐκείνων τῶν ψήφων ὧν ἴσως ὑπολάβοι ἄν τις οὐ δυσχερῶν, ἀλλ' ἐξ ἐκείνων τῶν ψήφων οὐχὶ τῶν δοκούντων ἀποτροπαίων τῆς πίστεως, ἀλλὰ τῶν κατὰ πολὺ λυσιτελούντων εἰς τὴν ταύτην. δυσχερὲς οὖν εὑρεθῆναι τοιοῦτον ψῆφον ἐν ταῖς βίβλοις τῶν ἄλλων διὰ τὸ ὕψος | τούτου. f306vv

Καὶ ὡς ἐτέθη δὲ | οὗτος ὁ ψῆφος εἰς τὸ βιβλίον τοῦτο ἐν ἄλλῳ οὐκ ἄν f89vV τις εὕροι. διὰ τί οὖν ἔγωγε τοιοῦτον ψῆφον θαυμάσιον ἐν τούτῳ τέθηκα τῷ βιβλίῳ; δι' ἐκεῖνο ὅτι οἱ μῆνες τῆς σελήνης παρὰ τῶν Περσῶν διὰ τῆς θεωρίας

1 ἑνδεκάτη Vv ‖ 5 διὰ ... ὅτι] διὰ τί. διότι Vv ‖ 7 διάστασις] διάβασις cum ςτα sup β v ‖ 8 νηστείαν + τούτων Vv

τῆς σελήνης φανείσης νέας κρατοῦνται, οὐχὶ διὰ τοῦ μέσου ψήφου. οἷος οὖν βούλεται ὠφεληθῆναι ἀπὸ τούτου τοῦ ψήφου ὀφείλει εἰδέναι | ὅτι πάντων τῶν f148vL ἀνθρώπων ἡ ὄψις οὐχ ἡ αὐτή, καὶ σελήνη νέα εἰς τὸν αὐτὸν ἀεὶ τόπον οὐ φαίνεται, καὶ κατὰ πᾶσαν δὲ πόλιν ἄλλως θεωρεῖται καὶ ἄλλως. ἐκεῖνος οὖν ὁ ζητῶν περὶ τῆς θεωρίας τῆς σελήνης νέας ἐὰν οὐκ ἐπίσταται ζητῆσαι τοῦτο καὶ πόθεν, πάντως ἀπολιμπάνεται κενός, καὶ ἐπὶ τοσοῦτον δὲ μοχθήσῃ ἂν πρὸς τὸν οὐρανὸν διὰ τῆς ὄψεως ὥστε ἀμβλυωπῆσαι τοῦτον περὶ τὴν ὄψιν ὥστε καὶ τῆς σελήνης φανείσης παρὰ πάντων μὴ δυνηθῆναι ἔπειτα τοῦτον ταύτην θεάσασθαι ἔστ' ἂν δύνῃ. ὅσον οὖν ἄρα καὶ ἔστιν ὁ ἄνθρωπος συνετός, μετὰ τοῦ ψήφου τούτου καὶ τῆς καταλήψεως τῆς ἀναβάσεως τῆς σελήνης εἰς τὸν καιρὸν τῆς θεωρίας ταύτης καὶ τοῦ σημείου ἐκείνης εἰς τὸν οὐρανὸν φανερωθήσεται εἰς ἕνα τόπον αὐτῷ εὐθὺς ἀναβλέψαντι εἰς τὸν οὐρανόν. ἡ μέθοδος δὲ τῆς τέχνης ταύτης εἰς ε̅ διαιρεῖται κεφάλαια.

Κεφάλαιον α΄. Περὶ τῶν ψήφων ἐκείνων ὧν χρεία εἰς τὸν ψῆφον τοῦτον. τοῦτο τὸ κεφάλαιον εἰς ὄκτω διαιρεῖται .

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9 ἔστ' Vv ‖ 12 αὐτῷ εὐθὺς ἀναβλέψαντι] ἅμα τοῦ ἀναβλέψαι τοῦτον L

Διαίρεσις α΄. Εἰς τὴν κατάληψιν τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ τῆς σελήνης εἰς ἐκεῖνον τὸ καιρὸν ὅτι ἡ μοῖρα τοῦ | αὐθημερινοῦ τῆς σελήνης f90rV κατέρχεται δύνουσα

Καὶ ὁ ψῆφος δὲ οὕτως ἐστὶν | ὅτι ἡ μετάβασις τῆς σελήνης εἰς μίαν ὥραν f149rL καταλαμβάνεται καὶ ἀφαιρεῖται ἀπὸ τῶν $\overline{\text{ιε}}$. εἴ τι καταλειφθῇ, ἐκεῖνο ταχεῖα κίνησίς ἐστι τῆς ὥρας ἐκείνης. τοῦτο τηρεῖται. ἔπειτα τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης εἰς τὸ μέσον τῆς κθ΄ ἡμέρας εἰς τὸν μῆνα τῶν Ἀράβων καταλαμβάνεται.

Εἶτα κατ' ἐναντίον ἑκάστου αὐθημερινοῦ γίνεται εἰσέλευσις εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης μετὰ εὐθείας γραμμῆς, καὶ κρατεῖται ὁ εὑρεθεὶς ψῆφος τοῦ τόπου τῆς τύχης ἑκάστου μετὰ τῆς εὐθείας γραμμῆς. εἶτα ἡ περισσεία ἑκάστου τόπου τῆς τύχης τηρεῖται καὶ ἑνοῦται τῷ ἡμίσει τόξῳ τῆς ἡμέρας. εἴ τι οὖν εὑρεθῇ, ἐκεῖνο μερίζεται εἰς τὴν ταχεῖαν κίνησιν. εἴ τι ἐξέλθῃ, ὥρα ἐστὶ μέσον τῆς ἡμέρας ἐκείνης καὶ μέσον τῆς καταβάσεως τῆς μοίρας τῆς σελήνης.

Εἶτα ἡ μετάβασις τοῦ ἡλίου καὶ τῆς σελήνης εἰς μίαν ὥραν ζητεῖται, καὶ αὕτη ἑκάστη εἰς τὰς ὥρας ἐκείνας τηρεῖται τοῦ μέσου τῆς ἡμέρας καὶ τῆς καταβάσεως. εἴ τι οὖν εὑρεθῇ ἀπὸ τῆς μεταβάσεως ἑκάστου ἑνοῦται τῷ αὐθημερινῷ ἑκάστου εἰς τὸ ἥμισυ τῆς ἡμέρας. εἴ τι εὑρεθῇ, αὐθημερινὸν

γίνεται τοῦ ἡλίου καὶ τῆς σελήνης εἰς ἐκείνην τὴν ὥραν ὅτι ἡ μοῖρα τῆς σελήνης κατέρχεται. καὶ τὸ αὐθημερινὸν δὲ τοῦ καταβιβάζοντος εἰς ἐκείνην τὴν ὥραν ἐκβάλλεται. ἔπειτα χρείας οὔσης εἰδέναι τὸ αὐθημερινὸν τῆς σελήνης |εἰς τὸν καιρὸν|τῆς καταβάσεως τοῦ ἡλίου, ἡ ὥρα τοῦ μέσου τῆς f307rv, f149vL
ἡμέρας εἰς τὴν μετάβασιν τῆς σελήνης εἰς τὴν μίαν ὥραν τηρεῖται. εἴ τι εὑρεθῇ, εἰς τὸ αὐθημερινὸν τῆς σελήνης τοῦ μέσου τῆς ἡμέρας ἐνοῦται, καὶ εὑρίσκεται τὸ |αὐθημερινὸν τῆς σελήνης εἰς τὴν ὥραν ὅταν κατέρχηται. f90vV

Διαίρεσις β΄. Περὶ τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόπου τῆς σελήνης εἰς τὸ πλέον καὶ ἔλαττον τῆς ὄψεως εἰς τὸ μῆκος καὶ πλάτος

Τόπος δὲ τῆς σελήνης ἐκεῖνος ὅταν κατέρχηται πρὸς δύσιν· οὗτος οὖν ὀρθοῦται. ἡ μέθοδος δὲ αὕτη εὔληπτος ἀπὸ τῶν κανονίων τοῦ πλείονος καὶ ἐλάττονος τῆς ὄψεως γινομένη μετὰ τῶν λεπτῶν ἐκείνων τοῦ αὐθημερινοῦ τῶν ἐν τῷ κανονίῳ τῆς μεταβάσεως ἡλίου καὶ σελήνης καθὼς ἐρρέθη πρότερον εἰς τὴν θ΄ Μοῖραν.

Διαίρεσις γ΄. Περὶ τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόπου τῆς σελήνης μετὰ τῆς ὀρθώσεως τῆς ἡμέρας

1–3 ὅτι ... ὥραν om. v ‖ 8 τῆς ἀσφαλοῦς ὀρθώσεως] τοῦ ἀσφαλοῦς ὀρθώματος L

Κατ' ἐναντίον τῆς μοίρας τοῦ ἡλίου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ὀρθώσεως τῆς ἡμέρας, καὶ τὰ λεπτὰ κρατοῦνται τῆς ὥρας. ἔπειτα εἴ τι εὑρεθῇ, κατ' ἐναντίον τούτου γίνεται εἰσέλευσις εἰς τὸ ὑπὸ τοὺς μῆνας κανόνιον τῶν ὡρῶν, καὶ κρατεῖται ἡ μέση κίνησις. καὶ αὕτη ἀφαιρεῖται ἀπὸ τοῦ αὐθημερινοῦ τῆς σελήνης, καὶ γίνεται τοῦτο τέλειον.

Διαίρεσις δ΄. Περὶ τῆς μοίρας ἐκείνης ἥτις κατέρχεται μετὰ τῆς σελήνης

Τηρεῖται. ἐὰν ἡ τραχηλαῖα | πλάτος οὐκ ἔχῃ, μετὰ τῆς μοίρας ἐκείνης f150rL
ἅμα τοῦ αὐθημερινοῦ κατέρχεται· εἴ δ' ἔχει πλάτος ἀσφαλές, ἡ τραχηλαῖα ἐκείνου κρατεῖται. καὶ ἐκεῖνο εἰς τὴν τραχηλαῖαν τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων | τηρεῖται. εἴ τι εὑρεθῇ, ἐκεῖνο μερίζεται εἰς τὴν τραχηλαῖαν τὴν f91rV
τετελειωμένην τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων. εἴ τι εὑρεθῇ, τραχηλαῖά ἐστιν.

Τὸ τόξον ταύτης κρατεῖται. εἴ τι εὑρεθῇ, ὄρθωσίς ἐστιν. ἐκεῖνο τηρεῖται. εἰ οὖν χρεία γένηται διὰ μιᾶς μεθόδου γενέσθαι τὸν ψῆφον τοῦτον εὐκαταληπτότερον, ἐκείνη ἡ μοῖρα τῆς σελήνης ἥτις εὑρέθη εἰς τὴν μετάβασιν τῆς σελήνης ζητεῖται εἰς τὸ κανόνιον τοῦ πλείονος καὶ ἐλάττονος τοῦ τόπου τῆς τύχης εἰς τὸ γ΄ κλίμα. κατ' ἐναντίον οὖν ἐκείνης, ἤγουν τῶν ἐκεῖσε

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8 ἅμα post ἔχῃ L | κατέρχεται τοῦ αὐθημερινοῦ Vv ‖ 14 γένηται χρεία L | διὰ μιᾶς add et cancell v ‖ 17 τρίτον Vv

ζῳδίων, γίνεται εἰσέλευσις εἰς τὸ κλίμα ὃ βουλόμεθα καὶ εἰς ὃ ἡ πόλις ἡμῶν ἐστιν ἐγγυτέρα, καὶ κρατεῖται ὁ εὑρεθεὶς ψῆφος ἐκεῖ ἀπὸ μοιρῶν καὶ λεπτῶν. καὶ ἐκεῖνο τὸ εὑρεθὲν τηρεῖται εἰς τὸ στερεὸν πλάτος τῆς σελήνης. εἴ τι οὖν εὑρεθῇ, ὄρθωσίς ἐστιν.

Ἔπειτα τηρεῖται τὸ στερεὸν ἐκεῖνο πλάτος. ἐὰν ᾖ βόρειον, ἡ ὄρθωσις ἑνοῦται τῷ τόπῳ τῆς σελήνης· εἰ δὲ νότιον, ἀφαιρεῖται ἐξ ἐκείνου. εἴ τι εὑρεθῇ, ἐκεῖνο μοῖρά ἐστιν ἡ κατερχομένη μετὰ τῆς σελήνης. καὶ εἰ γίνεται ψῆφος | διὰ τὴν μοῖραν ἐκείνην τὴν μετὰ τῆς σελήνης κατερχομένην, f150vL ἀντεστραμμένως τῷ ψήφῳ τούτῳ γίνεται, ἤγουν ἔνθα ἐγένετο ἀφαίρεσις ἐνταῦθα ἕνωσις διὰ τῆς ὀρθώσεως, καὶ ἔνθα ἕνωσις ἐνταῦθα ἀφαίρεσις.

Διαίρεσις ε΄. Περὶ τοῦ τόξου τοῦ φωτός

| Τὸ στερεὸν πλάτος τῆς σελήνης γίνεται τετράγωνον, ἤγουν τηρεῖται εἰς f307vv ἑαυτό, καὶ ἐκεῖνο | μετὰ τοῦ τετραγώνου τοῦ μήκους μέσον ἡλίου καὶ σελήνης f91vV ἑνοῦται. εἴ τι εὑρεθῇ, ὁ πολυπλασιασμὸς ἐκείνου ζητεῖται, καὶ τὸ ἐξελθὸν τόξον ἐστὶ τοῦ φωτὸς ἤγουν τῆς ἐλλάμψεως τῆς σελήνης.

Διαίρεσις ς΄. Περὶ τοῦ τόξου ἐκείνου καὶ τοῦ καιροῦ ὅτι ἐστὶν ὑπὲρ γῆν ἡ σελήνη μετὰ τὴν δύσιν τοῦ ἡλίου

13 ἑαυτό] αὐτὸ Vv

Κρατεῖται ὁ τόπος τῆς τύχης τῆς μοίρας τῆς διαμέτρου τοῦ ἡλίου εἰς τὸ πλάτος τῆς πόλεως. ἐκεῖνο τηρεῖται. ἔπειτα κρατεῖται ὁ τόπος τῆς τύχης τῆς μοίρας ἐκείνης τῆς διαμέτρου μετὰ τῆς μοίρας μεθ' ἧς κατέρχεται ἡ σελήνη εἰς τὸ πλάτος τῆς πόλεως. ἔπειτα ὁ τόπος τῆς τύχης τοῦ ἡλίου ἀφαιρεῖται ἀπὸ τοῦ τόπου τῆς τύχης τῆς σελήνης. εἴ τι καταλειφθῇ, ἐκεῖνό ἐστι τὸ ῥηθέν.

Διαίρεσις ζ'. Περὶ τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου ὑπὸ γῆν κατὰ τὸν καιρὸν ἡνίκα κατέρχεται ἡ σελήνη

Χρείας γενομένης εἰς τὸν ψῆφον τοῦτον τὸ αὐθημερινὸν τοῦ ἡλίου ἀπὸ τοῦ ὀρθωθέντος παρ' ἡμῶν ἐκείνου τόπου τῆς σελήνης ἀφαιρεῖται. εἴ τι καταλειφθῇ, ἡ τραχηλαῖα ἐκείνη ἔπειτα κρατεῖται. | καὶ ἐκείνη τηρεῖται εἰς f151rL
τὴν τραχηλαῖαν τὴν τετελειωμένην τῆς ἀναβάσεως τοῦ τόπου τῶν ἄκρων. τὸ γοῦν εὑρεθὲν ἐκεῖνο παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. ὅ τι εὑρεθῇ, τραχηλαῖά ἐστιν. εἶτα τὸ τόξον ἐκείνου κρατεῖται, καὶ ἡ κατάβασις τοῦ ἡλίου εὑρίσκεται. | παρ' ἡμῶν δὲ ἐτέθη κανόνιον εἰς τὸ πλάτος τῶν $\overline{\lambda\zeta}$. f92rV

Εἰ οὖν δεήσει τὸ τόξον ἐκεῖνο τοῦ καιροῦ καταληφθῆναι εἰς τὴν ἐσχάτην ἀνάβασιν τῆς διαμέτρου τῆς μοίρας τοῦ ἡλίου, κατ' ἐναντίον τῆς τοιαύτης ἀναβάσεως γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς καταβάσεως ἡλίου καὶ ἀναβάσεως τῆς σελήνης εἰς τὸν διὰ κοκκίνου ψῆφον τῆς ἀναβάσεως τῆς

μοίρας τῆς διαμέτρου τοῦ ἡλίου εἰς τὸν κύκλον τοῦ μέσου τῆς ἡμέρας καὶ τὸν ψῆφον τοῦ τόξου τοῦ καίρου τῆς ἀναβάσεως τῆς σελήνης ἄνω τοῦ κανονίου, ὄντα καὶ τοῦτον δι᾽ κοκκίνου. ἔνθα οὖν συνδράμωσιν οἱ ψῆφοι ἐκ διαστημάτων κρατεῖται ὁ εὑρεθεὶς ψῆφος ἐκεῖ. εἴ τι εὑρεθῇ ἀπὸ μοιρῶν καὶ λεπτῶν, ἐκεῖνο τόξον ἐστὶ τῆς καταβάσεως τῆς ἡλίου.

Διαίρεσις ⟨η΄⟩. Περὶ τῆς ἀναβάσεως τῆς σελήνης μετὰ τὴν δύσιν τοῦ ἡλίου ἀπὸ τοῦ κανονίου τούτου

᾽Επεὶ χρεία εἰδέναι τὴν μέθοδον ταύτην, ἐκβάλλεται τὸ πλάτος τῆς σελήνης, καὶ τηρεῖται εἴτε νότιον εἴτε βόρειόν ἐστιν. ἐκεῖνο οὖν τὸ πλάτος φυλάττεται. ἔπειτα καταλαμβάνεται ἡ ἐσχάτη ἀνάβασις τῆς μοίρας τῆς σελήνης. εἶτα | τηρεῖται. ἐὰν τὸ πλάτος τῆς σελήνης βόρειον, ἑνοῦται ταύτῃ f151vL
τῇ ἀναβάσει· εἰ δὲ νότιον, ἀφαιρεῖται ἐξ ἐκείνου. καὶ εὑρίσκεται ἡ ἐσχάτη ἀνάβασις τῆς σελήνης. εἶτα αὕτη ζητεῖται εἰς τὸ κανόνιον τῆς καταβάσεως τοῦ ἡλίου καὶ ἀναβάσεως τῆς σελήνης εἰς τὸν διὰ κοκκίνου ψῆφον. ἔνθα οὖν εὑρεθῇ κατ᾽ | ἐναντίον τούτου μέσον τοῦ τοιούτου κανονίου, ὁ καιρὸς f308rv
| ζητεῖται τοῦ τόξου. ἔνθα εὑρεθῇ, κατ᾽ ἐναντίον τούτου ὁ ἄνω ψῆφος τοῦ 92vV
κανονίου ὁ διὰ κοκκίνου κρατεῖται. καὶ ἐκεῖνό ἐστιν ἡ ἀνάβασις τῆς σελήνης ἡνίκα νέα φανῇ.

7 τούτου om. Vv ‖ 11 ταύτῃ] τούτῳ codd.

Κεφάλαιον β΄. Περὶ τῆς καταλήψεως τῶν τόξων

Ἐζητήθη ἐν ταῖς βίβλοις τῶν ἀρχαίων περὶ τῆς σελήνης νέας φαινομένης μετὰ σύνοδον, καὶ εὑρέθη ὅτι $\overline{\delta}$ τόξα ἐτέθησαν παρ' ἐκείνοις· α΄ τόξον τοῦ καιροῦ, ἕτερον τῶν ἀκτίνων, ἄλλο τῆς ἀναβάσεως, καὶ ἕτερον τόξον τῆς καταβάσεως. ταῦτα τὰ $\overline{\delta}$ τόξα μετὰ τοῦ ψήφου τοῦ ἰδίου τῆς σελήνης ὀρθοῦται εἰς τὸν παρ' ἡμῶν δὲ γινόμενον ψῆφον.

Ταῦτα δὲ τὰ $\overline{\delta}$ τόξα ἐν πᾶσιν ὀρθὰ οὐ συμβαίνουσιν. διὰ τί; διὰ τὸν πλεονασμὸν καὶ τὴν ἔλλειψιν τῶν πλατῶν τῶν πόλεων. καὶ δι' ἐκεῖνο ὅτι εἰς τὰ τόξα τῆς ἀναβάσεως καὶ τῆς καταβάσεως τοῦ καιροῦ περισσεία καὶ ἔλλειψις γίνεται. παρ' ἡμῶν δὲ ἐζητήθη τοῦτο ἐκβληθῆναι ὡς ἂν καταβληθῇ | ἡ περισσεία ἑκάστου τόξου καὶ ἡ ἔλλειψις καὶ πόση. f152rL

Διαίρεσις. Περὶ τῆς καταλήψεως [τοῦ φωτὸς] τοῦ τόξου ἀπὸ τῶν $\overline{\iota}$ μοιρῶν μέχρι καὶ τῶν $\overline{\iota\beta}$

Τὸ τόξον τοῦ καιροῦ ἀπὸ τῶν $\overline{\eta}$ μέχρι καὶ τῶν $\overline{\iota\beta}$, τὸ τόξον τῆς ἀναβάσεως τῆς σελήνης ἀπὸ τῶν $\overline{\varsigma}$ μοιρῶν ἕως τῶν $\overline{\eta}$, τὸ τόξον τῆς ἀναβάσεως τοῦ ἡλίου

3 μετὰ σύνοδον om. L ‖ 5 τέσσαρα Vv ‖ 6 γινόμενον om. Vv ‖ 13 καὶ om. Vv ‖ 14 καὶ om. Vv

ἀπὸ τῶν $\overline{\eta}$ μοιρῶν μέχρι τῶν $\overline{\iota}$. ἐπεὶ γοῦν χρεία γενέσθαι ἑκάστου ψῆφον, ἡ περισσεία ἑκάστου | κρατεῖται εἰς τὸν πλεονασμὸν καὶ τὴν ἔλλειψιν. ἐκεῖνο f93rV τοίνυν τηρεῖται εἰς τὰ λεπτὰ τοῦ αὐθημερινοῦ. εἴ τι ἐξέλθῃ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. εἴ τι εὑρεθῇ, ὄρθωσίς ἐστιν. ἐκεῖνο ἑνοῦται ἑκάστῳ τῶν $\overline{\delta}$ τόξων. εἴ τι οὖν εὑρεθῇ ἀφ' ἑκάστου τούτων, ἐκεῖνο τρυτάνη τῆς θεωρίας τῆς σελήνης.

Ἐπεὶ δὲ $\overline{\delta}$ τόξα, καὶ $\overline{\delta}$ τρυτάναι. καὶ ἕκαστον δὲ ἀπὸ τῶν $\overline{\delta}$ τούτων τόξων μετὰ τοῦ ψήφου ὡς ἐρρέθη πρότερον ἐκβάλλεται, καὶ ἓν παρ' ἓν μετὰ τοῦ ψήφου ἐκείνου τῆς τρυτάνης θεωρεῖται κατ' ἐναντίον. εἰ οὖν ἕκαστον ἐξισοῦται τῷ ψήφῳ τῆς ἰδίας τρυτάνης ἢ πλέον ἐστὶ τούτου, ἡ σελήνη θεωρεῖται· εἰ δ' ἔλαττον, οὐ θεωρεῖται. ἀπὸ τῶν $\overline{\delta}$ δὲ τούτων τόξων μετὰ τοῦ ψήφου τοῦ ἑνὸς δυνατὸν ἰδεῖν τὴν σελήνην, μετὰ τῶν ἑτέρων δὲ $\overline{\gamma}$ οὐ δυνατόν. εἰς ταῦτα οὖν τὰ $\overline{\gamma}$ γίνεται ὁ ψῆφος. | εἰ δὲ διὰ τῶν $\overline{\gamma}$ ψήφων f152vL δυνατὸν ἰδεῖν, διὰ τῶν $\overline{\beta}$ δὲ οὐ δυνατόν. ἀπὸ τούτου οὐ γίνεται μέθοδός τις ὅθεν ὁ ψῆφος οὗτος καταλιμπάνεται. καὶ ἕτερος μεθοδεύεται ὡς ἔπειτα ῥηθήσεται.

Κεφάλαιον γ΄. Περὶ τοῦ θεμελίου τῆς θεωρίας τῆς σελήνης ὅλου

Ἴσθι ὅτι ἡ θεωρία τῆς σελήνης νέας φανείσης περὶ τὴν ὄψιν τῶν ὀμμάτων

8–9 ὡς...τοῦ ψήφου in marg v ‖ 12 τριῶν Vv ‖ 13 $\overline{\gamma}^2$] $\overline{\beta}$ Lvv

ἐστί. καὶ | γάρ εἰσιν οἱ ὀφθαλμοὶ πλείονος μετέχοντες φωτός, καὶ εἴσιν ἕτεροι f308vv
ἐλάττονος μετέχοντες, καὶ εἴσιν οἱ μέσου φωτὸς εὐμοιροῦντες. εἰς τοῦτο
οὖν τρεῖς ψῆφοι | ἐτέθησαν· $\overline{\alpha}$ ψῆφος μέγας διὰ τοὺς ὀφθαλμοὺς τοὺς τὸ φῶς f93vV
ἔχοντας ἔλαττον, καὶ $\overline{\alpha}$ μέσος διὰ τοὺς ὀφθαλμοὺς τοὺς μέσον ἔχοντας φῶς,
5 καὶ $\overline{\alpha}$ ψῆφος μικρὸς διὰ τοὺς ὀφθαλμοὺς τοὺς πλεῖστον ἔχοντας φῶς. ἐκεῖνο
οὖν ὁ ψῆφος ὁ μέσος παρὰ πάντων πιστοῦται.

Χρείας τοίνυν γενομένης περὶ τῆς τοιαύτης μεθόδου ἐκβάλλεται τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης εἰς τὸν καιρὸν ἐκεῖνον ἡνίκα δύνῃ ἡ σελήνη ὡς ἂν ἐκβληθῇ τὸ τόξον τοῦ φωτὸς μετὰ τῆς καταβάσεως τοῦ ἡλίου.
10 ταῦτα οὖν τὰ $\overline{\beta}$ – τὸ τόξον καὶ ἡ κατάβασις – τηροῦνται. ἔπειτα γίνεται εἰσέλευσις ἀπὸ τοῦ ἰδίου ἢ τῆς μεταβάσεως τῆς σελήνης εἰς τὰ κανονία τῆς θεωρίας τῆς σελήνης ἀπὸ τῆς ὄψεως.

Κατ' ἐναντίον οὖν τούτων τοῦ ἰδίου καὶ μεταβάσεως | κρατεῖται ὁ μέσος f153rL
ψῆφος ὁ εὑρεθεὶς μέσον τῶν στιγμῶν ὃς καὶ μέσος ψῆφος λέγεται. οὗτος
15 τοίνυν ὁ ψῆφος ὁ ἀπὸ τοῦ ἑνὸς καὶ τῶν δύο ἰδίᾳ κρατεῖται. ἔπειτα ὁ ἀπὸ τοῦ ἑνὸς ψῆφος ἀφαιρεῖται ἀπὸ τοῦ δευτέρου. εἴ τι καταλειφθῇ, ἐκεῖνο ὄρθωσις λέγεται. καὶ τοῦτο ἤγουν ἡ ὄρθωσις τηρεῖται. εἰς τὸν ψῆφον δὲ τοῦτον δύο τινά εἰσιν ἐφ' οἷς χρὴ ἐπιστῆσαι τὸν νοῦν.

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3 εἷς Vv | ψῆφος + ὁ Vv ‖ 4 εἷς Vv ‖ 5 εἷς Vv ‖ 10 δύο V ‖ 15 $\bar{\beta}$ L ‖ 17 ἡ om. v

Διαίρεσις. Εἰς τὴν πρώτην θεωρίαν

Γίνεται τήρησις εἰς τὴν πρώτην θεωρίαν. εἴπερ ἐστὶν ἐλάττων ἀπὸ τοῦ α΄ τόξου ἢ ἴση, θεωρία οὐκ ἔστι τῆς σελήνης. διὰ τί; ὅτι ἡ σελήνη ἔτι ὑπὸ τὸ φῶς ἐστι τοῦ ἡλίου κεκρυμμένη. |εἰ δ' ἐξισοῦται τῷ β΄ τόξῳ ἢ πλέον ἐστίν, ἡ f94rV
5 σελήνη ὑπεξέστη τοῦ φωτὸς τοῦ ἡλίου καὶ πρὸ τοῦ δῦναι τὸν ἥλιον φαίνεται αὕτη. καὶ χρεία ψήφου οὐκ ἔστιν ἐν ταύλᾳ. εἰ δὲ τὸ τόξον τοῦ φωτὸς πλέον τοῦ α΄ τόξου καὶ ἔλαττον τοῦ β΄ , ἡ σελήνη νέα γενομένη εἰς ἐκεῖνόν ἐστι τὸν βαθμὸν τοῦ φανῆναι ἢ οὔ.

Ἐνταῦθα οὖν χρεία πάντως ψήφου εἰς τὸ ἰδεῖν τὴν σελήνην ἢ μὴ ἰδεῖν.
10 βουλομένων οὖν ἡμῶν ποιῆσαι τὸν ψῆφον τοῦτον ποιοῦμεν οὕτως· τὸ πρῶτον τόξον ἀπὸ τοῦ τόξου τοῦ φωτὸς ἀφαιροῦμεν. εἴ τι καταλειφθῇ, ἐκεῖνο περισσεία λέγεται. ταύτην οὖν περισσείαν | τηροῦμεν εἰς τὸ α΄ τόξον. εἴ f153vL
τι εὑρεθῇ, μερίζομεν εἰς τὴν φυλαχθεῖσαν ἐκείνην ὄρθωσιν. εἴ τι ἐξέλθῃ, ἐκεῖνο ἀφαιρεῖται ἀπὸ τοῦ α΄ τόξου, καὶ ἐκεῖνο τὸ καταλειφθὲν τόξον ἐστὶ
15 τῆς τελείας ὄψεως.

Διαίρεσις. Περὶ τῆς δευτέρας θεωρίας

Τηρεῖται ἡ κατάβασις τοῦ ἡλίου. ἐὰν ᾖ ἐξισουμένη αὕτη τῷ τόξῳ τῆς

3 πρώτου Vv ‖ 4 δευτέρῳ V ‖ 7 πρώτου Vv | δευτέρου V | γινομένη v ‖ 10 βουλομένων ... τοῦτον om. Vv | ποιοῦμεν + οὖν Vv ‖ 12 πρῶτον V ‖ 14 πρώτου Vv | καὶ ἐκεῖνο τὸ] τὸ γοῦν Vv

τελείας ὄψεως ἢ πλείων, ἡ σελήνη φαίνεται γενομένη νέα.

Εἰ δὲ βούλεταί τις ἀσφαλῶς τηρῆσαι τὴν μέθοδον ταύτην μετὰ τῶν δύο λοιπῶν, τοῦ α΄ καὶ τοῦ γ΄, χρὴ τὴν ἐργασίαν ποιῆσαι. ἐὰν οὖν μετὰ τοῦ ψήφου τοῦ α΄ τούτου κανονίου φανῇ ἡ σελήνη, |λέγομεν ὅτι ἡ σελήνη μεγάλη f309rv ὀφείλει φανῆναι ὥστε καὶ τοὺς ἀμβλυωποιοῦντας ἰδεῖν αὐτήν. εἰ δὲ ἐξέλθῃ ὁ ψῆφος ἀπὸ τοῦ β΄ κανονίου, λέγομεν ὅτι ἡ σελήνη οὔτε πάνυ ἀμυδρὰ οὔτε μεγάλη ὀφείλει φανῆναι οὕτως ἵνα ἴδωσιν αὐτὴν οἱ ὀφθαλμοὶ οἱ μέσοι κατὰ τὴν ὄψιν. εἰ δὲ ἐξέλθῃ ὁ ψῆφος ἀπὸ τοῦ γ΄ κανονίου, ἐργασία οὐ γίνεται διότι ἡ σελήνη πάνυ ἐστὶ τηνικαῦτα ἀμυδρὰ τοιαύτη|ὅτι εἰ οὐκ ἔστι νέφος εἰς τὸν f94vV οὐρανὸν ἢ ὁμίχλη τις, οἱ ὀφθαλμοὶ οἱ βλέποντες καθαρῶς βλέπουσι ταύτην. καὶ ἡ ἀρχὴ τοῦ μηνὸς οὐ λογίζεται ἀπὸ τότε, ἀλλὰ γράφεται εἰς τὴν ἀρχὴν τοῦ αὐθημερινοῦ οὕτως ὅτι|ἴσως ἵνα φανῇ ἡ σελήνη. f154 rL

Κεφάλαιον δ΄. Περὶ τοῦ ψήφου τούτου ἵνα δειχθῇ ἡ σελήνη διὰ δακτύλων

Ἐπεῖ χρεία τούτου τοῦ ψήφου, περισσεύονται εἰς τὸν τόπον τῆς σελήνης $\overline{\delta}$ λεπτὰ ὅπως εὑρεθῇ ὁ τόπος τῆς σελήνης ὅταν δύῃ ὁ ἥλιος εἰς ἐπόγδοον μιᾶς ὥρας διὰ ἐκεῖνο ὅτι ὁ ἥλιος τόσον οὐκ ἔδυ ὑπὸ γῆν, καὶ τὸ φῶς τοῦ

1–3 γενομένην... ποιῆσαι] εἰ δ' ἔλαττον οὐ φαίνεται εἰ δὲ ἐγένετο ἡ μέθοδος καὶ ἐργασία διὰ τοῦ α΄ καὶ γ΄ κανονίου Vv ‖ 3 οὖν om. Vv | μετὰ] διὰ Vv ‖ 4 τούτου om. Vv ‖ 5 ὀφείλει φανῆναι] ἵνα φανῇ L ‖ 7 ὀφείλει φανῆναι] ἵνα φανῇ L | οἱ ὀφθαλμοὶ om Vv ‖ 9 τηνικαῦτα πάνυ ἐστὶ Vv ‖ 11 ἀρχὴν] ἄκρην L ‖ 12 ἴσως] ἂν τύχῃ L ‖ 14 ψήφου τούτου Vv ‖ 16 τόσον om Vv

ἡλίου ἔτι οὐκ ἐᾷ τὴν σελήνην φανῆναι. ἔπειτα ἐκβάλλεται ἡ ἀνάβασις τῆς σελήνης καθὼς ἐρρέθη πρότερον ὡσαύτως καὶ τὸ σημεῖον τῆς ἀναβάσεως καθὼς ἐρρέθη εἰς τὸ ε΄ κεφάλαιον τῆς ς΄ μοίρας.

Εἶτα ἐκεῖ τίθεται κάθετος εἰς τὸ σημεῖον τῆς ἀναβάσεως μετὰ τῆς ἀποδείξεως ταύτης ἵνα εἰς τὸ μέρος τῆς δύσεως μήτε βουνὸς μήτε νέφος ἐπιπροσθοῦν.

Διαίρεσις.

Ἔπειτα ὁ ἀστρολάβος εἰς τὴν κάθετον ἐκείνην κρεμᾶται, καὶ ἐξισοῦται μετὰ τῆς ἐν τῇ γῇ γενομένης εὐθείας γραμμῆς. καὶ τηρεῖται ἡ ἀνάβασις τῆς σελήνης πόση ἡ ἐξελθοῦσα ἀπὸ τοῦ κανονίου τῆς καταβάσεως τοῦ ἡλίου καὶ τῆς ἀναβάσεως τῆς σελήνης. καὶ τίθεται τὸ ἄκρον τοῦ πήχεος τοῦ ἀστρολάβου εἰς τὸν τοιοῦτον ψῆφον. ἔπειτα διὰ τοῦ ἑνὸς ὀφθαλμοῦ τοῦ ἑτέρου καμμύσαντος θεωρεῖται διὰ τῶν ὀπῶν τοῦ πήχεος εἴ πως φανῇ ἡ σελήνη. εἰ δὲ οὐ φανῇ διὰ τῶν τοιούτων ὀπῶν, ἐκεῖνος ὁ φανεὶς ἐν τῳ οὐρανῷ τόπος | ἐκεῖνός | ἐστιν ἐν ᾧ ἡ σελήνη ἔνθα ὀφείλει αὕτη ζητηθῆναι. f154vL, f95rV

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3 πέμπτον Vv | ἕκτης V ‖ 11 τὸ ἄκρον] ἡ ἄκρα L ‖ 12 ἔπειτα] εἶτα v

Κεφάλαιον ε΄. Περὶ τῶν $\overline{\varepsilon}$ πλανωμένων ἀστέρων ὅτι κατὰ ποῖον καιρὸν ἐξέρχονται ἤτοι ὑπεξίστανται τοῦ φωτὸς τοῦ ἡλίου, καὶ κατὰ ποίαν ὥραν εἰσέρχονται ὑπὸ φῶς τοῦ ἡλίου κατὰ τὸ πρωΐ ἢ τὴν ἑσπέραν

Καὶ οὗτος ὁ ψῆφος οὕτως ἐστὶ καθώσπερ καὶ ἐπὶ τῆς σελήνης.

Ἐπεὶ οὖν χρεία τοῦ ψήφου τούτου, ἐκείνη ἡ μοῖρα ἡ ἐξερχομένη μετὰ τοῦ ἀστέρος τηρεῖται ἢ ἐκείνη ἡ μοῖρα ἡ μετὰ τοῦ ἀστέρος δύνουσα γινώσκεται οὕτως ὡς ἐρρέθη πρότερον, καθώσπερ ἐξεβλήθη εἰς τὸν ψῆφον τῆς σελήνης νέας φαινομένης τὸ τόξον τοῦ καιροῦ τῆς καταβάσεως τοῦ ἡλίου καὶ ἐνταῦθα οὕτως | ὀφείλει ἐκβληθῆναι. τὸ τόξον εἰς τὴν θεωρίαν τῶν ἀστέρων κατὰ f309vv τοὺς Ἰνδούς ἐστι τόσον· τοῦ Κρόνου $\overline{\iota\varepsilon}$, τοῦ Διός $\overline{\iota\alpha}$, τοῦ Ἄρεος $\overline{\iota\gamma}$, τῆς Ἀφροδίτης $\overline{\theta}$ καὶ τοῦ Ἑρμοῦ $\overline{\iota\gamma}$.

Κατὰ τὸν Πτολεμαῖον μετὰ τοῦ ψήφου τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου εἰς τὸν καιρὸν ἡνίκα δύνῃ ὁ ἀστὴρ ἢ ἀνίσχῃ ἐστὶ τόσον· τοῦ Κρόνου $\overline{\iota\alpha}$, τοῦ Διὸς $\overline{\iota}$, τοῦ Ἄρεος $\overline{\iota\alpha}$ λ΄, τῆς Ἀφροδίτης ὅταν κινῆται κατ' ὀρθὸν $\overline{\zeta}$, καὶ ὅταν ὑποποδίζῃ $\overline{\varepsilon}$, τῆς Ἑρμοῦ $\overline{\iota}$.

Ἔπειτα τηρεῖται ὅτι τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ ἡλίου πόσον ἔνι. ἐὰν ᾖ κατ' ἐναντίον τῶν τόξων τούτων ἢ πλέον, ὁ ἀστὴρ φαίνεται· εἰ δ' ἔλαττον, ὁ ἀστὴρ οὐ φαίνεται.

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1 περὶ + τῆς καταλήψεως περὶ L ‖ 8 τοῦ τόξου LVv ‖ 10 τοῦ^1] ὁ L | τοῦ^2] ὁ L | τοῦ^3] ὁ L | τῆς] ἡ L ‖ 11 τοῦ] ὁ L ‖ 13 τοῦ] ὁ L ‖ 14 τοῦ^1] ὁ L | τοῦ^2] ὁ L | τῆς] ἡ L | ἐξ ὀρθοῦ L ‖ 15 τῆς] ἡ L

Διαίρεσις. Ἐις τὸ γνώρισμα | ὅταν φανῇ ὁ ἀστήρ, καὶ ὅταν δύνῃ μετὰ τοῦ f155rL
κανονίου

Ἡμεῖς κανόνιον ἐθήκαμεν, καὶ τὰ τόξα ἅπερ ἔδομεν τεθείκαμεν εἰς ἐκεῖνο τὸ κανόνιον μετὰ τοῦ ψήφου τῶν καταβάσεων εἰς τὸ δ΄ κλίμα εἰς τὰς ἀρχὰς τῶν ζῳδίων. ἐὰν οὖν ὁ ἀστὴρ εἰς τὴν ἀρχὴν τῶν ζῳδίων εἴ τι ἔνι, | εἰς τὸ f95vV
κανόνιον κρατεῖται· εἰ δὲ εἰς τὴν ἀρχὴν τοῦ ζῳδίου οὐκ ἔστιν, ὁ ψῆφος ὅστις ἔνι εἰς τὴν ἀρχὴν τοῦ ζῳδίου κρατεῖται, καὶ τηρεῖται ὡσαύτως καὶ εἴ τι εὑρεθῇ εἰς τὴν ἀρχὴν τοῦ μετ᾽ αὐτὸ ζῳδίου. καὶ τοῦτο κρατεῖται, καὶ μετὰ τοῦ ψήφου τῶν $\overline{\beta}$ ζῳδίων ὀρθοῦται ὡς ἐρρέθη εἰς τὸ πλέον καὶ ἔλαττον τῆς ὄψεως. εἴ τι οὖν εὑρεθῇ, τόξον τῆς θεωρίας τοῦ ἀστέρος ἐστίν. εἶτα κρατεῖται ἡ μέση τοῦ αὐθημερινοῦ τοῦ ἡλίου καὶ τοῦ ἀστέρος περισσεία καὶ τηρεῖται. ἐὰν οὖν ὁ ψῆφος οὗτος εἰς τὸ φανῆναι τὸν ἀστέρα, ἐκείνη ἡ περισσεία ἐὰν πλείων τοῦ φανέντος τόξου, ὁ ἀστὴρ ἐφάνη· εἰ δ᾽ ἐλάττων, ὁ ἀστὴρ οὐ φαίνεται. εἰ δ᾽ ἐστὶν οὗτος ὁ ψῆφος ἵνα δύνῃ ὁ ἀστήρ, ἐκείνη ἡ περισσεία ἐὰν πλείων τοῦ τόξου οὗ εἴδομεν, ὁ ἀστὴρ ἔτι οὐκ ἔδυνεν· εἰ δ᾽ ἐλάττων, ὁ ἀστὴρ ἔδυνεν.

Διαίρεσις. Εἰς τὴν κατάληψιν ἐκείνην ὅτι ὁ ἀστὴρ κατὰ ποῖον καιρὸν δύνει

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3 κανόνιον] κανόνα v ‖ 9 δύο Vv

καὶ κατὰ ποῖον ἀνίσχει

Ἡ μετάβασις τοῦ ἡλίου καὶ ἐκείνου τοῦ ἀστέρος καταλαμβάνονται καὶ | τίθενται εἰς τὴν ταῦλαν. ἔπειτα τηροῦνται. ἐὰν ὁ ἀστὴρ ὑποποδίζῃ, ἑνοῦνται f155vL καὶ αἱ $\overline{\beta}$ μεταβάσεις. εἰ δὲ κινεῖται ὁ ἀστὴρ ἐξ ὀρθοῦ, τὸ ἔλαττον ἀφαιρεῖται ἀπὸ τοῦ πλείονος. εἴ τι εὑρεθῇ, ἐκεῖνο μετάβασίς ἐστι τελεία. τοῦτο τηρεῖται. ἔπειτα ἐκείνη ἡ περισσεία τίθεται εἰς τὴν ταῦλαν, καὶ τὸ τόξον τὸ φανὲν εἰς τὸ πλάγιον ταύτης τίθεται. καὶ τὸ ἔλαττον ἀφαιρεῖται τοῦ πλείονος. εἴ τι καταλειφθῇ, ἐκεῖνο μερίζεται εἰς ἐκείνην τὴν | τελείαν μετάβασιν. εἴ τι f310rv ἐξέλθῃ, ἡμέραι εἰσὶ ὅτι ἢ δύνει ἢ ἀνίσχει ὁ ἀστήρ.

Κεφάλαιον ς΄. | Περὶ τῆς σελήνης νέας φανείσης μετὰ τῶν ψήφων οἵτινες f96rV ἡνώθησαν μετὰ ἑτέρων ἄλλων οἳ καὶ ἐγεννήθησαν ἀπὸ τοῦ νοὸς τοῦ Χαζανῆ εἰς τὴν ὁδὸν τὴν εὔληπτον δίχα δυσχερείας τῶν μακρῶν ἐκείνων ψήφων, μεθοδευθέντων τούτων πρὸς σαφήνειαν καὶ βραχύτητα. τοῦτο εἰς δύο ἐτέθη διαιρέσεις.

Διαίρεσις α΄. Περὶ τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόξου τοῦ καιροῦ

4 δύο Vv ‖ 5 ἀπὸ om. v ‖ 11 μετὰ + τῶν v | χαζηνῆ L ‖ 12 εὔληπτον] εὔκολον L ‖ 15 ὀρθώσεως] ὀρθώματος L

Γίνεται τὸ αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης εἰς τὴν ἀρχὴν τῆς νυκτὸς ἥτις ἐστὶ τῆς ἐπιούσης πρωΐας εἰς τὴν λ΄ ἡμέραν εἰς τὰς ἡμέρας τῶν Ἀράβων. τηνικαῦτα οὖν κρατεῖται τὸ τόξον τοῦ καιροῦ καὶ τὸ τόξον τοῦ φωτὸς καὶ ἡ μετάβασις τῆς σελήνης. ἔπειτα τίθεται εἰς τὴν ταῦλαν ἡ μετάβασις, |καὶ αὕτη f156rL ἀφαιρεῖται ἀπὸ τοῦ τόσου· $\overline{\text{κε}}$ λ΄. εἴ τι καταλειφθῇ, ἐκεῖνο τόξον λέγεται τῆς θεωρίας οὐχὶ τέλειον. ἐκεῖνο τηρεῖται. ἔπειτα τὸ τόξον τοῦ φωτὸς εἰς τὸ πλάγιον ἐκείνης τίθεται καὶ τηρεῖται. ἐὰν ἐξισοῦνται καὶ τὰ $\overline{\beta}$, ἐκεῖνο τὸ τόξον τῆς θεωρίας τέλειόν ἐστιν· εἰ δ' οὐκ ἐξισοῦνται, τὸ ἔλαττον ἀφαιρεῖται τοῦ πλείονος. εἴ τι καταλειφθῇ, ἐκεῖνο περισσεία ἐστίν. τοῦτο τηρεῖται. ἔπειτα ἐὰν τὸ τόξον τοῦ φωτὸς ἔλαττον ᾖ τοῦ τόξου τῆς θεωρίας, ἐκείνη ἡ περισσεία εἰς τὸ τόξον τοῦτο τῆς θεωρίας ἑνοῦται. εἰ ἔστι πλέον ὅπως γένηται τὸ τόξον τῆς θεωρίας, τέλειον τοῦτο εἰς τὴν ταῦλαν τίθεται. καὶ τὸ τόξον τοῦ καιροῦ εἰς τὸ πλάγιον τούτου τίθεται καὶ τηρεῖται. εἰ τὸ τόξον τοῦ καιροῦ ἐξισοῦται τῷ τόξῳ τῆς θεωρίας ἢ πλέον, ἡ σελήνη φαίνεται· εἰ δ' οὐκ, οὐ φαίνεται. ἔπειτα τηρεῖται τὸ τόξον τοῦ φωτός. ἐὰν ᾖ τόσον· $\overline{\text{κε}}$ λ΄ ἢ πλέον, ἡ σελήνη ὑπεξέστη τοῦ φωτὸς τοῦ ἡλίου καὶ πρὸ τοῦ δῦναι τὸν ἥλιον φαίνεται· εἰ δ' ἔλαττον, οὐ φαίνεται.

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1 τὸ om L ‖ 2 ἥτις... ἡμέραν] τῆς λ΄ ἡμέρας Vv ‖ 3 οὖν om L ‖ 7 δύο Vv

Διαίρεσις β΄. Περὶ τῆς ἀσφαλοῦς ὀρθώσεως τοῦ τόξου τῆς καταβάσεως τοῦ ἡλίου καὶ εἰς τὴν ἐκβολὴν τῆς σελήνης νέας γενομένης μετὰ τῶν ἑτέρων ψήφων

Γίνεται αὐθημερινὸν τοῦ ἡλίου καὶ τῆς σελήνης εἰς τὴν νύκτα τὴν λ΄ ἀπὸ τοῦ μηνὸς τῶν Ἀράβων|ὅταν δύνῃ ἡ σελήνη. ἔπειτα τηρεῖται τὸ τόξον τοῦ φωτὸς f156vL
καὶ ἡ κατάβασις τοῦ ἡλίου καὶ ἡ μετάβασις τῆς σελῆνης. εἶτα ἀφαιρεῖται ἡ μετάβασις τῆς σελήνης ἀπὸ τοῦ τόσου· $\overline{\text{κδ}}$ λ΄. εἴ τι καταλειφθῇ, ἐκεῖνο τόξον ἐστὶ τῆς θεωρίας οὐχὶ τέλειον. τότε τηρεῖται εἰς τὸ τόξον τοῦ φωτός. ἐὰν ᾖ ἔλαττον τοῦ τόξου τῆς θεωρίας, οὐκ ἔνι χρεία τῆς θεωρίας τῆς σελήνης· εἰ δ' ἐξισοῦται τούτῳ ἢ πλέον, φαίνεται.

Ὁ ψῆφος.

Τὸ τόξον τοῦ φωτὸς καὶ τὸ |τόξον τῆς θεωρίας τίθενται καὶ τὰ $\overline{\beta}$ εἰς τὴν f310vv
ταῦλαν. καὶ ἡ περισσεία τῶν $\overline{\beta}$ κρατεῖται καὶ ἀφαιρεῖται ἀπὸ τοῦ τόξου τοῦ φωτός, καὶ γίνεται τέλειον. τοῦτο τίθεται εἰς τὴν ταῦλαν. καὶ ἡ κατάβασις τοῦ ἡλίου εἰς τὸ πλάγιον τούτου τίθεται. εἶτα τηρεῖται ἡ κατάβασις τοῦ ἡλίου. ἐὰν ἐξισοῦται μετὰ τοῦ τόξου τῆς θεωρίας τοῦ τελείου ἢ πλέον τούτου, ἡ σελήνη φαίνεται· εἰ δ' ἔλαττον, οὐ φαίνεται. εἶτα τηρεῖται. εἰ τὸ τόξον τοῦ φωτός ἐστι τόσον· $\overline{\text{κδ}}$ λ΄ ἢ πλέον τούτου, ἡ σελήνη πρὸ τοῦ δῦναι τὸν ἥλιον

‖ 18 τοῦ ἀσφαλοῦς ὀρθώματος L 8 ἔνι] ἐστι L ‖ 9 φαίνεται] ἐλπὶς ἰδεῖν αὐτὴν L ‖ 11 δύο Vv ‖ 12 δύο Vv

φαίνεται· εἰ δ' ἔλαττον τούτου, πρὸ τοῦ δῦναι τὸν ἥλιον οὐ φαίνεται.

|Μοῖρα ιβ΄. Περὶ τῆς εἰσέλευσεως τῶν χρόνων καὶ τῶν γενεθλιαλογικῶν, καὶ περὶ τῆς καταλήψεως τοῦ τόπου τῶν ἀστέρων καὶ τῆς κινήσεως τῶν μοιρῶν καὶ τῆς καταλήψεως τοῦ τόπου τῶν μοιρῶν f97rV

|Ἐπεὶ βουλόμεθα εἰδέναι ὅτι πόσον παρῆλθον ἀπὸ τοῦ χρόνου τοῦ ἡλίου εἰς τὰ γενεθλιαλογικά, τὸ ἔτος τῶν Περσῶν ἡνίκα ἐγένετο ἡ γέννησις ἀπὸ τοῦ ἐνεστῶτος ἔτους τῶν Περσῶν ἀφαιρεῖται ἢ τὸ ἔτος τῶν Ῥωμαίων τὸ τότε ἀπὸ τοῦ ἐνεστῶτος ἔτους τῶν Ῥωμαίων ἀφαιρεῖται. εἴ τι καταλειφθῇ, χρόνοι εἰσὶ τοῦ ἡλίου τετελειωμένοι οἱ παρελθόντες ἀπὸ τῆς γεννήσεως. ἡ μοῖρα δὲ αὕτη εἰς $\overline{\delta}$ διαιρεῖται κεφάλαια. f157rL

Κεφάλαιον α΄. Περὶ τῆς εἰσελεύσεως τῶν χρόνων ὅλων καὶ τῶν χρόνων τῶν γενεθλιαλογικῶν καὶ τοῦ τόπου τῆς τύχης ἑκάστου

Οὗτος ὁ ψῆφος ὀφείλει καταλειφθῆναι. εἰ οὖν ἐστιν οὕτως ὅτι τὸ αὐθημερινὸν τοῦ ἡλίου κατὰ τὸν καιρὸν ἡνίκα ἐγένετο ἡ γέννησις τέλειον ἐγένετο μετὰ τῆς ὀρθώσεως τῆς ἡμέρας, τὸ αὐθημερινὸν τοῦ ἡλίου εἰς τοῦτον τὸν χρόνον εἰς ὅν ἐσμεν τέλειον ὀφείλει γενέσθαι μετὰ τῆς ὀρθώσεως τῆς ἡμέρας· εἰ δ' ἐκεῖνο τέλειον οὐκ ἔστιν, οὐ δὲ τοῦτο. οὗτος ὁ ψῆφος ὀφείλει κρατεῖσθαι εἰς ἐνθύμησιν.

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1 δυοδεκάτη v ‖ 3 μοιρῶν] μερισμῶν L ‖ 8 ἡ om. L

Διαίρεσις. Περὶ τῆς ἐκβολῆς τῶν ὡρῶν τῆς εἰσελεύσεως τῶν χρόνων ὅλων εἰς ἐκεῖνον τὸν καιρὸν ὅτι ὁ ἡλίος γίνεται εἰς τὴν ἀρχὴν τῶν ζῳδίων ἢ εἰς τὸν καιρὸν ἐκεῖνον ὅτι ὁ ἥλιος γίνεται εἰς τὴν μοῖραν ἐκείνην καθ' ἣν ἐγένετο | ἡ f157vL ζήτησις τῆς γεννήσεως

| Τοῦτο ὁ τόπος τοῦ θεμελίου τοῦ ἡλίου καλεῖται εἰς τὸν ψῆφον τοῦ f97vV γενεθλιαλογικοῦ. οὗτος ὁ ψῆφος εἰς τοῦτο τὸ βιβλίον εἰς τὸ μῆκος τῆς μεταβάσεως ῥηθήσεται. ἐπεὶ βουλόμεθα εἰδέναι τὴν ὥραν τοῦ καιροῦ ἐκείνου ἡνίκα φθάνει ὁ ἥλιος εἰς τὴν μοῖραν ἐκείνην, τὸ αὐθημερινὸν τοῦ ἡλίου ζητεῖται εἰς τὸ μέσον τῆς ἡμέρας ὅπερ ἐστὶν ἐγγὺς τῆς μοίρας ἐκείνης τὸ καὶ γεγονὸς εἰς τὸ μῆκος τῆς πόλεως ἐκείνης | ἔνθα καὶ ἡ γέννησις. εἰ f311rv οὖν ἐστι τὸ αὐθημερινὸν ἐκεῖνο ἐξισούμενον μετὰ τῆς μοίρας ἐκείνης, ἡ ὥρα τοῦ μέσου τῆς ἡμέρας ὥρα ἐστὶ τῆς εἰσελεύσεως· εἰ δ' οὐκ ἐξισοῦται, ἡ εὑρεθεῖσα περισσεία μέσον τῶν $\overline{\beta}$ κρατεῖται. καὶ τηρεῖται αὕτη εἰς τὰ $\overline{\text{κδ}}$. εἴ τι εὑρεθῇ, μερίζεται εἰς τὴν μετάβασιν τοῦ ἡλίου. εἴ τι ἐξέλθῃ, αἱ ὧραί εἰσι τοῦ μήκους. ἔπειτα τηρεῖται. ἐὰν τὸ αὐθημερινὸν τοῦ ἡλίου ἔλαττον ᾖ τῆς μοίρας ἐκείνης, ἡ ὥρα τοῦ μήκους ἑνοῦται τῇ ὥρᾳ τοῦ μέσου τῆς ἡμέρας· εἰ δὲ πλέον, ἀφαιρεῖται ἀπὸ τῆς μοίρας ἐκείνης. καὶ πληροῦται ὁ ψῆφος ὡς ἐρρέθη εἰς τὴν διάμετρον καὶ σύνοδον ἡλίου καὶ σελήνης. καὶ εὑρίσκονται

8 φθάνῃ v ‖ 13 δύο Vv

αἱ ὧραι τῆς εἰσελεύσεως ἀπὸ τῆς ἡμέρας ἢ τῆς νυκτὸς εἰς τὸν ψῆφον τῶν γενεθλιαλογικῶν καὶ τῶν χρόνων τῶν αἰσθητῶν ὅλων.

Εἰς τὸν αἰσθητὸν δὲ χρόνον ἕν τι ὀφείλει τηρεῖσθαι. ἐὰν ᾖ οὕτως ὅτι | τὸ f158rL αὐθημερινὸν τοῦ ἡλίου τέλειον οὐκ ἐγένετο μετὰ τῆς ὀρθώσεως τῆς ἡμέρας, κατ' ἐναντίον τοῦ αὐθημερινοῦ τοῦ ἡλίου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς ὀρθώσεως τῆς ἡμέρας, καὶ | κρατοῦνται τὰ πρῶτα καὶ β′ λεπτὰ τῆς ὥρας. f98rV καὶ ἐκεῖνα ἑνοῦνται εἰς τὴν ὥραν τῆς εἰσελεύεως.

Διαίρεσις. Περὶ τῆς εἰσελεύσεως τοῦ τόπου τῆς τύχης

Ἀφ' οὗ καταλειφθῇ ἡ ὥρα τῆς εἰσελεύσεως, ἀπ' ἐκείνης τῆς ὥρας ἡ τύχη ἐκβάλλεται οὕτως καθὼς ἐρρέθη πρότερον.

Ἐπεὶ δὲ βουλόμεθα τὴν τύχην τῆς εἰσελεύσεως μεθ' ἑτέρου ψήφου ἐκβαλεῖν, ἐκεῖνος ὁ ψῆφος ὁ ψῆφός ἐστι τῆς περισσείας τῶν χρόνων. γίνεται τοίνυν ζήτησις ὅτι ἀπὸ τῆς γεννήσεως πόσοι χρόνοι παρῆλθον. καὶ κατ' ἐναντίον τῶν χρόνων ἐκείνων γίνεται εἰσέλευσις εἰς τὸ κανόνιον τῆς περισσείας τῶν χρόνων, καὶ κατ' ἐναντίον ἐκείνου κρατεῖται. ἡ περισσεία ἐκείνη μετὰ τῆς ὀρθώσεως τοῦ ὑψώματος τελεία γίνεται. καὶ ἐκείνη ἀεὶ ἑνοῦται τῷ τόπῳ τῆς τύχης ἐκείνης ἤγουν τῇ ἀρχῇ τῆς γεννήσεως. εἴ τι εὑρεθῇ, ἐὰν ᾖ πλέον τῆς περιφορᾶς τοῦ κύκλου τῶν $\overline{\tau\xi}$, ἡ περιφορὰ

6 δεύτερα Vv ‖ 11 ἐπεὶ] ἔπειτα Vv ‖ 12 post χρόνων add et cancell καὶ κατ' ἐναντίον v

ἀφαιρεῖται ἐξ ἐκείνου μέχρι ἂν γένηται ἐλάττων ἐκείνης. εἴ τι καταλειφθῇ, ὁ τόπος τῆς τύχης ἐστὶ τῆς εἰσελεύσεως. κατ' ἐναντίον ἐκείνου γίνεται εἰσέλευσις εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης εἰς τὸ | πλάτος τῆς πόλεως f158vL ἐκείνης ἐν ᾗ γίνεται τηνικαῦτα ἡ ζήτησις τοῦ γενεθλιαλογικοῦ. καὶ κατ' ἐναντίον ἐκείνου ἡ τύχη ἐκβάλλεται ὡς ἐρρέθη πρότερον.

Διαίρεσις. Περὶ τῆς καταλήψεως τῆς τύχης τοῦ μέσου τῆς οἰκουμένης εἰς τὸ μῆκος καὶ πλάτος

Κρατεῖται ἡ περισσεία τῆς μέσης τοῦ μήκους τῆς πόλεως καὶ τῆς μέσης τῶν $\overline{\rho}$. | εἴ τι εὑρεθῇ, περιφορά ἐστιν. εἰ δὲ τὸ μῆκος τῆς ἡμετέρας πόλεως f311vv ἔλαττόν ἐστι τῶν $\overline{\rho}$, ἐκείνη ἡ περιφορὰ εἰς τὸν | τόπον τῆς τύχης τῆς ἡμετέρας f98vV πόλεως ἑνοῦται· εἰ δὲ πλέον τῶν $\overline{\rho}$, ἀφαιρεῖται. εἴ τι εὑρεθῇ, τόπος τῆς τύχης ἐστίν. κατ' ἐναντίον ἐκείνου εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς ἧς ἡ ἀρχὴ ἀπὸ τῆς ἀρχῆς τοῦ Κριοῦ γίνεται εἰσέλευσις, καὶ ἐκβάλλεται ἡ τύχη. εἰ δὲ ἡ ἀρχὴ τοῦ κανονίου ἐκείνου τοῦ μετὰ τῆς εὐθείας γραμμῆς ἀπὸ τῆς ἀρχῆς ἐστι τοῦ Αἰγοκέρωτος, ἐξ ἐκείνου ἐκβάλλεται ἡ τύχη.

Ἐκεῖνος οὖν ὁ τόπος τῆς τύχης ὁ μεθ' ἡμῶν περισσεύεται τόσον· $\overline{\sigma o}$. εἴ τι εὑρεθῇ, τόπος τῆς τύχης ἐστὶν εἰς τὸ κανόνιον ἐκεῖνο. εἰ βουλόμεθα τὴν τύχην ἐκβαλεῖν ἀπὸ τοῦ μέσου τῆς οἰκουμένης ὅτι τὸ πλάτος ἐκείνης ἐστὶ

τόσον· $\overline{\lambda\gamma}$, ἐκεῖνος ὁ τόπος τῆς τύχης οὐχὶ ὁ ἑνωθεὶς μετὰ τῶν $\overline{\sigma o}$, ἀλλ' ὁ πρὸ αὐτοῦ ἀπὸ τοῦ τόπου τῆς τύχης τοῦ ἐν τῷ κανονίῳ τοῦ πλάτους τῶν $\overline{\lambda\gamma}$ ἐκβάλλεται.

| Κεφάλαιον β΄. Περὶ τῆς καταλήψεως τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων f159rL
ἤτοι τοῦ πρὸς ἄλληλα τούτων σχηματισμοῦ

Πρὸ τοῦ εἰσελθεῖν εἰς τὸν ψῆφον τοῦτον τοσαῦτά εἰσι θεμέλια ἃ χρὴ εἰδέναι. ἴσθι ὅτι ἀπὸ τοῦ ι΄, τοῦ πρώτου μέχρι καὶ τοῦ τετάρτου ἥμισύ ἐστι τῆς ἀναβάσεως, ἀπὸ δὲ τοῦ δ΄, τοῦ ζ΄ μέχρι καὶ τοῦ ι΄ τὸ ἥμισύ ἐστι τῆς ἀναβάσεως.

Διαίρεσις. Περὶ τοῦ μήκους τῶν ἀστέρων ἀπὸ τῶν $\overline{\zeta}$ οἷος καὶ ἔστιν ἀπὸ τοῦ κέντρου τοῦ δ΄ καὶ τοῦ ι΄ μετὰ τοῦ ψήφου τοῦ Πτολεμαίου

Κρατεῖται ὁ τόπος τῆς τύχης τῶν ἀστέρων μετὰ τῆς εὐθείας γραμμῆς. εἶτα τηρεῖται. εἰ ἔστιν ὁ ἀστὴρ ὑπὲρ γῆν, κρα|τεῖται ἡ μοῖρα τοῦ ι΄ οἰκήματος μετὰ f99rV
τῆς εὐθείας γραμμῆς· εἰ δ' ὑπὸ γῆν ὁ ἀστήρ, κρατεῖται ἡ μοῖρα τοῦ τόπου τῆς τύχης τοῦ δ΄ οἰκήματος μετὰ τῆς εὐθείας γραμμῆς. εἶτα τηρεῖται. ἐὰν ὁ ἀστὴρ ὑπὲρ γῆν μέσον τῶν ζ΄ καὶ τῶν ε΄, ὁ τόπος τῆς τύχης τοῦ ἀστέρος ἀπὸ

7 δεκάτου V, L

τοῦ τόπου τῆς τύχης τοῦ ί οἰκήματος ἀφαιρεῖται. εἰ τι καταλειφθῇ, μῆκός ἐστι ἀπὸ τοῦ ί. εἰ δὲ ὁ ἀστὴρ μέσον τοῦ ί καὶ τοῦ α οἰκήματος τοῦ τόπου τῆς τύχης, ὁ τόπος τῆς τύχης ὁ ί ἀπὸ τοῦ τόπου τῆς τύχης τοῦ ἀστέρος ἀφαιρεῖται. εἰ τι καταλειφθῇ, μῆκός ἐστι τοῦ ἀστέρος ἀπὸ τοῦ ί. εἰ δ' ἐστὶν ὁ ἀστὴρ ὑπὸ γῆν, τηρεῖται. ἐὰν μέσον τῆς τύχης καὶ τοῦ δ, ὁ τόπος τῆς τύχης | τοῦ ἀστέρος ἀφαιρεῖται ἀπὸ τοῦ τόπου τῆς τύχης τοῦ δ. εἰ τι καταλειφθῇ, f159vL
μῆκός ἐστι τοῦ ἀστέρος | ἀπὸ τοῦ δ. εἰ δὲ ὁ ἀστὴρ μέσον τοῦ δ καὶ τοῦ ζ, f312rv
ὁ τόπος τῆς τύχης ὁ δ ἀπὸ τοῦ τόπου τῆς τύχης τοῦ ἀστέρος ἀφαιρεῖται. εἰ τι καταλειφθῇ, μῆκός ἐστι τοῦ ἀστέρος ἀπὸ τοῦ δ.

Διαίρεσις. Περὶ τοῦ πλάτους τῆς κινήσεως τοῦ κύκλου ἤγουν τοῦ πλάτους τῶν πόλεων

Ἐπεὶ χρεία γενέσθαι τὸν ψῆφον τοῦτον, τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ κέντρου τοῦ ί ἢ τοῦ δ τηρεῖται εἰς τὸ πλάτος τῆς πόλεως. εἰ τι εὑρεθῇ, τηρεῖται. τοῦτο θεμέλιον καλεῖται. ἔπειτα τηρεῖται. ἐὰν ὁ ἀστὴρ ὑπὲρ γῆν, ἐκεῖνο τὸ θεμέλιον μερίζεται εἰς τὸ ἥμισυ τόξον τῆς ἡμέρας – | τὸ αἰλὰτζ κατ' f99vV
Ἰνδούς. εἰ δ' ὑπὸ γῆν ἐστιν ὁ ἀστήρ, ἐκεῖνο τὸ θεμέλιον μερίζεται εἰς τὸ ἥμισυ τόξον τῆς νυκτός – τὸ αἰλάτζ. εἰ τι ἐξέλθῃ, πλάτος ἐστὶ τοῦ κύκλου τῆς κινήσεως.

2 post ἐστι v add et cancell τοῦ ἀστέρος ‖ 7–9 εἰ δ' ... δ in marg v ‖ 16 τὸ[1] iter. V

Εἰς τοῦτο τὸ πλάτος κανόνιον τοῦ τόπου τῆς τύχης τῶν ζῳδίων γίνεται ὡς ἂν ἐκεῖνο ᾖ τὸ θεμέλιον εἰς τὸ κίνημα τῶν ἀστέρων

Διαίρεσις. Περὶ τοῦ τόπου τοῦ φωτὸς τῶν ἀστέρων ἤτοι τοῦ πρὸς ἄλληλα τούτων σχηματισμοῦ οἵπερ ἔχουσι πλάτος μετὰ τοῦ ψήφου καὶ διὰ τοῦ κανονίου

Ἴσθι· ἐὰν ὁ ἀστὴρ πλάτος οὐκ ἔχῃ, τὰ τόξα τοῦ ἑξαγώνου καὶ τετραγώνου καὶ τριγώνου καὶ τῆς διαμέτρου τόσα · $\overline{\xi}$, $\overline{\rho}$, $\overline{\rho\kappa}$, $\overline{\rho\pi}$, $\overline{\sigma\mu}$, $\overline{\sigma o}$. ἐὰν ἔχῃ τοίνυν ὁ ἀστὴρ πλάτος, τὰ τόξα | ταῦτα πλέον καὶ ἔλαττον γίνονται ὧν χρεία f160rL ὀρθώσεως.

Κρατεῖται οὖν ἡ τραχηλαῖα $\overline{\lambda}$. ἐκείνη τηρεῖται εἰς τὴν τετελειωμένην τραχηλαῖαν τοῦ πλάτους τοῦ ἀστέρος. εἴ τι εὑρεθῇ, παρ' ἕνα βαθμὸν ἔλαττον κρατεῖται. ἔπειτα εἴ τι εὑρεθῇ, ἐκεῖνο τραχηλαῖά ἐστιν. τὸ τόξον ἐκείνης κρατεῖται· ἐκεῖνο ὄρθωσις λέγεται. τοῦτο τηρεῖται. ἔπειτα τὰ $\overline{\rho}$ εἰς τρεῖς τόπους τίθενται. εἶτα ἡ ὄρθωσις ἐκείνη ἀπὸ τοῦ α΄ ἀφαιρεῖται καὶ τῷ γ΄ ἑνοῦται. εἴ τι εὑρεθῇ ἀπὸ τοῦ α΄ τόξον ἐστὶ τοῦ ἑξαγώνου, ἡ διάμετρος ἐκείνου τρίγωνον· τὸ β΄ τόξον ἐστὶ τοῦ τετραγώνου, ἡ διάμετρος ἐκείνου αὖθις τετράγωνον· τὸ γ΄ τόξον ἐστὶ τοῦ τριγώνου, ἡ διάμετρος τούτου τόξον ἐστὶ τοῦ ἑξαγώνου.

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2 ᾖ om V, L ‖ 6 ἔχει v ‖ 14 πρώτου V | τρίτῳ Vv ‖ 15 πρώτου V ‖ 16 δεύτερον V ‖ 17 τρίτον Vv

Ψῆφος μετὰ τοῦ κανονίου ἀφ' οὗ γίνεται δῆλον τὸ πλάτος τοῦ ἀστέρος

Κατ' ἐναντίον τοῦ|πλάτους τοῦ ἀστέρος γίνεται εἰσέλευσις εἰς τὸ κανόνιον f100rV τόδε τῶν σχηματισμῶν τῶν ἀστέρων, καὶ κρατεῖται κατ' ἐναντίον ἐκείνου. εἴ τι εὑρεθῇ ἀπὸ τοῦ α΄ καὶ β΄ κανονίου καὶ τὸ ἀπὸ τῶν $\overline{\beta}$ εὑρεθὲν κανονίων τηρεῖται. ἔπειτα τὸ αὐθημερινὸν τοῦ ἀστέρος τίθεται εἰς τὴν ταῦλαν εἰς $\overline{\beta}$ τόπους. ἐκεῖνος οὖν ὁ κρατηθεὶς ψῆφος ἀπὸ τοῦ α΄ κανονίου ἀφαιρεῖται ἀπὸ τοῦ αὐθημερινοῦ τοῦ ἀστέρος τοῦ τεθέντος εἰς τὴν ταῦλαν α΄, καὶ ἑνοῦται τῷ τεθέντι αὐθημερινῷ β΄. εἴ τι οὖν εὑρεθῇ εἰς τὸ β΄ | ὁ τόπος |ἐστὶ τοῦ φωτὸς f160vL, f312vv τοῦ ἑξαγώνου τοῦ ἀστέρος ἐξ ἀριστερῶν, καὶ ἡ διάμετρος τούτου τρίγωνόν ἐστι δέξιον. εἴ τι δὲ εὑρεθῇ ἀπὸ τοῦ α΄ ἑξάγωνόν ἐστι δεξιόν, καὶ ἡ διάμετρος τούτου τρίγωνόν ἐστι ἀριστερόν.

Ὁ ψῆφος δὲ τοῦ β΄ κανονίου τὸ πλάτος τοῦ ἑξαγώνου εἰς ἐκεῖνο τὸ μέρος ἔνθα ἐστὶ τὸ πλάτος τοῦ ἀστέρος. καὶ πάλιν οὗτος ὁ ψῆφος τὸ πλάτος ἐστὶ τοῦ τριγώνου εἰς ἐκεῖνο τὸ μέρος ἔνθα οὐκ ἔστι τὸ πλάτος τοῦ ἀστέρος. τὸ τετράγωνον πλάτος οὐκ ἔχει. εἰ γοῦν δεήσει καταλειφθῆναι τὸ τετράγωνον, $\overline{\varrho}$ μοῖραι ἑνοῦνται τῷ αὐθημερινῷ τοῦ ἀστέρος, καὶ τὸ τετράγωνον τὸ ἀριστερὸν εὑρίσκεται. καὶ ἡ διάμετρος τούτου τὸ δεξιόν ἐστι τετράγωνον.

1 γένηται Vv ‖ 4 πρώτου Vv | δευτέρου Vv | δύο Vv ‖ 5 δύο Vv ‖ 6 πρώτου Vv ‖ 7 πρώτου Vv | τῷ om V ‖ 8 δευτέρῳ Vv | δεύτερον V ‖ 10 πρώτου V ‖ 12 δευτέρου Vv ‖ 17 ἐστι post τετράγωνον L

καὶ τὸ πλάτος τῆς διαμέτρου τοῦ ἀστέρος κατ' ἐναντίον ἐστὶ τοῦ πλάτους τοῦ ἀστέρος εἰς τὸ μέρος ἐκεῖνο ἔνθα οὐκ ἔστιν ὁ ἀστήρ.

Διαίρεσις. Περὶ τοῦ τόπου τοῦ | φωτὸς τῶν ἀστέρων μετὰ τῆς ἑνώσεως τῶν f100vV
$\overline{\beta}$ τόπων τῆς τύχης μετὰ τοῦ ψήφου τοῦ Πτολεμαίου

Χρείας γενομένης, τηρεῖται. ἐὰν ὁ ἀστὴρ εἰς τὸ ἥμισυ τῆς ἀναβάσεώς ἐστιν ἀπὸ τῆς σφαίρας, κατ' ἐναντίον τῆς μοίρας τοῦ ἀστέρος γίνεται εἰσέλευσις εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς, καὶ ἀπὸ μέσου τοῦ κανονίου ὁ τόπος κρατεῖται. τοῦτο εἰς $\overline{\varsigma}$ τόπους τίθεται εἰς τὴν ταῦλαν. εἰς τὸν α΄ οὖν τόπον ἑνοῦνται $\overline{\xi}$, εἰς τὸν β΄ $\overline{\rho}$, εἰς τὸν γ΄ $\overline{\rho\kappa}$· καὶ ἀπὸ τοῦ δ΄ | ἀφαιροῦνται $\overline{\xi}$, ἀπὸ τοῦ ε΄ $\overline{\rho}$, καὶ ἀπὸ τοῦ ς΄ $\overline{\rho\kappa}$. ἔπειτα ἕκαστον ἀπὸ τῶν $\overline{\varsigma}$ f161rL
ζητεῖται μέσον τοῦ κανονίου τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς.

Ἄνωθεν οὖν τοῦ κανονίου κρατεῖται τὸ ζῳδίον, καὶ ἐκ πλαγίου αἱ μοῖραι. καὶ τὰ λεπτὰ αὖθις ἐκβάλλονται ἀπὸ μέσου τῶν $\overline{\beta}$ κανονίων ὡς ἐρρέθη πρότερον. εἴ τι οὖν ἐξέλθῃ, κατὰ τὴν τάξιν ἐκείνην εἰς $\overline{\varsigma}$ τόπους τίθεται, καὶ εὑρίσκεται ἀπὸ τοῦ α΄ τόπου τὸ ἀριστερὸν ἑξάγωνον, καὶ ἀπὸ τοῦ β΄ τὸ ἀριστερὸν τετράγωνον, καὶ ἀπὸ τοῦ γ΄ τὸ ἀριστερὸν τρίγωνον, καὶ ἀπὸ τοῦ δ΄ τὸ δέξιον ἑξάγωνον, καὶ ἀπὸ τοῦ ε΄ τὸ δέξιον τετράγωνον, καὶ ἀπὸ τοῦ ς΄

4 δύο Vv ‖ 7 post ἀπὸ L add et cancell τοῦ ‖ 9 πρῶτον Vv | δεύτερον Vv | τρίτον Vv | τετάρτου Vv ‖ 10 πέμπτου Vv ‖ 13 δύο Vv ‖ 15 πρώτου Vv | δευτέρου Vv ‖ 16 τρίτου Vv | τρίγωνον] τετράγωνον v ‖ 17 τετάρτου Vv | πέμπτου Vv | ἕκτου V

τὸ δεξιὸν τρίγωνον. ταῦτα οὖν τὰ $\overline{\varsigma}$ ἤγουν οἱ $\overline{\varsigma}$ σχηματισμοὶ τηροῦνται.

Ἔπειτα αὖθις κατ' ἐναντίον τοῦ αὐθημερινοῦ τοῦ ἀστέρος γίνεται εἰσέλευσις εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης τῶν ζῳδίων | εἰς τὸ πλάτος f101rV τῆς πόλεως ἐκείνης ἔνθα ἡ γέννησις, καὶ ὁ τόπος τῆς τύχης κρατεῖται ἀπὸ μέσου τοῦ κανονίου καὶ εἰς $\overline{\varsigma}$ τόπους τίθεται. | καὶ γίνεται ὁ ψῆφος οὗτος f313rv ὡς ὁ α΄ τεθεὶς εἰς $\overline{\varsigma}$ τόπους κατ' ἐναντίον τῶν $\overline{\varsigma}$ ἐκείνων ψήφων, ὁ α΄ ὑπὸ τὸν α΄, ὁ β΄ ὑπὸ τὸν β΄, καὶ καθεξῆς. ἔπειτα τηρεῖται, ὅτι οἱ $\overline{\beta}$ οὗτοι ψῆφοι, ἕκαστος μετὰ τοῦ ἑτέρου, κατ' ἐναντίον εἰσὶν ἢ οὔ, ὁ α΄ μετὰ τοῦ α΄ καὶ | καθεξῆς. ἐὰν οὖν ὦσι καὶ οἱ $\overline{\beta}$ ἐξισούμενοι, ὁ τόπος τῶν $\overline{\varsigma}$ φωτῶν τῶν f161vL ἀστέρων ἤγουν τῶν σχηματισμῶν ὀρθός ἐστιν.

Εἰ δὲ κατ' ἐναντίον οὐκ εἴσιν, χρεία τῆς τούτων ὀρθώσεως. ὀρθωθέντος δὲ τοῦ ἑνὸς καὶ τὰ ἕτερα ὀρθοῦνται. ἐπεὶ γοῦν χρεία ἐκβληθῆναι τὴν ὄρθωσιν ἑκάστου, ἡ περισσεία ἑκάστου κρατεῖται ἤγουν ἡ εὑρεθεῖσα μέσον τοῦ α΄ καὶ καθεξῆς. ἐκεῖνο τηρεῖται εἰς τὸ μῆκος τοῦ ἀστέρος ἀπὸ τοῦ ι΄ ἢ τοῦ δ΄ κέντρου. εἴ τι οὖν εὑρεθῇ, ἐκεῖνο θεμέλιον λέγεται. τοῦτο τηρεῖται.

Πάλιν δὲ τηρεῖται. ἐὰν ὁ ἀστὴρ ὑπὲρ γῆν, ἐκεῖνο τὸ θεμέλιον μερίζεται εἰς τὸ ἥμισυ τόξον τῆς ἡμέρας τοῦ ἀστέρος. εἰ δὲ ὑπὸ γῆν ὁ ἀστήρ, ἐκεῖνο τὸ θεμέλιον μερίζεται εἰς τὸ ἥμισυ τόξον τῆς νυκτὸς τοῦ ἀστέρος. εἴ τι εὑρεθῇ, ὄρθωσίς ἐστιν. καὶ αὖθις τηρεῖται εἰς ἐκείνας τὰς $\overline{\gamma}$ ἀκτινοβολίας τοῦ ἀστέρος,

6 πρώτος Vv | πρώτος Vv ‖ 7 πρώτον Vv | δεύτερος Vv | δεύτερον Vv | δύο Vv ‖ 8 πρώτος Vv | πρώτου Vv ‖ 9 δύο Vv ‖ 13 πρώτου Vv ‖ 19 τρεῖς Vv

ἤγουν τοὺς τρεῖς σχηματισμοὺς τοὺς ἐξ ἀριστερῶν, ἀφ' ὧν ἕκαστος ἀπὸ τῶν $\overline{\beta}$ ψήφων ἐξῆλθεν ὅτι ποῖός ἐστιν ἐγγὺς τοῦ ἀστέρος. ἐκείνη οὖν ἡ ὄρθωσις ἑνοῦται εἰς ἐκεῖνο τὸ ἐγγύτερον. |καὶ εἰς τὰς $\overline{\gamma}$ ἀκτινοβολίας τὰς ἐξ δεξιῶν f101vV
εἰς τὸ πορρώτερον ἑνοῦται, καὶ εὑρίσκονται οἱ $\overline{\varsigma}$ σχημαστισμοί.

Εἰ δὲ ὁ ἀστὴρ εἰς τὸ ἥμισυ τῆς καταβάσεώς ἐστι τῆς σφαίρας, οὗτοι οἱ ῥηθέντες ψῆφοι εἰς τὸν τόπον τῆς τύχης τῆς διαμέτρου τοῦ ἀστέρος γίνονται. εἴ τι οὖν εὑρεθῇ, διάμετρός ἐστι τοῦ |φωτὸς τοῦ ἀστέρος. $\overline{\varsigma}$ ζῴδια ἀεὶ f162rL
ἑνοῦνται τῇ διαμέτρῳ ταύτῃ, καὶ εὑρίσκεται τὸ φῶς τοῦ ἀστέρος.

Εἰ οὖν βουληθῶμεν καὶ ἄλλως ἐργάσασθαι τὴν τέχνην ταύτην, τὸ πλάτος τῆς κινήσεως τοῦ κύκλου καταλαμβάνεται, καὶ τὸ κανόνιον τοῦ τόπου τῆς τύχης τῶν ζῳδίων εἰς ἐκεῖνο τὸ πλάτος γινώσκεται ὡς ἂν γένηται ὁ ψῆφος εὐληπτότερος. ἐπεὶ γοῦν βουλόμεθα ποιῆσαι ψῆφον, τηρεῖται. ἐὰν ὁ ἀστὴρ εἰς τὸ ἥμισυ τῆς ἀναβάσεως τῆς σφαίρας ἐστίν, ὁ τόπος τῆς τύχης τῆς μοίρας ἐκείνης κρατεῖται ἀπὸ τοῦ κανονίου ἐκείνου. εἰ δὲ ὁ ἀστὴρ εἰς τὸ ἥμισυ τῆς καταβάσεως τῆς σφαίρας ἐστίν, ὁ τόπος τῆς διαμέτρου τῆς μοίρας τοῦ αὐθημερινοῦ τοῦ ἀστέρος κρατεῖται εἰς τὸ κανόνιον τοῦ τόπου τῆς τύχης εἰς τὸ πλάτος τῆς πόλεως |μετὰ τῆς εὐθείας γραμμῆς. καὶ ὁ ψῆφος ἑκάστης f313vv
ἀκτινοβολίας εἰς ἐκεῖνον τὸν τόπον τῆς τύχης ἑνοῦται ὡς ἐρρέθη ἐν τοῖς $\overline{\xi}$ καὶ $\overline{\rho}$ καὶ $\overline{\rho\kappa}$, ἀφαιρέσεως καὶ προσθέσεως γινομένης. καὶ ὁ ψῆφος ὁ ἕτερος

1 τῶν om Vv ‖ 2 δύο Vv ‖ 3 τρεῖς Vv ‖ 4 καὶ iter. v

οὕτω πληροῦται ὡς ἐρρέθη πρότερον. εἴ τι εὑρεθῇ, διάμετρός ἐστι τοῦ φωτὸς τῶν ἀστέρων ἐκείνων. εἰς ἕκαστον $\overline{\varsigma}$ ζῴδια προσ|τίθενται, καὶ εὑρίσκεται τὸ f102rV φῶς τῶν ἀστέρων.

Ὁ ψῆφος οὗτος δι᾽ ἄλλης μεθόδου εὐληπτοτέρας

Ἐπεὶ δι᾽ ἑνὸς τόπου τῆς τύχης γίνεται ὁ ψῆφος τούτου οὕτως, τὸ κανόνιον τοῦ τόπου τῆς τύχης μετὰ | τοῦ πλάτους τοῦ κύκλου τῆς κινήσεως φέρεται f162vL ἀνὰ χεῖρας, καὶ οἱ λεχθέντες οὗτοι ψῆφοι ἀπὸ τοῦ κανονίου τούτου γίνονται. καὶ χρεία οὐκ ἔστι τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς.

Κεφάλαιον γ΄. Περὶ τῆς κινήσεως τοῦ αἰλὰτζ ἤγουν τοῦ ἐξ ἰδίας | διανοίας f163rL γενομένου καὶ τοῦ τόπου τῆς μοίρας ἐκείνης

Ἴσθι ὅτι ἡ κίνησις τοῦ αἰλὰτζ καθ᾽ ἕκαστον χρόνον τοῦ ἡλίου μία μοῖρα τοῦ τόπου τῆς τύχης ἐστίν. ἐπεὶ γοῦν μία μοῖρα τὸν χρόνον $\overline{\varepsilon}$ λεπτά εἰσιν εἰς τὸν α΄ μῆνα, καὶ $\overline{\varsigma}$ ἡμέραι εἰς τὸ ἓν λεπτόν, καὶ δέκα δεύτερα λεπτά ἡμέρα μία. καὶ εἰς ὅλους τοὺς ψήφους οὕτω γίνεται, τοῦτο τὸ αἰλὰτζ ὅπερ κινεῖται μετὰ τῶν | ἀστέρων καὶ τῶν ὡρῶν τῶν καλῶν καὶ κακῶν κινεῖται f102vV

2 τὸ om v ‖ 12 post μοῖρα v add et cancell τοῦ τόπου τῆς τύχης ἐστὶ ‖ 13 ἕνα LV | ι β L ‖ 15 κινοῦσι LV | κινοῦσιν LV

ὅτι ἀπὸ τούτου ἵνα καταλειφθῇ ὅτι ὁ ἄνθρωπος ἐκεῖνος ζήσεται ἢ τελευτήσει. ἐνταῦθα δὲ εἰς τὴν κίνησιν ταύτην τοῦ αἰλὰτζ $\overline{\beta}$ ψῆφοι εἰσέρχονται. εἷς ψῆφος ἐκεῖνος ὅτι εἰς τὴν μοῖραν ἐκείνην τὸ αἰλὰτζ διχῶς κινεῖται δεύτερον ἐκεῖνο, ὅτι ὀφείλει καταληφθῆναι ὁ καιρός, ἡ δὲ μοῖρα οὐκ ἐξ ἀνάγκης. διὰ τοῦτο οὖν τὸ κεφαλαῖον τοῦτο εἰς $\overline{\beta}$ διαιρεῖται.

Διαίρεσις α΄. Περὶ τοῦ ψήφου ἐκείνου ἵνα γινώσκηται ἡ μοῖρα τοῦ καιροῦ ἀγνοουμένου

Ἐπεὶ χρεία γενέσθαι | τὸν ψῆφον τοῦτον, πρῶτον ὁ τόπος τῆς τύχης τοῦ f314rv
αἰλὰτζ μετὰ τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνης μετὰ τοῦ πλάτους τῆς πόλεως κρατεῖται, καὶ ἕκαστον ἰδίᾳ τίθεται. εἶτα τηρεῖται τὸ αἰλάτζ. ἐὰν ᾖ εἰς τὴν μοῖραν τοῦ ι΄ οἰ|κήματος ἢ τοῦ δ΄, ὁ τόπος τῆς τύχης ἐκείνου μετὰ τῆς f163vL
εὐθείας γραμμῆς ἀπὸ τοῦ τόπου τῆς τύχης ἐκείνου μετὰ τῆς εὐθείας γραμμῆς ἀφαιρεῖται· εἰ δὲ τὸ αἰλὰτζ εἰς τὴν μοῖράν ἐστι τοῦ ζ΄ οἰκήματος, ὁ τόπος τῆς τύχης τῆς διαμέτρου ἐκείνου μετὰ τοῦ πλάτους τῆς πόλεως ἀπὸ τοῦ τόπου τῆς τύχης τῆς διαμέτρου ἐκείνης τῆς μοίρας μετὰ τοῦ πλάτους τῆς πόλεως ἀφαιρεῖται. εἴ τι καταλειφθῇ, τὸ τόξον ἐστὶ τῆς κινήσεως.

Εἰς ἑκάστην οὖν μοῖραν εἷς χρόνος κρατεῖται οὕτως ὡς εἴρηται πρότερον ὡς ἂν ὁ καιρὸς τῆς κινήσεως γνωρισθῇ. εἰ δὲ τὸ αἰλὰτζ μέσον ἐστὶ τῶν

2 δύο Vv ‖ 3 κινούσι LV ‖ 4 καταλειφθῆναι ut videtur L ‖ 5 δύο Vv

δύο κέντρων, ἐκεῖ ὄρθωσις γίνεται οὕτως. ἐὰν τὸ αἰλὰτζ εἰς τὸ ἥμισυ τῆς ἀναβάσεως τῆς|σφαίρας, ἡ περισσεία ἡ μέση τοῦ τόπου τῆς τύχης τῆς μοίρας f103rV ἐκείνου μετὰ τῆς εὐθείας γραμμῆς εἰς τὸ πλάτος τῆς πόλεως κρατεῖται καὶ τηρεῖται. ἐκεῖνο εἰς τὸ μῆκος τοῦ αἰλὰτζ ἀπὸ τοῦ κέντρου τηρεῖται. εἴ τι εὑρεθῇ, θεμέλιόν ἐστιν. ἔπειτα τηρεῖται. ἐὰν ὑπὲρ γῆν ἐστι τὸ αἰλάτζ, ἐκεῖνο τὸ θεμέλιον εἰς τὸ ἥμισυ τόξον τῆς ἡμέρας τοῦ αἰλάτζ μερίζεται· εἰ δ' ὑπὸ γῆν, εἰς τὸ ἥμισυ τόξον τῆς νυκτός. εἴ τι ἐξέλθῃ, ὄρθωσίς ἐστιν. ἔπειτα τηρεῖται μετὰ τοῦ τόπου τῆς τύχης τῆς εὐθείας γραμμῆς. ἐὰν πλέον τοῦ τόπου τῆς τύχης τῆς πόλεως, ἡ ὄρθωσις ἐξ ἐκείνου ἀφαιρεῖται· εἰ δ' ἔλαττον, ἑνοῦται ἐκείνῳ. |εἴ τι εὑρεθῇ, ὁ τόπος τῆς τύχης τῆς μοίρας τοῦ αἰλάτζ ἐστι f164rL τέλειος. τοῦτο τηρεῖται. ἡ περισσεία μέσον τοῦ τόπου τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς ἐκείνης τῆς μοίρας μετὰ τοῦ τόπου τῆς τύχης τῆς πόλεως ἐκείνης τῆς μοίρας κρατεῖται. ἐκεῖνο εἰς τὸ μῆκος τοῦ αἰλὰτζ τηρεῖται, καὶ εἰς τὸ ἥμισυ τόξον τῆς ἡμέρας ἢ τῆς νυκτὸς τοῦ αἰλὰτζ μερίζεται. καὶ ὁ ἕτερος ψῆφος πληροῦται ὡς ἐρρέθη ἵνα ὁ τόπος τῆς τύχης ἐκείνης τῆς μοίρας εὑρεθῇ τέλειος.

Ἔπειτα ὁ τόπος τῆς τύχης ὁ τέλειος τοῦ αἰλὰτζ ἀπὸ τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνης ἀφαιρεῖται. εἴ τι καταλειφθῇ, τόξον ἐστὶ τῆς κινήσεως. εἰ δὲ τὸ αἰλὰτζ εἰς τὸ ἥμισυ τῆς καταβάσεως τῆς σφαίρας, ὁ τόπος|τῆς τύχης f103vV

4 τηρεῖται iter. L

τῆς διαμέτρου τοῦ αἰλὰτζ κρατεῖται ἀπὸ τῆς μοίρας ἐκείνης, | καὶ γίνεται f314vv
οὗτος ὁ ψῆφος ἵνα τὸ τόξον τῆς κινήσεως εὑρεθῇ. εἰ δὲ θέλομεν τὸν ψῆφον τοῦτον λεπτότερον ποιῆσαι, πρῶτον ὁ τόπος τῆς τύχης τῶν ζῳδίων μετὰ τοῦ πλάτους τοῦ κύκλου τῆς κινήσεως μεταχειρίζεται. ἔπειτα εἷς τόπος τῆς τύχης κρατεῖται τοῦ αἰλὰτζ ἢ τῆς διαμέτρου τούτου, καὶ πάλιν ἡ μοῖρα ἐκείνη τούτου ὡσαύτως. ἔπειτα ὁ τόπος τῆς τύχης τοῦ αἰλὰτζ ἀπὸ τοῦ τόπου τῆς τύχης τῆς μοίρας ἐκείνης ἀφαιρεῖται ἵνα εὑρεθῇ τὸ τόξον τῆς κινήσεως. καὶ ἑκάστου μοῖρα κρατεῖται ὡς ἐρρέθη.

| Διαίρεσις. Περὶ τοῦ μερισμοῦ τῆς μοίρας τοῦ αἰλάτζ f164vL

Ἐπεὶ ἐγνώσθη ὁ καιρός, εἴπερ οὐ γινώσκεται ἡ μοῖρα εἰς ἣν κινεῖται τὸ αἰλάτζ, χρείας γενομένης γενέσθαι τὸν ψῆφον τοῦτον, τηρεῖται τὸ γενεθλιαλογικὸν πόσοι χρόνοι καὶ μῆνες καὶ ἡμέραι ἐκ τούτου παρῆλθον. καὶ ἕκαστος χρόνος τοῦ ἡλίου μία μοῖρα κρατεῖται, καὶ ἕκαστος μὴν $\overline{\varepsilon}$ λεπτά, καὶ ἑκάστη ἡμέρα δέκα δεύτερα λεπτά. εἴ τι εὑρεθῇ, ἐκεῖνο τόξον λέγεται τῆς κινήσεως ἤγουν τῆς ἐλάσεως. τοῦτο φυλάττεται. ἔπειτα τηρεῖται. ἐὰν τὸ αἰλὰτζ εἰς τὴν μοῖραν τοῦ ί καὶ δ΄ κέντρου ἐστίν, τὸ τόξον τοῦτο τῆς κινήσεως ἐνοῦται εἰς τὸν τόπον τῆς τύχης τούτου μετὰ τῆς εὐθείας γραμμῆς. εἴ τι εὑρεθῇ, ἐκεῖνο τηρεῖται εἰς τὸ μέσον τοῦ τόπου τῆς τύχης μετὰ τῆς

12 χρόνοι om L ‖ 13 πέντε V ‖ 14 δέκα] $\bar{\iota}$ L

εὐθείας γραμμῆς, καὶ κρατεῖται τὸ ζῴδιον ἄνωθεν καὶ αἱ μοῖραι ἐκ πλαγίου. καὶ ὁ ψῆφος τῶν λεπτῶν ἀπὸ μέσου τῶν $\overline{\beta}$ κανονίων ἐκβάλλεται οὕτως | ὡς f104rV
εἴρηται πρότερον.

Εἴ τι εὑρεθῇ, ὁ τόπος τῆς μοίρας ἐστὶ τοῦ αἰλάτζ. εἰ δὲ τὸ αἰλὰτζ εἰς τὴν μοῖράν ἐστι τῆς τύχης, οὗτος ὁ ψῆφος μετὰ τοῦ τόπου τῆς τύχης τῆς πόλεως γίνεται· εἰ δὲ τὸ αἰλὰτζ εἰς τὴν μοῖραν τοῦ ζ′ οἰκήματος, οὗτος ὁ ψῆφος μετὰ τοῦ τόπου τῆς τύχης τῆς διαμέτρου τοῦ αἰλὰτζ γίνεται εἰς τὸν τόπον τῆς τύχης τῆς πόλεως. εἴ τι εὑρεθῇ, διάμετρος τῆς μοίρας τοῦ μέρους τοῦ αἰλάτζ ἐστιν. | $\overline{\varsigma}$ ζῴδια τούτῳ προστίθενται, καὶ εὑρίσκεται ἡ μοῖρα τοῦ f165rL
μέρους τοῦ αἰλάτζ. εἰ δὲ τὸ αἰλὰτζ μέσον τῶν $\overline{\beta}$ κέντρων ἐστίν, ὁ ψῆφος μετὰ τῶν $\overline{\beta}$ τόπων τῆς τύχης ὀφείλει γενέσθαι μετὰ τοῦ τόπου τῆς τύχης τῆς εὐθείας γραμμῆς καὶ τῆς πόλεως. ἔπειτα τηρεῖται. ἐὰν τὸ αἰλὰτζ εἰς τὸ ἥμισύ ἐστι τῆς ἀναβάσεως, οὗτος ὁ ψῆφος μετὰ τοῦ τόπου τῆς μοίρας τοῦ αἰλὰτζ γίνεται· εἰ δὲ εἰς τὸ ἥμισύ ἐστι τῆς καταβάσεως τῆς σφαίρας, | οὗτος ὁ ψῆφος f315rv
μετὰ τῆς διαμέτρου τῆς μοίρας τοῦ αἰλὰτζ γίνεται. εἴ τι εὑρεθῇ ἀπὸ τῶν δύο τόπων τῆς τύχης ἀπὸ ζῳδίων, μοίρων καὶ λεπτῶν, ἐκείνη ἡ μοῖρα ἡ μοῖρά ἐστι τοῦ αἰλὰτζ μετὰ τοῦ ψήφου ἑκάστου τόπου τῆς τύχης. καὶ αὖθις τηρεῖται. ἐὰν καὶ τὰ $\overline{\beta}$ κατὰ τὰ ζῴδια, τὰς μοίρας καὶ τὰ λεπτὰ ἐξισοῦνται, ἐκείνη ἡ μοῖρα ἡ μοῖρα τοῦ αἰλὰτζ τελεία· εἰ δ' οὐκ ἐξισοῦνται, γίνεται ὄρθωσις.

1 ἡ μοῖρα Vv ‖ 2 δύο Vv ‖ 10 δύο Vv ‖ 11 δύο Vv ‖ 13 τῆς^2+τύχης ἡ LV ‖ 15 post γίνεται add et cancell εἰ δὲ εἰς τὸ ἥμισύ ἐστι τῆς καταβάσεως τῆς σφαίρας v ‖ 18 δύο Vv

Ὁ ψῆφος τούτου οὕτως· ἡ περισσεία τῶν $\overline{\beta}$ τόπων τῆς τύχης κρατεῖται, καὶ ἐκείνη εἰς τὸ μῆκος τοῦ αἰλὰτζ εἰς τὸ κέντρον τὸ ἱ ἢ δ᾽ τηρεῖται. εἴ τι εὑρεθῇ, | θεμέλιόν ἐστιν. πάλιν τηρεῖται. ἐὰν τὸ αἰλὰτζ ὑπὲρ γῆν ἐστιν, τὸ f104vV
θεμέλιον τοῦτο μερίζεται εἰς τὸ ἥμισυ τόξον τῆς ἡμέρας τοῦ αἰλάτζ· εἰ δε τὸ αἰλὰτζ ὑπὸ γῆν ἐστιν, μερίζεται τοῦτο εἰς τὸ ἥμισυ τόξον τῆς μοίρας τοῦ αἰλάτζ. εἴ τι εὑρεθῇ, ἐκεῖνο ὄρθωσίς ἐστιν.

Ἔπειτα | τηρεῖται εἰς τὸν τόπον τῆς τύχης μετὰ τῆς εὐθείας γραμμῆς. ἐὰν f165vL
ᾖ πλέον τοῦ τόπου τῆς τύχης τῆς πόλεως, ἡ ὄρθωσις ἐξ ἐκείνου ἀφαιρεῖται· εἰ δ᾽ ἔλαττον, ἡ ὄρθωσις ἐκείνῳ ἑνοῦται. εἴ τι εὑρεθῇ, ὁ τόπος τῆς τύχης τῆς μοίρας ἡ μοῖρά ἐστι τοῦ αἰλὰτζ μετὰ τῆς εὐθείας γραμμῆς. ἀπ᾽ ἐκείνου τοῦ τόπου τῆς τύχης ἡ μοῖρα τῆς μοίρας τοῦ αἰλὰτζ ἐκβάλλεται. εἰ δὲ τὸ αἰλὰτζ εἰς τὸ ἥμισυ τῆς καταβάσεως τῆς σφαίρας, οὗτος ὁ ψῆφος μετὰ τοῦ τόπου τῆς τύχης τῆς διαμέτρου τοῦ αἰλὰτζ γίνεται. εἴ τι εὑρεθῇ, μοῖρα τῆς διαμέτρου τῆς μοίρας ἐστὶ τοῦ αἰλάτζ. $\overline{\varsigma}$ ζῴδια τούτῳ προστίθενται. εἴ τι εὑρεθῇ, ἡ μοῖρά ἐστι τοῦ αἰλάτζ.

Οὗτος ὁ ψῆφος μετὰ ἄλλης τάξεως εὐληπτοτέρας γινόμενος μετὰ ἑνὸς τόπου τῆς τύχης

Εἰ γένηται χρεία γενέσθαι τὸν ψῆφον τοῦτον, ὁ τόπος τῆς τύχης τῶν ζῳδίων τοῦ πλάτους τῆς κινήσεως κρατεῖται. ἔπειτα τηρεῖται. ἐὰν τὸ αἰλὰτζ

1 δύο Vv ‖ 5 μοίρας] sup lin ἡμέρας add et cancell v ‖ 8 ἐκείνου] ἐκείνων v

εἰς τὸ ἥμισυ τῆς ἀναβάσεως, οὗτος ὁ ψῆφος μετὰ τοῦ τόπου τῆς τύχης τῆς μοίρας τοῦ αἰλάτζ ἀπὸ τοῦ κανονίου τούτου γίνεται· εἰ δὲ εἰς τὸ ἥμισυ τῆς καταβάσεως, οὗτος ὁ ψῆφος μετὰ τοῦ τόπου τῆς τύχης τῆς διαμέτρου τὸ αἰλὰτζ | γίνεται ἀπὸ τούτου τοῦ κανονίου. f315vv

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| Κεφάλαιον δ΄. Περὶ τῆς ἐνθυμήσεως τῆς κινήσεως τῆς μοίρας τῆς τύχης τοῦ f105rV γενεθλιαλογικοῦ εἰς τὸν χρόνον, εἰς τοὺς μῆνας καὶ τὰς ἡμέρας καὶ εἰς τὴν κίνησιν τῆς τύχης | τούτου τέσσαρες διαιρέσεις εἰσίν. f166rL

Διαίρεσις α΄. Περὶ τῆς ἐνθυμήσεως ἐκείνου τοῦ ψήφου ὅτι καθ ᾽ ἕκαστον χρόνον $\overline{\alpha}$ ζῴδιον κινεῖται

᾽Επεὶ χρεία τοῦ ψήφου τοῦτου, οἱ τετελειωμένοι χρόνοι τοῦ ἡλίου οἱ παρηλθόντες ἀπὸ τοῦ γενεθλιαλογικοῦ τίθενται εἰς τὴν ταῦλαν. καὶ τὸ σημεῖον τοῦ ζῳδίου τῆς τύχης τοῦ θεμελίου τοῦ γενεθλιαλογικοῦ περισσεύεται εἰς τοὺς χρόνους ἐκείνους. εἴ τι εὑρεθῇ, ἐκεῖνο εἰς τὰ $\overline{\iota\beta}$ μερίζεται, ἤγουν ἀνὰ $\overline{\iota\beta}$ γίνεται τούτων ἀφαίρεσις. εἴ τι καταλειφθῇ, ἐκεῖνο ζῴδιον ὀφείλει εἶναι ἐφ᾽ ᾧ ἡ κίνησις τῆς τύχης κατ᾽ ἐκεῖνον τὸν χρόνον ἔφθασεν. ἐκεῖνο τὸ ζῴδιον ἰντεὲ καλεῖται.

5 ἐνθυμήσεως + ἐλάσεως sup lin V ‖ 7 τοῦτο LV ‖ 9 κινοῦσιν LV

Ἡ μοῖρα οὖν καὶ τὰ λεπτὰ ἐκεῖνα ἐκείνη ἡ μοῖρα καὶ τὰ λεπτὰ τῆς τύχης τοῦ θεμελίου εἰσίν.

Καὶ ἡ κίνησις ἐκείνη εἰς τρία τινά ἐστιν. ἕν ὅτι εἰς ἕκαστον ζῴδιον ἓν ζῴδιον κινεῖται, καὶ καθ' ἕκαστον μῆνα δύο μοῖραι καὶ ἥμισυ, καὶ καθ' ἑκάστην ἡμέραν $\overline{\varepsilon}$ λεπτά. καὶ μετὰ τούτου τοῦ ψήφου ἡ μοῖρα κινεῖται τῆς τύχης μετὰ τοῦ φωτὸς τῶν ἀστέρων ὅτι ἡ τύχη ἐστὶ τοῦ θεμελίου καὶ ἡ τύχη τῆς εἰσελεύσεως. δεύτερον ὅτι εἰς ἕκαστον χρόνον $\overline{\iota\gamma}$ ζῴδια ἀριθμοῦνται, καὶ εἰς ἑκάστην ἡμέραν $\overline{\alpha}$ μοῖρα καὶ $\overline{\delta}$ λεπτά εἰσιν, καὶ εἰς τὰς $\overline{\kappa\eta}$ ἡμέρας καὶ ἐπιδέκατον τῆς ἡμέρας $\overline{\alpha}$ ζῷδιον παρέρχεται. αὕτη ἡ κίνησις λέγεται τῶν μηνῶν. | τρίτον ἐκεῖνο ὅτι εἰς τὰς $\overline{\kappa\eta}$ ἡμέρας καὶ |ἐπιδέκατον τῆς ἡμέρας $\overline{\iota\gamma}$ f105vV, f166vL
ζῷδια ἀριθμοῦσιν, καὶ καθ' ἑκάστην ἡμέραν τόσον· $\overline{\iota\gamma}$ μοῖραι $\overline{\nu\gamma}$ λεπτά(αὕτη ἐν τούτῳ τῶν ἡμερῶν ἡ κίνησις). καὶ εἰς ἕκαστον ἀπὸ τῶν $\overline{\gamma}$ κανόνιον ἐτέθη ὅτι ὁ ψῆφος οὗτος ἐκεῖθεν ἵνα γένηται διὰ τὸ εὔληπτον.

Διαίρεσις β΄. Περὶ τῆς κινήσεως τῶν ψήφων τῆς τύχης τῆς εἰσελεύσεως

Ἴσθι πρῶτον ὅτι ἡ μοῖρα τῆς τύχης τῆς εἰσελεύσεως καὶ τὰ οἰκήματα ταύτης καὶ οἱ ἀστέρες τούτων εἰς ἕνα χρόνον $\overline{\iota\beta}$ ζῴδια κινοῦσιν, καὶ εἰς μίαν ἡμέραν $\overline{\nu\theta}$ λεπτὰ καὶ $\overline{\eta}$ β΄ λεπτά – ὅτι ἡ κίνησίς ἐστιν ἡ μέση τοῦ ἡλίου, καὶ εἰς ἕνα χρόνον μετὰ τοῦ ψήφου τούτου μετὰ τοῦ φωτὸς τῶν ἀστέρων ὅλων

1 ἐκεῖνα difficile visu v ‖ 5 πέντε Vv ‖ 10 ἐπίδεκτον ut videtur v ‖ 12 τριῶν Vv ‖ 17 δεύτερα Vv

| κινοῦνται διὰ τῆς σφαίρας πληρωθείσης τῆς περιφορᾶς. δεύτερον εἰς τὴν f316rv
κίνησιν τῶν μηνῶν. ἐκεῖνο εἰς μίαν ἡμέραν $\overline{\iota\beta}$ μοῖραι καὶ $\overline{\mu\theta}$ λεπτά. μετὰ
τοῦ ψήφου τούτου εἰς τόσας ἡμέρας κεὶ λεπτὰ τῆς ἡμέρας καὶ β′ λεπτά· $\overline{\lambda}$
$\overline{\kappa\varsigma}$ $\overline{\iota\beta}$ ζῴδιον $\overline{\alpha}$ πληροῦται εἰς τὸν μῆνα τοῦ ἡλίου.

Διαίρεσις γ′. Περὶ τῆς ἐλάσεως τῆς τύχης τῆς εἰσελεύσεως τοῦ μηνὸς μετὰ τοῦ ψήφου τούτου

Εἰς τόσον καιρόν· $\overline{\lambda}$ $\overline{\kappa\varsigma}$ $\overline{\iota\beta}$ ζῴδια $\overline{\iota\beta}$ ἐλαύνονται ἵνα πληρωθῇ ἡ περιφορά. καθ᾽ ἑκάστην ἐστὶ τόσον μοῖραι λεπτά· $\overline{\iota\alpha}$ $\overline{\nu}$ ὥστε εἰς $\overline{\alpha}$ μῆνα οἱ ψῆφοι τῆς τύχης τῶν μηνῶν ἐπανακυκλοῦνται μεθ᾽ ὅλων τῶν ἀκτινοβολιῶν τῶν ἀστέρων. καὶ διὰ τούτους τοὺς ψήφους κανόνια ἐτέθησαν ὅπως ὁ ψῆφος εὔληπτος ᾖ.

| Διαίρεσις δ′. Περὶ τῆς ἐλάσεως τῆς εἰσελεύσεως τῆς τύχης μεθ᾽ ἑτέρου f167rL
ψήφου

Ὁ τόπος τῆς τύχης | τῆς εἰσελεύσεως τίθεται εἰς τὴν ταῦλαν. καὶ εἰς τὸν f106rV
$\overline{\alpha}$ μῆνα τοῦ ἡλίου περισσεύεται τόσον· $\overline{\zeta}$ $\overline{\iota\gamma}$ μοῖραι καὶ λεπτά. εἴ τι εὑρεθῇ, ἐκεῖνο εἰς τὸ μέσον τοῦ κανονίου τοῦ τόπου τῆς τύχης τῆς πόλεως ζητεῖται. καὶ κατ᾽ ἐναντίον ἐκεῖνου ζῴδια καὶ μοῖραι κρατοῦνται ἵνα εὑρεθῇ ἡ μοῖρα

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3 δεύτερα Vv ‖ 8 $\overline{\alpha}^2$] ἕνα Vv ‖ 14 ἕνα Vv

εἰς τὸν $\overline{\alpha}$ μῆνα.

Καὶ ἡ μοῖρα ἑκάστης ἡμέρας ἐκεῖθεν ἐκβάλλεται μετὰ τοῦ ψήφου τούτου εἰς τὸν $\overline{\alpha}$ χρόνον τοῦ ἡλίου. εἰς τὸν τόπον τῆς τύχης τῆς εἰσελεύσεως περισσεύεται τόσον· $\overline{\pi\varsigma}$ $\overline{\mu\delta}$ $\overline{\delta}$ καὶ διὰ τοῦτον τὸν ψῆφον κανόνιον ἐτέθη ὡς ἂν ὁ ψῆφος ἐκεῖθεν εὔληπτος γένηται. εἴ τι εὑρεθῇ παρ' ἡμῶν ἐξ ἀρχῆς καὶ ὅπερ ὑπεσχέθημεν πρότερον εἰς ταύτας τὰς $\overline{\iota\beta}$ μοίρας καὶ εἰς τὰ κεφάλαια ἑκάστης μοίρας καὶ τὰς διαιαρέσεις τούτων πάντων, τοῦτο εἰς τὸ τέλος ἀρήγοντος τοῦ Θεοῦ ἠγάγομεν σὺν προθυμίᾳ. ὁ Θεὸς δὲ διατηρήσοι τὸν ἄνθρωπον ἐκεῖνον ὃς τὴν σύνταξιν ταύτην διελθὼν μάθοι ἂν ὡς δεῖ τὰ ποιηθέντα παρ' ἡμῶν ἐν αὐτῇ πρὸς ἀκρίβειαν.

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1 ἕνα Vv ‖ 3 ἕνα V | τῆς^2 + τῆς τύχης LV

First Appendix

Σχόλιον τοῦ Βράνα παραδείγματος χάριν

Ὁ ψῆφος εἰς χρόνους τῶν Ῥωμαίων ιγλ ἰουλ ις τοῦ ἡλίου εἰς τὸ ζ τοῦ Λέοντος καὶ λθ μοίρας περὶ τῆς ὀρθώσεως τῆς ἡμέρας κατ' ἐναντίον τοῦ πλάτους τῆς πόλεως με. ἐγένετο εἰσέλευσις εἰς τὸ κανόνιον τῆς ὀρθώσεως τῶν ἡμέρων, καὶ εὑρέθη ψῆφος κς ια. ἐκρατήθησαν κατ' ἐναντίον τῆς ἐποχῆς τοῦ ἡλίου γενικὰ λεπτὰ τὴν ἀρχὴν τοιούτων τῶν μοιρῶν ἀπὸ τοῦ α μέχρι καὶ τοῦ ρ , καὶ πάλιν ἐπαναστρεφομένων. εὑρέθησαν οὖν νι. ταῦτα ἐτηρήθησαν εἰς τὴν τραχηλαῖαν τῆς ὀρθώσεως τῆς ἡμέρας τὰ κς ια. δηλονότι καὶ ἐξῆλθον κα νγ λα ν.

Ταῦτα ἐκρατήθησαν παρ' ἕνα βαθμὸν κάτω καὶ ἐγένοντο κ νγ λα ν. καὶ εὑρέθη ἡ τραχηλαῖα τῆς ὀρθώσεως τῆς ἡμέρας ταῦτα. κατ' ἐναντίον τῆς τραχηλαίας ταύτης ἐκρατήθη τὸ τόξον θθ. καὶ τοῦτο ἦν ἡ ὄρθωσις τῆς ἡμέρας εἰς τὰς μοίρας τοῦ ἡλίου. τηνικαῦτα ἐκεῖνα δὲ τὰ κ νγ λα ν | ἐγένοντο κα καὶ ἡνώθησαν τοῖς ρ καὶ ἐγένετο τὸ ἥμισυ τόξον τῆς ἡμέρας f107vL ταύτης. ἐδιπλασιάσθη ταύτῃ καὶ ἐγένετο τὸ τόξον τῆς ἡμέρας πάσης ἤτοι σκβ. ἐμερίσθησαν εἰς τὰ ιε. ταῦτα καὶ ἐξῆλθον αἱ ὧραι πάσης τῆς ἡμέρας.

1 τοῦ Βράνα παραδείγματος χάριν] εἰς παραδείγματος + τοῦ βράνα in marg L ‖ 2 ιγλ] ιγδ v ιχη L | ις om L | τοῦ ἡλίου] ἐκείνη δὲ τοῦ ἡλίου L ‖ 6 τοιούτων] ποιούντων v, L ‖ 8 δηλονότι] δῆλα L ‖ 9 καιγλαι v ‖ 10 κιγλαι v ‖ 13 κιγλαι v ‖ 14 καὶ om V ‖ 15 ταύτῃ om V ‖ 16 πάσης] πᾶσαι v

Second Appendix

Ἄλλως ἀπὸ φωνῆς τοῦ Σάμψ

Οἱ ο•ϙ χρόνοι ἀφαιροῦνται ἀπὸ τοῦ ἔτους τῶν Ἀράβων. εἴ τι καταλειφθῇ, εἴ εστι πλέον τῶν $\overline{\xi}$, τὰ $\overline{\xi}$ ἀνάβασις μία κρατοῦνται. εἴ τι οὖν εὑρεθῇ, ἀπὸ τῶν ἀναβάσεων, ὃ λέγεται | κατὰ Πέρσας μορφοῦ, καὶ ἀπὸ τῶν χρόνων εἰς f109rL
τὰ $\overline{\text{νγ}}$ δεύτερα λεπτὰ ἀεὶ τηρεῖται. εἴ τι εὑρεθῇ, ἀπὸ μοιρῶν καὶ λεπτῶν ἑνοῦται τῷ εὑρεθέντι ἐν τῷ κανονίῳ ψήφῳ τοῦ αὐθημερινοῦ τῶν ἀστέρων καὶ τὸ αὐθημερινὸν τῶν ἀστέρων εὑρίσκεται εἰς ἐκεῖνο τὸ ἔτος.

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1 ἀπὸ φωνῆς om. Vv ‖ 2 τι] τινα v

Third Appendix

Τοῦ Σὰμψ εἰς τοῦτο

Τηρεῖται τὸ ἥμισυ τόξον τῆς νυκτὸς ἐκείνης καὶ τὸ ἥμισυ τόξον τοῦ ἀστέρος τῆς ἡμέρας. εἰ ἐξισοῦνται καὶ ἀμφότερα, ἐκείνη ἡ εὑρεθεῖσα περιφορὰ ὅταν ἀνίσχῃ ὁ ἀστὴρ |τῆς ἀρχῆς | ἐστι τῆς νυκτός. εἰ δὲ τὸ f288vv, f112vL
5 τόξον τοῦ ἀστέρος τῆς ἡμέρας ἔλαττον ἀπὸ τοῦ ἡμίσεως τόξου τῆς νυκτός, ἀφαιρεῖται τοῦτο ἀπὸ τοῦ ἡμίσεως τόξου τῆς νυκτός. εἴ τι καταλειφθῇ, ἐκεῖνο ἐνοῦται τῇ περιφορᾷ. εἴ τι εὑρεθῇ, περιφορά ἐστιν ἀπὸ τῆς ἀρχῆς τῆς νυκτός. εἰ δὲ τὸ ἥμισυ τόξον τοῦ ἀστέρος τῆς ἡμέρας πλέον ἀπὸ τοῦ ἡμίσεως τόξου τῆς νυκτός, τὸ ἔλαττον ἀφαιρεῖται ⟨ἀπὸ⟩ τοῦ πλείονος. εἴ
10 τι καταλειφθῇ, ἐκεῖνο ἀφαιρεῖται ἀπὸ τῆς περιφορᾶς. εἴ τι καταλειφθῇ, περιφορά ἐστιν ἀπὸ τῆς ἀρχῆς τῆς νυκτός. καὶ ἀπὸ τούτου καταλαμβάνονται αἱ ζητούμεναι ὧραι τῆς νυκτός.

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1 τοῦ Σὰμψ εἰς τοῦτο] ὁ Ἀβδουραχμάνης μέτρον τοῦτον εἴρηκε καὶ ὁ ἐμὸς διδάσκαλος τόνδε τὸν μέτρον προσέθηκεν L ‖ 5 ἥμισυ ut vid. v ‖ 6 ἥμισυ ut vid. v ‖ 8 τῆς ἡμέρας τοῦ ἀστέρος L ‖ 10 εἴ τι καταλειφθῇ] τὸ καταλειφθὲν Vv

Fourth Appendix

Χρὴ εἰδέναι ὅτι ἐὰν ἀπὸ τοῦ Καρκίνου κρατηθῇ ὁ ψῆφος ἐν τῷ κανονίῳ τοῦ α΄, καὶ ὁ ἕτερος ψῆφος αὖθις ἀπὸ τοῦ Καρκίνου τοῦ ἐν τῷ ἑτέρῳ κανονίῳ. καὶ καθεξῆς οὕτω καὶ ἐπὶ τῶν ἄλλων ζῳδίων.

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1 τοῦ[1] om v ‖ 2 πρώτου Vv

Fifth Appendix

οἷον ἐὰν ὦσι $\overline{\lambda}$ καὶ $\overline{\lambda\varsigma}$ εἰς τὴν περισσείαν τούτων, τὰ $\overline{\varsigma}$.

1 εἰς...τὰ ς om. v