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P. MICH. INV. 29: TWO ASTROLOGICAL TREATISES

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P. Mich. Inv. 29: Two Astrological Treatises*

P. Mich. Inv. 29	9.5 x 6 cm	provenance unknown
Pl. VIII		II/III century A.D. (both sides)

The provenance of P. Mich. Inv. 29, purchased in Egypt in 1920 along with the astrological fragments of *P. Mich.* III 149 by B.P. Grenfell and Francis W. Kelsey, is unknown. The color of the papyrus is medium brown. Both sides contain two columns separated by a margin of 1.5 cm on the front (→) and 1.8 cm on the back (↑). The intercolumnium is in different areas of the papyrus on the front and the back, so that the vertical break in the piece intersects the middle of the second column of the front side and the middle of the margin on the back. The different handwriting on each side and the different location of the intercolumnia indicate that the piece is a fragment of a papyrus roll, rather than part of a codex and, henceforward, we will use "interior" for the front and "exterior" for the back. The text on the interior side is written with a sharper pen, the letters are more rounded and bilinearity is more closely adhered to. The text on the exterior side has entirely different letter forms, the hand tends to connect letters more, appears to have written more hastily and is clearly more informal (for more on the palaeography see below).

Based on the proposed reconstruction of col. i.6 to 9 and col. ii.6 of the interior side, it can be concluded with some certainty that the columns on the interior are rather narrow, each line containing about 18 to 20 letters (cf. *P. Lond.* I.130, I/II A.D. horoscope which has 15-18 letters per line). The columns on the exterior seem to be wider, but their exact size cannot be determined.

Neither of the two treatises can be identified with an otherwise extant text. **Treatise I**, the text on the interior side of the roll is clearly astrological, as is indicated by parallels from various sources (see notes). It seems to contain an astrological prediction based on a constellation or planet which, however, cannot be identified. Verbs in the future tense are found twice in i.7 and i.9 together with verbs in the present tense (most notably in line 6), but since the present tense can be easily used instead of the future,¹ the fragment apparently deals with future events. As we shall see in further parallels, it is quite usual to find both tenses used interchangeably in predictions and prophecies. Additionally, the nature of the predicted dangers has parallels in other astrological works (see line notes). χρηματίζω (ii.2) for instance is a key astrological term. It appears that col. i contains a general prediction concerning groups of individuals affected by the influence of a certain constellation. This is indicated by the third person plural used in i.7, 9. Predictions for a specific individual usually display the second person singular (e.g. *P. Med.* inv. 160, II A.D., see S. Daris, *Aegyptus* 67 [1987] 37-40). Hence, the predictions are of general nature and are not made for a particular person. As for col. ii, it appears to have dealt rather with the location and movement of the constellation or planet itself.

* This paper is a result of discussions in the papyrology seminar in the fall of 1993, held by Prof. L. Koenen to whom we wish to extend our special thanks for his help and suggestions. We also want to thank Traianos Gagos who brought the text to the attention of the class after he had suspected that it contains predictions of future events. Greg Schwendner gave us helpful hints at the beginning stages of our work.

¹ For the usage of *praesens pro futuro* see J. Wackernagel, *Vorlesungen über Syntax* (Basel 1926) I 158ff.

The second text, **treatise II** (exterior side), is most likely astrological as well, but a non-prognostic description of the movement of a sign of the zodiac and possibly of a planet (see notes below and comm. to ii.1-10) is also possible. The repetitiveness of the vocabulary in col. ii indicates a technical description. The combination of words found in col. ii.1 of the papyrus (a number followed by εἰς συμπλήρωσιν) occurs frequently in precisely the same order, for example, in Vettius Valens, who uses the phrase in the technical parts of his astrological treatise to mean the number of degrees or amount of time required to reach a certain total. If col. ii, then, contains a technical description of this nature, col. i does not seem to match the pattern, although there is too little extant to say for certain. There is, however, no repetition visible, and the conjectured words themselves are not in the same category as those in col. ii. The possible mention of a book (ἴη βυ in line 4) could indicate the end of a brief introduction before the beginning of the description.

Astrology was widely in vogue around the 2nd cent. A.D. both in Rome and in Egypt. There was a large number of complicatedly interrelated astrological writers² from this period most of whose work is now lost. An impression of their work is provided by the rich collections in the *Catalogus Codicum Astrologorum Graecorum* (12 vols., Brussels, 1898-1936) and by the numerous fragments of astrological writings and horoscopes on papyrus. Moreover, a fully extant astrological treatise from the 2nd century, the *Anthologies* of Vettius Valens (ed. Pingree, 1986), gives us a deeper glimpse into the esoteric context of mainstream astrology at the time. Although it had ceased to be a prerogative of the priests as early as the 3rd cent. B.C.³, astrology was still apocryphical and carefully guarded from the eyes of laymen as the words of Vettius Valens himself testify: "Those obeying our precepts I beseech in the name of the sacred orbit of the Sun and the changing phases of the Moon, the power of the other stars and the cycle of the twelve signs of the zodiac to keep these writings in secret and not to share them with the uneducated and uninitiated and to render homage and remembrance to the one who initiated them" (VII.1.3). But a different, more scientific spirit is found in Ptolemy's *Tetrabiblos* (ed. S. Feraboli, 1985). Ptolemy lived during the first three quarters of the 2nd century in Alexandria. Along with his scientific works, mainly his large astronomical treatise in 30 books, *Syntaxis Mathematica*, he also wrote his four books about *apotelesmatika* (known as "Tetrabiblos"), where he distinguishes between two branches of astronomy, the one treating the positions of the stars and their movements (as in the *Syntaxis*), and an inferior one dealing with the prediction of the influence which those positions and movements have on events on earth. He clearly postulates the necessity of integrating the predictions with the precise observation of astronomy (I.1), and in doing so he distinguished himself from the more popular uses of astrology.

As stated, the handwriting of **treatise I** on the interior side of the Michigan roll is different from the one on the exterior side. Both may be dated to the end of the second or beginning of the third century. Most of the palaeographical parallels for treatise I (interior) come from literary hands: a Pindar text from *P. Oxy.* XXVI 2441 (in E.G. Turner, *Greek Manuscripts of the Ancient World* [Oxford 1971] No 22) and an Alcaeus from *Pap. Berol.* 9810 (in W.

² For a synopsis and filiation of the astrological writers related to Vettius Valens see the edition and commentary by Joelle-Frederique Bara, I (Leiden 1989) 5.

³ F. Cumont, *L'Égypte des Astrologues* (Brussels 1937) 124.

Schubart, *Papyri Graecae Berolinenses* [Bonn 1909] No 29b) which can be tentatively dated to the 2nd cent. A.D. The writing may be characterized as an informal, round literary hand classified as type 1 by E.G. Turner (*op. cit.* p. 24). It is also known as rounded book hand, a type of writing which has been known since the Ptolemaic period, II-I B.C. (W. Schubart, *Palaeographie*, I [München 1925] 110-111), but becomes fully developed in the 2nd century A.D.⁴ Characteristically, the letters are carefully formed, with the α , ω and o being especially large and generously rounded. The narrow, controlled strokes, made by a sharp pen, also point to a more careful scribe than the one who wrote on the exterior side. Writing is strictly bilinear with only occasional deviations, while the letters are usually separated from each other with only occasional linkings, such as from α or κ to λ . Loops are found on μ , ν , ω , ζ ; hooks on ν , λ , δ ; ϵ is almost closed, with its horizontal stroke very high and connected to the succeeding letters. A similar letter form is found in *P. Phil.* 1, a dossier of official papers concerned with liturgies from 125 A.D. (Roberts, *op. cit.* 12-13); c is also almost closed. The fork of κ is high, and its final downstroke is long and curved, often connected with the following letter, but in no way does the lower stroke resemble the tendency to lengthen parts of letters, a feature which becomes characteristic of the 3rd cent. A.D. (Schubart, *Palaeographie*, 134). Similarly curved strokes can be found in the μ , which is very wide and rather flat, a form most often found in 2nd cent. A.D. handwritings (Schubart, *Palaeographie*, 125). It contrasts sharply with the taller, steeper form of μ found on the exterior. Other characteristics of the interior side include line fillers (col. i.6 and 9) and occasional punctuation by spacing (col. i.5 $\nu\tau\alpha\iota$ $\kappa\alpha\iota$ and ii.3 $\mu\epsilon\rho\iota\delta\iota$ $\kappa\alpha\iota$).

The general date of treatise I is confirmed by that of **treatise II** which provides a *terminus ante quem* for treatise I, but the differences of the two hands do not suggest a great time gap between them. The writing of treatise II (exterior) is more informal than that of treatise I (interior), but it also belongs to the category of “informal literary hands” (E.G. Turner, 24). One should bear in mind that “the gap between the best documentary hands and the plain literary style in this period is extremely narrow” (Schubart, *Palaeographie* I, 121). This writing is clearly less careful and faster than the one on the interior—the strokes of the pen are thicker and letters are often connected together. Bilinearity is also less strictly observed: κ , π , λ , η , and ι all fall below the level of the other letters at various points. Certain letters exhibit an angular quality not seen in the rounded hand on the interior. The difference is particularly striking in the thinned loop of the α , and in β whose right stroke, a waved line, at the bottom protrudes pointedly to the right. Letters tend to slant to the left, particularly when connected to the preceding as, for example, in “ $\alpha\lambda\lambda\alpha$ ” of the repeated “ $\alpha\lambda\lambda\alpha\varsigma$ $\eta\mu\epsilon\rho\alpha\varsigma$ ” (col. ii.3). The ϵ betrays the speed of the writing in col. ii, e.g. $\pi\omicron\iota\epsilon\iota$ in line 3 and $\eta\mu\epsilon\rho\alpha\varsigma$ in line 6, where it is formed of a single stroke which curves up, down, and then across to join to the next letter. Other characteristics include the fact that the initial letters in col. ii are written considerably larger than those following them. Some end-letters in col. i seem to be formed with more flourish to mark the end of the line. For example, the ν at the end of i.2 and 4 is written with a loop and a trailing tail, in a very different way from other ν ’s found in col. ii. c is also ‘flourished’, with a long stroke from the top of the letter extending into the margin.

⁴ C.H. Roberts, *Greek Literary Hands*, 350 B.C.--400 A.D. (Oxford 1955) 12: *P. Phil.* 1, a dossier of official papers concerned with liturgies, A.D. 125.

Additionally, υ in col. ii.4 and 7 has a trema, in both cases used to mark the initial vowel of the word “υπο” (“inorganic” usage in E.G. Turner’s terminology [12]). The decorative elements used by the hand on the interior are almost entirely absent on the exterior. The μ, which is composed of a simple up-down movement, is very different from the wide, decoratively curved form made by the hand on the interior. The ν and the δ lack the hooks noticeable on the interior.

The handwriting of **treatise II** (exterior) has similarities in general appearance and individual letter shapes with the *Gnomon of the Idios Logos* which originated in the chancery of the government of Alexandria in 150-170 A.D. (R.Seider, *Palaeographie der griechischen Papyri*, I [Stuttgart 1967], no. 37). It also bears similarities to *P. Berol. 22a* (119?), which Schubart (*Palaeographie*, 63) cites as an earlier example of this type of writing. Dated hands from the 3rd century show an expressed tendency to lengthen the vertical strokes of letters (Schubart, *Papyri Graecae Berolinenses*, no. 31, 32), which is a feature present, but only slightly expressed on this papyrus. In sum, we date treatise II to the late II or early III cent. A.D., possibly only a short time after treatise I was written on the interior side of the roll.

Astrological Treatise I (Interior; pl. VIII.1)

	col. i	col. ii
1	[±14] ι θνη [±7] χρ[ο]νον ικανον [±11] ω ερημου	των εαν ο τ[χρηματιζηι [
4	[±8] ετερων διεπι [±7] ται και γονει [αποχω]ριζονται απ αλλη [λων και] κινδυνευουσιν	μεριδι και κ [] επι νεοτητο[ε γ της ζωης χ[ρον- πρωτου αποκ[ατατατι]
8	[υπο των] θηριων και τα πα [τρικα α]ποβαλουσιν τι [νεε δε και ±7] ατης [±18]	κου κυκλου α[εισιν δε . . . μεγ[χρονον [] ποιου . . . [] κοινα []
12	[±18] ο	

loose fiber: και επι ος

Col. i

1. Two small spots of ink are visible at the beginning of the line, the second of which forms the bottom of a vertical downstroke. If the traces belong to two different letters, the second is likely to be a ι. There is a trace of a horizontal stroke in front of the ν, which makes the preceding letter rather an ε or θ than an ο.

θνη: possibly a form of θνήσκω (in papyri often spelled without iota) or a form of θνητός.

2. χρ[ο]νον ικανόν: Vettius Valens II.14.3.

ἐρημοῦν: for this verb in oracular context ἐρημωθήσεται (sc. πόλις) see the *Oracle of the Potter* (L. Koenen, *ZPE* 2 [1968] 178-209).

4.] ετερων: the first two letters are now broken off, but they are visible on the print.

4f. διεπι[±7]ται: probably the line contains a verb in the third person plural (cf. lines 6 and 7 below).

5ff. γονεῖς | [ἀποχω]ρίζονται ἀπ' ἀλλή|λων: Vettius Valens II.17.78: ἡ χωρίζονται ἀπ' ἀλλήλων ἔχθραις, about the influence of a certain constellation resulting in break-up of relationships. There is an entire chapter in Vettius Valens entitled περὶ χωρισμοῦ γονέων (II.33). Considering the width of the column, the compound seems preferable. It has the technical meaning 'to be divorced' in late documents: *P. Cair. Masp.* II 67153.13 ἀποχωριθῆναι ἀπ' ἀλλήλων (cf. *P. Lond.* 1731.11). — In this line present tense is used instead of future (see introd.).

6. The space left at the end of the line is filled by a space filler in order to achieve an even margin.

7. κινδυνεύουσιν: Vettius Valens IV.10.20 (κινδυνεύουσιν); II.17.79 (κινδυνεύουσιν, in the same passage as the parallel to line 6 above); Heliodorus in *CCAG* IV 154.15 (ἐν νεότητι πολλὰ κινδυνεύουσιν). For the change of tenses compare another astrological papyrus, *P. Iand.* 1.3 and above n. 5.

8. θηρίων: according, for example, Ptolemy, *Tetr.* IV.9.10 ὁ - - - τοῦ Κρόνου - - - ποιεῖ - - - ἐν - - - τοῖς θηριώδεσι τόποις ἢ ζῳδίοις ὑπὸ θηρίων διαφθειρομένους. Vettius Valens, too, frequently mentions attacks by wild beasts among the dangers resulting from a certain constellation in the horoscope. The preposition may be ἀπό or ὑπό. Other possibilities like e.g. μοχ]θηρίων are not precluded.

8f. καὶ τὰ πα[τρικὰ ἀ]ποβαλοῦσιν: the verb is used in the meaning 'to lose property', e.g., in *P. Mich.* III 148.ii.16-17, πολλὰ ἀποβαλόν; Vettius Valens II.7.4 καὶ ὅσα ἂν κτήσεται ἀποβαλεῖ and 8.2 καὶ εἴ τι ἂν κτήσονται ἀποβαλοῦσιν. See also *PSI* III 158.161f.

The supplement πατρικά is supported by many parallels. The losing of inheritance is mentioned regularly in astrological works listing the influence of certain planets, e.g., Heliodorus in *CCAG* VIII 4.238.13, also *P. Laur.* II/27 (R. Pintaudi and D. Pingree, *BASP* 18 [1981], 83-87) and Vettius Valens II.14.7 στερηθήσεται τῶν πατρικῶν.

9f. τι[νὲς δὲ καὶ: marks the transition to a new sentence in Vettius Valens (e.g., II.14.5.; IV.21.10), sometimes after a corresponding τινὲς μὲν οὖν (IV.15.2), which could be the subject of the preceding sentence in the papyrus.

11. At the end of the line a small trace of ink is visible. The loose fiber possibly belonged here.

Col. ii

1. τῶν: the first letter is likely to be a τ, but the horizontal stroke through the ω remains unexplained. There are some traces of ink in the left margin.

1f. ἐὰν ὁ τ[±12] | χρηματίζη: the term is frequently used, and the phrase occurs twice in Vettius Valens, denoting the significant influence of a certain planet for the horoscope: ἐὰν ὁ τοῦ ὠροσκόπου κύριος χρηματίζη (II.33.4); ἐὰν ἡ Ἄφροδίτη χρηματίζη (II.37.6). χρηματίζοντα in reference to a 'significant sign' is also found in *P. Mich.* III 149.viii.29 and 32 (cf. *PSI* XII 1289A.ii.4-5). It occurs also in *P. Lond.* I 98.76, a horoscope, but there it is a loose word and the immediate context is lost. The definite article ὁ (with ἀκτήρ implied) followed by the name of a planet in the genitive is extremely frequent in Vettius Valens. Unfortunately, the name of the planet is lost. ὁ τ[ῆς Ἄφροδίτης] would well fit the presumed width of the column.

3. At the end of the line we see the left part of a curve (ε or ο).

μερίδι: μερίς occurs three times in *P. Mich.* III 149 in the technical sense of a 'portion' associated with a planet (iii.25; vi.18, 26).

4. ἐπὶ νεότητο[ς: 'in young age', 'in youth' (e.g. Aristoph., *Wasps*, 1199). Cf. *P. Laur.* II/27 (*BASP* 18 [1981] 83-87) ἐπὶ τῆς νεότητος. Vettius Valens has ἀπὸ νεότητος (II.4.2, 17.96, 25.13) and ἐκ νεότητος

(II.6.1) when describing that certain planets start to exercise their influence from a person's youth on. Standard predictions often include a distinction between the influence of a decane during a person's youth and old age (Heliodorus, *CCAG* IV 154). For the distinction between ascendant planets or signs controlling young people and descendant ones controlling old people see also *P. Ryl.* III 527.

5. γ̄ τῆς ζωῆς χ[ρόν-: In a chapter entitled περὶ χρόνων διατρέσεως, Ptolemy divides human life into seven parts, each influenced by one of the seven Planets, beginning with the moon and its orbit close to earth and proceeding always to the next planet. The third age, spanning the eight years from the 14th to the 22nd birthday, is adolescence and stands under the influence of Venus. It is called τρίτη ἡλικία (*Tetr.* IV.10.8; cf. here 4 ἐπὶ νεότητος). Vettius Valens (III.7.10; IX.2.5) also speaks about οἱ τῆς ζωῆς χρόνοι. Hence, the papyrus referred probably to a case of [ό] | (τρίτος) τῆς ζωῆς χ[ρόνος. In a different context, Ptolemy uses χρόνος for lift (*Tetr.* III.11 περὶ χρόνων ζωῆς).

6. ἀποκαταστατικὸς κύκλος: this conjecture results in a line of approximately the same length as in column i. In astronomical context the noun ἀποκατάστασις means 'periodical return to the original position'. In parallel passages it is often connected with κύκλος: **1.** *P. Mich.* III 149.v.19-21: ἐν τῷ Ἄρεω κ[ύ]κλωι ὃς ἐν ἔτεσιν ἰε̄ τὴν ἀποκατάστασιν ἔχει - - -; **2.** Vettius Valens II.2.6 ὁ γεννώμενος ἐν πρώτοις χρόνοις ἀνωμαλίας ἕως τῆς ἀναφορᾶς τοῦ ζωδίου ἢ τῆς τοῦ χρόνου κυκλικῆς ἀποκαταστάσεως ἐξ ὑτέρου ἔμπρακτος ἔσται - - -; **3.** Vettius Valens VII.6.118 ἀποκατάστασις ἀπὸ τῶν τῆς ἀναφορᾶς τοῦ ζωδίου χρόνων ἢ ἀπὸ τῆς τοῦ ἀτέρως κυκλικῆς ἀποκαταστάσεως. In Vettius Valens the adjective ἀποκαταστατικός is combined with μοῖρα (V.3.5, app. XIX.43) and μῆν (add. 7.83). Other combinations are possible, e.g. Vettius Valens has ζωδιακὸς κύκλος (II.1.1; 41.27), ἀρεϊκὸς κύκλος (VI.6.23), and θανατικὸς κύκλος (IX.4.14). The word κύκλος is used as a technical term for the zodiacal ring by Aristotle in his *Meteorologica*.

8. εἰν δε̄ . . . μεγ[ι]: the middle stroke of the second ε is long and crosses the vertical stroke of the next letter. The latter curves a bit to the right, at the top as well as at its foot. These hooks are much too narrow for normally curved letters in this hand. Most likely the letter is ι. If so, then a vertical stroke of the next letter is visible, but in this hand, c is not excluded; hence very tentatively εἰς (not ἐν, nor οἱ or εἰ). The next two letters are certain. At the end of the traces γ is possible, perhaps εἰς μεγ[α - - -, whether this is an adjective or a compound noun.

Astrological (?) Treatise II (Exterior; pl. VIII.2)

	col. i	col. ii
1]μη]θεου ε]τεραις	κ̄ εἰς συνπληρ[ωσιν ημερων εως] τοῦ ελθῆν εἰς οψι[ν ποιεῖ αλλας ημερας τ̄[
4]ης βυ]ανθρω]ε̄' ε̄ και ερ]ωνη[]	ὑπο γην γενεσθαι τα τ[νι αὐτου ανατολας δυε[ε]ις[και ποιει αλλας ημερας ζ̄π[γε- νεσθαι κατα το ὑπο γην ες []
8		ποιει αλλας ημερας ὄ̄ υπ[ο εἰς συν- πληρωσιν η[μερων ανατολην ελ[ε̄̄ υπο []
12		[. . .]ε̄ . . . [] [.] []

Col. i

2.]θεοῦ: perhaps the genitive singular of θεός. In astrological context it usually means either a planet or a decane. The word occurs in these two meanings in *P. London* 130 (lines 8 and 73 respectively). See W. Gundel, *Dekane und Dekansternbilder* (Glückstadt and Hamburg 1936) 27 and O. Neugebauer, H.B. Van Hoesen, *Greek Horoscopes* (Philadelphia 1959) 21.

3. ἐ]τέραις: another possible conjecture is the feminine plural dative of a comparative adjective.

4.]ης βυ: the final two letters could be the beginning of various words, such as some form of βυθός (see Vettius Valens II.36.23), but if the preceding letters are believed to be the end of the definite article, βύβλου is the most likely possibility.

6. The correction written above the first letter is either ζ or π.

7.]ωνη[]: η is a correction written through the traces of an original ει. Then follows what seems to be another ει or ci, squeezed in at the end of the line and reaching into the margin. Next, the scribe deleted either both letters or only ι. The scribe found it difficult to make up his mind. If he wished to restore]ωνης, he could have intended a genitive of ζώνη, used in astrological contexts as synonym of ζώδιον (Porphyrus, *In Ptol. Tetr.* 186) or as one of the planetary spheres (Vettius Valens I.2.4 and 13, VI.3.9). But, of course, there are many other possibilities.

Col. ii

1-10. The vocabulary in these lines indicates three elements of thought: **1. period of time** — 1 κ̄ εἰς συμπλήρωσιν ἡμερῶν, 3 ἄλλαξ ἡμέραξ ῑ[. The four numbers mentioned, all measuring duration of time, are seven (line 6) and multiples of ten (10 [?, line 3], 20 [line 1], and 50 [line 8]). Seven equals the number of days in a week, and ten is the number of days needed by the sun to pass through a decan; **2. points or regions in the zodiac** — ὑπὸ γῆν (4 and 7), ἀνατολή, and δύσις 5 (see notes to 4); **3. motion** — 3 ἐλθεῖν εἰς ὄψιν; 4 ὑπὸ γῆν γενέσθαι.

The subject that performs the motion within the framework periods and zodiac is lost. The periods of days spent in invisibility or in the nadir (see n. to line 4) may indicate a movement of a sign of the zodiac and, with it, of a "house" of a planet; "houses" of the planets were in the signs of the zodiac. If the passage mentioned any evil caused by the movements of the stars (see n. to line 3), the evil must have been mentioned in the broken-off part of the column. However, it remains uncertain if any predictions were mentioned. The text may have spoken merely about the movements of a sign of the zodiac and, perhaps, of a planet.

1. κ̄ εἰς συνπλήρωσιν: εἰς συμπλήρωσιν is used by Vettius Valens at I.6.7: ἐπεὶ ὁ Κριὸς ἀναφέρεται ἐν κ̄, ὁ Ζυγὸς ἐν μ̄ εἰς συμπλήρωσιν τῶν ξ̄. For other examples see *idem*, IV.4.17, 10.12, and VI.6.19. See also *P. Med. inv.* 124.4 (*Aegyptus* 67 [1987] 40-42). For the restoration of ἡμερῶν see line 8f. Other words for time like μηνῶν or ἐτῶν are also possible.

1f. ἔως] | τοῦ ἐλθεῖν εἰς ὄψιν: or beginning a new sentence ἔως δὲ] | (or similar) - - -. This supplement is *exempli gratia*. We found no exact parallels for the expression. If the phrase in the papyrus is taken in the meaning "to emerge into sight" and refers to rising, it describes a motion opposite to moving into the lower hemisphere (4, ὑπὸ γῆν γενέσθαι). Ptolemy says ἀπὸ ἀνατολῆς μέχρι μεσουρανήσεως ἢ καὶ ἀπὸ δύσεως μέχρι τῆς ὑπὸ γῆν ἀντιμεσουρανήσεως (*Tetr.* I.6.2).

3-4. ποιεῖ ἄλλαξ ἡμέραξ ῑ - - - | ὑπὸ γῆν γενέσθαι: a similar phrase occurs in lines 6f. and 8f. It is unlikely that the infinitive γενέσθαι (4) depends on ποιεῖ. The verb may govern an accusative, possibly of good or bad events or qualities resulting from the movement of a planet (see e.g. Ptolemy, *Tetr.* III.14.35). Alternatively the accusative could refer to some motion like e.g. the heliacal rising; thus it is used in Cod. 7 of CCAG VII which contains a section περὶ φάσεων (the heliacal risings) καὶ μοιρῶν καὶ λεπτῶν καὶ κτηριμῶν τῶν πέντε ἀκτέρων (p. 119ff.) describing the length of the different phases of the movement of Saturn, Jupiter, Mars, Venus, and Mercury. It begins: ὁ μὲν τοῦ Κρόνου ἀκτῆρ ποι ῶν φάσει ἀπὸ μὲν

μοίρα α' ἕως ιζ' ὑπανυος συνοδικός ἐστιν (μοίρα F. Boll : ἡμέρα ms.; one degree (μοίρα) is equivalent to one day).

4. ὑπὸ γῆν: in philosophical, astronomical, and astrological texts this phrase frequently refers to the lower, invisible part of stellar orbits; it is used most frequently for the sun, but also for other planets. It occurs as early as Anaxagoras, 59 A 42 Diels-Kranz, τῶν ἄστρων περιφορὰν ὑπὸ γῆν γίνεσθαι, in contrast to the horizontal movement as posited by Anaximenes, 13 A 1 cp. 14 Diels-Kranz: κινεῖσθαι δὲ τὰ ἄστρα οὐχ ὑπὸ γῆν, ἀλλὰ περὶ γῆν (cf. Arist. *Meteor.* 354a27ff.). *P. Oxy.* II 235, a horoscope, offers a diagram of the zodiacal circle (reproduced in Neugebauer and Van Hoesen, *Greek Horoscopes* [above, n. to line 1.2] 18) with the nadir marked as ὑπὸ γῆν, while Leo occupies this position, thus illustrating line 15f. ὑπὸ [γῆν ἐν Λέο(ντι) | οἶκος Ἡλίου, οἰκοδεσποτεῖ Ἀφροδίτη. Vettius Valens uses ὑπὸ γῆν (III.2.5) and τὸ ὑπόγειον [κέντρον] (VII.2.11) for the nadir. Ptolemy prefers the expression τὸ ὑπὸ γῆν ἀντιμεσουράνημα (*Tetr.* I.6.2, see above, n. to 1f.) which he uses to contrast with the ὑπὲρ γῆν μεσουράνημα, the zenith. The papyrus mentions the other two main points in their plural forms—ἀνατολή (called ὠροσκόπος when marking the time of birth) and δύσις. Due to the fragmentary nature of the papyrus it is not possible to determine whether ὑπὸ γῆν γενέσθαι means to reach the nadir or to pass into the lower hemisphere. For the latter option see Alexander Aphrod. *in metaph.* 692.9ff. τὸ γίνεσθαι δὲ καὶ καθ' ἐκάστην τὸν ἥλιον ὑπὸ γῆν καὶ ὑπὲρ γῆν κατ' ἄλλο κτῆ.

ὑπὸ γῆν may also be part of a prepositional phrase like διὰ τὸ | ὑπὸ γῆν γενέσθαι. Below, in line 7, ὑπὸ γῆν is repeated, this time preceded by κατὰ τὸ - - -.

τα [: the third letter is either τ or perhaps υ.

5. δυ[ε]ι[ς]: the fibers of the papyrus are slightly dislocated at the very end, but the ε appears to be the most likely possibility.

7. There are no exact parallels for κατὰ τὸ ὑπὸ γῆν. According to Ptolemy, a certain influence is strongest in the region of the zenith, κατὰ τὸ ὑπὲρ γῆν μεσουράνημα, and he also mentions the influence at the ascendant, κατὰ τὴν ἀνατολήν, and the descendant, κατὰ τὸ δύνον (*Tetr.* III.11.3). The preposition κατὰ occurs in Vettius Valens also almost exclusively with words referring to zodiacal zones, e.g. κατὰ τὸ β' κλίμα or κατὰ τὸν Λέοντα etc. Based on these and similar parallels the expression κατὰ τὸ ὑπὸ γῆν may refer to something happening in the region of the nadir. This prepositional phrase probably belongs to the infinitive preceding it (γε|ινέσθαι). A neuter noun could have followed, and words such as κέντρον, μεσουράνημα, ἀντιμεσουράνημα (see above, n. to line 4), τμήμα, ἡμικύκλιον, ἡμιφαίριον, κλίμα, μέρος can be expected after τὸ ὑπὸ γῆν. But only μεσο[υράνημα] suits the traces after γῆν. For the resulting phrase see Iamblich. *Theol. arithm.* 29 μεσουράνημα ὑπὸ γῆν καὶ ὑπὲρ γῆν; Iohann. Philop. *in meteor.* 14.1.107 τοῦ ἡλίου δηλονότι τὸ ὑπὸ γῆν ἔχοντος μεσουράνημα; *orif.* 131 εἰ οὖν τὸ ὑπὲρ γῆν μεσουράνημα ἐπέχει τότε ἢ κελήνη, ἀνάγκη τὸν ἥλιον ἐν τῷ ὑπὸ γῆν μεσουρανῆματι (also *in meteor.* 14.1.81; and cf. Sextus Emp. *adv. math.* 5.12). Posidonius fr. 10 Theiler (Strabo 1.3.11) when explaining the tide caused by the influence of the moon: ἄρχεται μὲν γὰρ περὶ τὴν ἀνατολήν τῆς κελήνης καὶ τὴν δύσιν, λήγει δ' ὅταν συνάπτῃ τῇ μεσουρανῆσει ἐκατέρω, τῇ τὲ ὑπὲρ γῆς καὶ τῇ ὑπὸ γῆς (see also F 26 Theiler [Strabo 3.5.8]).

εε [: there are interrupted traces of a first vertical stroke, followed by a seemingly horizontal stroke in the middle of the line, and some thin traces to the right at the end of the letter. The surface is damaged, and the fibres are slightly dislocated. We have considered δ or less probably α. While μ is not satisfying, it is not impossible. The next letter (ε) is certain; it is followed by an almost certain ε. The last trace is a clearly visible left half of an oval letter like ο or θ rather than ε. In sum, μεσο[υράνημα] is as good a reading as we can get (for the use of the word see above).

Basel - Ann Arbor

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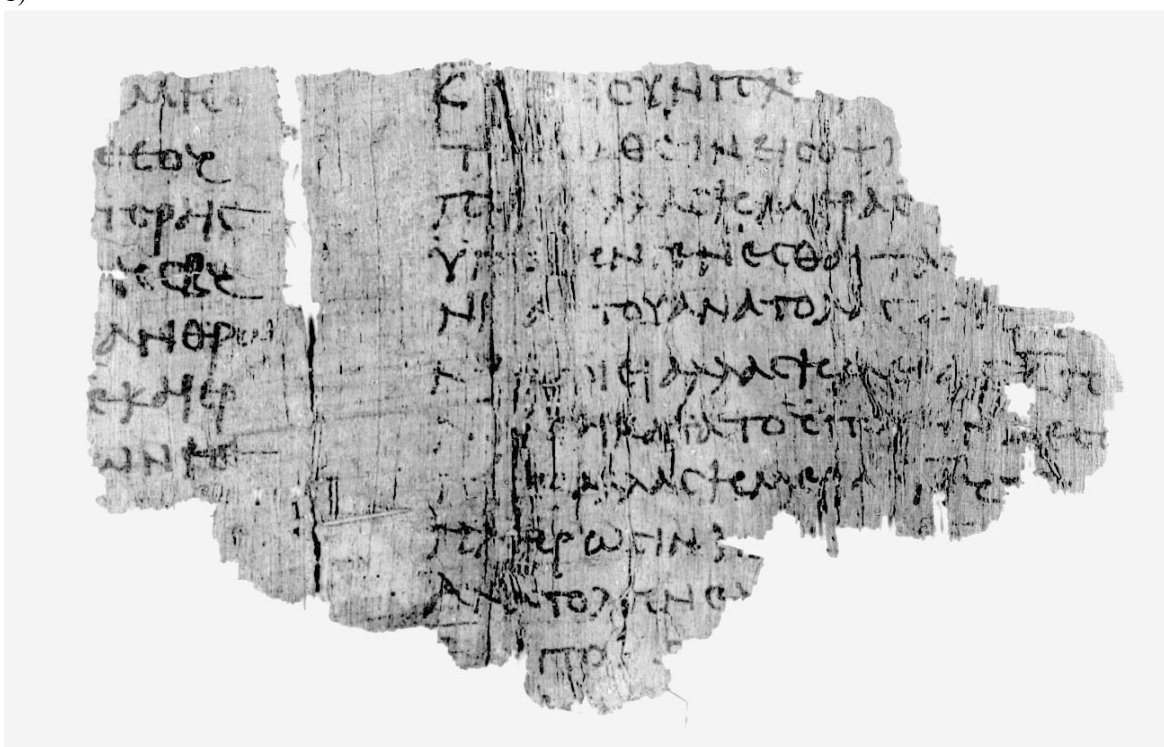
Annemarie Ambühl

Donka Markovska

Kristina Milnor



1)



2)

1. P.Mich. 29, interior: astrological treatise I (II/III cent.); 2. exterior: astrological treatise I (II/III cent.)