Inediti offerti a Rosario Pintaudi per il suo 65° compleanno

(*P.Pintaudi*)

a cura di
Diletta Minutoli

EDIZIONI GONNELLI
Firenze 2012

ISBN 978-88-7468-038-2

Tipografia Latini Firenze – Finito di stampare nel mese di ottobre 2012

Sommario

Lista dei testi editi

Testi Greci Letterari, Paraletterari e Liturgici

Testi Greci Documentari

Testi Copti

Testi Arabi

Tavola delle Concordanze

Inv.	*P.Pintaudi*
Amsterdam, Tropenmuseum	
Inv. Tropenmuseum 3134-58	**70**
Ann Arbor, University of Michigan	
P.Mich. inv. 339 *recto*	**28**
P.Mich. inv. 4481c	**22**
Berkeley, The Center for the Tebtunis Papyri, University of California	
P.Tebt. Suppl. 1122	**54**
Bruxelles, Musées Royaux d'Art et d'Histoire	
P.Brux. inv. E. 7906	**25**
P.Brux. inv. E. 7907	**26**
Dublin, Chester Beatty Library	
P.Beatty inv. 63-66	**23**
Dublin, Trinity College Library	
TCD Pap. Gr. 95a	**40**
TCD Select Box env. 195	**34**
Firenze, Biblioteca Medicea Laurenziana	
PL III/996 A	**6**
PSI 120 *verso*	**20**
Firenze, Istituto Papirologico «G. Vitelli»	
PSI inv. 182	**41**
PSI inv. 368	**35**
PSI inv. 663	**38**
PSI inv. 1079	**2**
PSI inv. 1527	**16**
PSI inv. 1696 *recto*	**14**
PSI inv. 1696 *verso*	**39**
PSI inv. 1872	**3**
PSI inv. 1911	**11**
PSI inv. 3262 + 3295	**24**
PSI inv. 3624	**1**
PSI inv. 3911	**4**

Inv.	*P.Pintaudi*
Genova, DAFIST, Università degli Studi	
PUG inv. 8674	**57**
Göteborg, Manuscripts Department of the University Library	
P.Got. 34 (= inv. 16)	**21**
Hamburg, Staats- und Universitätsbibliothek	
P.Hamb. inv. 425	**55**
P.Hamb. inv. 706	**32**
Helsinki, Finnish Egyptological Society	
O.Hels. Inv. 01:1:3	**67-68**
Il Cairo, Institut Français d'Archéologie Orientale	
P.Fouad inv. 226 a	**59**
P.Fouad inv. 226 b	**60**
P.Fouad inv. 226 c	**61**
P.Fouad inv. 226 d	**62**
P.Fouad inv. 226 e	**63**
P.Fouad inv. 226 f	**64**
Leiden, Dutch National Museum of Antiquities	
RMO inv. 1971/2.2	**52**
Liège, Centre de Documentation de Papyrologie Littéraire de l'Université (CEDOPAL)	
P.Leod. inv. 1	**7**
London, British Library	
P.Lond. 947 (2) c	**42**
P.Lond. 947 (1) l + j + h + b	//
P.Lond. inv. 2229	**19**
London, University College – Department of Greek and Latin	
P.Petrie ohne Nummer	**17**
Napoli, Biblioteca Nazionale	
Bib.Naz. II C 32, f. 253^{r}	**8**
Oxford, Bodleian Library	
Bodl.MS.Gr.th.g 2 [P]	**10**
Bodl.MS.Gr.th.g 4 [P]	**9**
Oxford, Sackler Library	
P.Misc. I 12 front	**15**

Inv.	*P.Pintaudi*
Paris, Sorbonne, Institut de Papyrologie de Paris IV	
P.Sorb. inv. 2288	**30**
Qift - Egypt, SCA Magazine	
P.Berenike BE11-76/999/001	**53**
Roma, Collezione Privata	
s.n.	**65**
Strasbourg, Collection BNU	
P.Strasb. G 1695	**27**
Trier, Universität	
P.UB Trier S 118–56	**33**
Warsaw, Department of Papyrology of Warsaw University	
P.Vrat. inv. 11	**18**
Wien, Papyrussammlung der Österreichischen Nationalbibliothek	
P.Vindob. G 21213	**36**
P.Vindob. G 23351	**49**
P.Vindob. G 23902	**56**
P.Vindob. G 24028	**44**
P.Vindob. G 24113	**48**
P.Vindob. G 24138	**45**
P.Vindob. G 24139	**46**
P.Vindob. G 24183	**37**
P.Vindob. G 27392	**51**
P.Vindob. G 27584	**47**
P.Vindob. G 27918	**43**
P.Vindob. G 27976	**50**
P.Vindob. G 28620	**58**
P.Vindob. G 29800*v*	**29**
P.Vindob. G 31481	**5**
P.Vindob. G 43010	**13**
P.Vindob. K 3195	**69**
P.Vindob. K 4722	**66**
Yale, Beinecke Rare Book and Manuscript Library	
P.CtYBR inv. 388	**31**
P.Yale CtYBR inv. 3775	**12**

12

An Astronomical Almanac

P.Yale CtYBR inv. 3775* — Tav. V
? — 2,1 × 8,2 cm — AD III*in.*

A small fragment perhaps preserving about 1 cm of margin at the top but broken on the three other sides. Parts of two sets of columns of a numerical table are preserved, written along the fibers on one side of the papyrus; the rows on the left, of which only a few final letters and traces of horizontal ruling survive, do not line up with the rows on the right. The other side of the papyrus is blank. The informal hand, typical of such tables, cannot be dated with precision but is compatible with the early third century AD dating that will be argued for below for the contents of the table. The provenance is not known; the fragment was bought by A.E. Samuel in late 1964 or early 1965 from a dealer "across from the Egyptian Museum in Cairo"[1].

recto →

Col. i		Col. ii	
	].	{.β}	
	].	(ἔτους) γ/	Year 3
	]	α α δ	1 1 4
4	].	4 γ β̣ ε̣	3 2̣ 5
	—	——	——
	]	α α ι̣[α	1 1 1[1
	].	β ϛ ι̣[β	2 6 1[2
	].	ε ϛ ι̣[α	5 6 1[1
8	]	8 ϊ η̣ ι̣[β	10 8 1[2
	]α	——	——
	]	α ιθ̣ [	1 19 [
	]α	γ δ [	3 4 [
12	]	.ι̣[	x 1[x
	—	12 [ ]. κ̣[	x 2[x
	]	– – – – –	. . .
	].		
	– – – – –		

Col. i

1. A speck of ink at the edge of the papyrus, just above a diagonal stroke tending upwards to the right.

---

* I am grateful to the Beinecke Rare Book and Manuscript Library, Yale University, for access to this papyrus and providing a photograph.

[1] <http://www.library.yale.edu/beinecke/brblsear/aboutpap.htm#Acquisition> (acquisition 1965a).

2. A speck of ink, apparently a stroke beginning downwards and then bending upwards to the right.

4. End of a stroke tending slightly upwards to the right. Below this is the end of a horizontal ruling separating the sections for two planets.

6. A short vertical stroke along the edge of the papyrus, and a small speck slightly below.

12. No trace of writing is preserved, but there is enough space for a lost line between line 11 and the horizontal ruling separating sections for planets.

14. Ink along a horizontal fiber, and below this, two specks along the edge of the papyrus. These may be traces of the ends of two consecutive lines.

Col. ii

1. The ink of this line is faint, perhaps deliberately effaced, and the bottom of the *beta* overlaps the top of the *gamma* in l. 2. The *beta* is formed with two equal semicircular loops, unlike the *betas* in lines ii 4 and 6 which have wide loops with the upper one smaller than the lower. The top and bottom of the damaged letter or symbol to the left of the *beta* resembles a cursive *xi*, though it is not clear what a numeral 62 would signify.

2. The symbol for ἔτους is written as a stroke descending diagonally from right to left and bending into a rightwards stroke slightly bending upwards from horizontal. The diagonal stroke transcribed following the *gamma* is actually written above it.

8. η: the strokes are also perhaps compatible with ις, though the space between the letters would be rather wide.

Comment.

The table is easily recognizable as a sign-entry almanac, listing for a succession of Egyptian calendar years the calculated dates when each planet crossed the boundary between two consecutive zodiacal signs[2]. More than twenty sign-entry almanacs are known, dating from the late first century BC to the beginning of the fourth century AD. The great majority employ the reformed Egyptian ("Alexandrian") calendar with the year's beginning fixed at Thoth 29/30, though three or four almanacs (none later than the mid second century) employ the old, unreformed Egyptian calendar.

The part of a sign-entry almanac covering one year typically occupies a column to itself, headed with the regnal year, and divided vertically into sections for the five planets known in antiquity in the conventional order Saturn, Jupiter, Mars, Venus, Mercury. (Since the order was standard, headings identifying the planets were not needed). Within each planetary section, each line contains three or, occasionally, two numerals. In a line with three numerals, the first is the ordinal number of the month (Thoth = 1 etc.), the second is the day number, and the third is an ordinal number indicating the zodiacal sign, counting eastwards from Virgo = 1. In a line with only two numerals, the first numeral is usually indented, and signifies the day number within the same month as in the line immediately above. The meaning of, say, "2 6 10" is that on the 6th of Phaophi (month 2) the planet enters Gemini, the 10th zodiacal sign counting from Virgo. If the planet was previously in Taurus, it would be at the beginning of Gemini (approximately Gemini 0°) on this date; if it was previously in Cancer, it would be moving retrograde and thus at the end of Gemini (approximately Gemini 30° = Cancer 0°) on this date. The first line of a planetary section often has month 1, day 1, and indicates

---

[2] A. Jones, *Astronomical Papyri from Oxyrhynchus*, I-II, [Memoirs of the American Philosophical Society 233], Philadelphia 1999, pp. I. 42-44; Id., *A Classification of Astronomical Tables on Papyrus*, in N.M. Swerdlow (ed.), *Ancient Astronomy and Celestial Divination*, Cambridge, Massachusetts 1999, pp. 299-340, esp. pp. 324-325.

the zodiacal sign *within which* the planet is situated at the start of the year; this initial line is often omitted if there is a sign-entry later in the same month.

In the better preserved column ii of our papyrus, we have the complete sections for Saturn and Jupiter (missing most of the numerals for Jupiter's zodiacal signs) and the first lines of the section for Mars (missing all the zodiacal sign numbers). The heading of the column is confused, with a clear indication of a year number 3, but also, above and partly superimposed on this, what looks like another numeral 62, which cannot be a regnal year and may in fact be extraneous to the table.

Assuming that the column pertains to the third regnal year of some emperor, we also have the information that Saturn began the year in Sagittarius and crossed into Capricorn after about two months, remaining in that sign for the rest of the year, and that Jupiter began the year in Gemini, Cancer, or Leo (signs 10, 11, and 12) and made three sign-entries during the year, remaining within those signs. Because of Saturn's slow rate of motion (maximum about 8′ per day), a sign-entry into Capricorn on month 3 day 2 implies that its longitude at the beginning of the year was greater than Sagittarius 20°. As a first step towards dating the fragment, we look for years, during the first three centuries of our era, in which Saturn was in or near the range Sagittarius 20°-30° on August 29. This search can be carried out using computations from modern astronomical theory; however, I have preferred to use Ptolemy's tables, which are an equally good approximation of what one may expect of ancient computed planetary positions regardless of their method of computation[3]. Moreover, since the longitudes in ancient almanacs are normally sidereal (i.e. based on a frame of reference relative to stars rather than to the solstitial and equinoctial points), I have applied Theon of Alexandria's formula for converting Ptolemy's tropical longitudes to sidereal, a correction amounting to an addition of a small number of degrees[4].

The matching years are, as one would expect for Saturn, at intervals of 30 or 29 years. Among nine reasonably good matches ranging from 17P through 282P, the only ones that correspond to a third regnal year are 223/224P (Severus Alexander 3) and 252/253P (Gallus 3). Of this pair, only 223/224P has Jupiter in the interval Gemini-Leo. Using Ptolemy's tables, we can reconstruct an almanac for Saturn, Jupiter, and Mars for this year (in the reformed calendar) that matches the contents of the papyrus very well indeed. The only comparatively large discrepancy in date is Saturn's sign-entry, which Ptolemy's tables predict as occurring about 23 days before the date in the papyrus, but this amounts to only a small discrepancy in longitude, about two and a half degrees. We give the reconstruction both in the numerical form found in the papyrus and using the names of the months and zodiacal signs:

Severus Alexander 3

Saturn				
1	1	4	Thoth 1	in Sagittarius
2	9	5	Phaophi 9	enters Capricorn
Jupiter				
1	1	11	Thoth 1	in Cancer
2	4	12	Phaophi 4	enters Leo
5	8	11	Tybi 8	reenters Cancer (retrograde)
10	3	12	Payni 3	reenters Leo

[3] I have used the "Almagest Ephemeris Calculator" by R. van Gent, <http://www.phys.uu.nl/~vgent/astro/almagestephemeris.htm>, which incorporates excellent features for calendar conversions.

[4] A. Jones, *Ancient Rejection and Adoption of Ptolemy's Frame of Reference for Longitudes*, in A. Jones (ed.), *Ptolemy in Perspective: Use and Criticism of his Work from Antiquity to the Nineteenth Century*, [Archimedes 23], New York 2010, pp. 11-44.

Mars				
1	19	2	Thoth 19	enters Libra
3	3	3	Hathyr 3	enters Scorpio
4	14	4	Choiak 14	enters Sagittarius
5	24	5	Tybi 24	enters Capricorn

Column i has slight remains; the only definite readings are the two *alphas* in lines 9 and 11 and the horizontal rulings below lines 4 and 12. Since one might expect this column to be the top part of the almanac for the year preceding that of column ii, thus 222/223^{P} (Severus Alexander 2), we provide a reconstruction based on Ptolemy's tables for that year:

Severus Alexander 2				
Saturn				
1	1	4	Thoth 1	in Sagittarius
5	19	5	Tybi 19	enters Capricorn
11	28	4	Epeiph 28	reenters Sagittarius (retrograde)
Jupiter				
1	20	11	Thoth 20	enters Cancer
3	20	10	Hathyr 20	reenters Gemini (retrograde)
9	10	11	Pachon 10	reenters Cancer
Mars				
1	1	9	Thoth 1	in Taurus
2	19	8	Phaophi 19	reenters Aries (retrograde)
5	7	9	Tybi 7	reenters Taurus
7	11	10	Phamenoth 11	enters Gemini
9	4	11	Pachon 4	enters Cancer
10	23	12	Payni 23	enters Leo
12	10	1	Mesore 10	enters Virgo

The match is not satisfactory. If the almanac for 222/223^{P} began at the top of this column, the sections for Saturn and Jupiter ought to have had six lines, so that the section for Mars should begin at about the same vertical position as it does in column ii, but there is a clear horizontal ruling about three lines further down. Furthermore, the pattern of the four sign-entries preceding this ruling (Virgo or Cancer, unknown, Virgo or Cancer, unknown) does not fit either Jupiter or Mars in 222/223^{P}. Hence it is probable that the almanac was not laid out with each year having a separate column, but instead the beginning of each year's data was written in whatever space was left below the end of the preceding year's data. Without knowing the complete column height, there is no good basis for identifying the precise part of the almanac partially preserved in column i.

General remarks on sign-entry almanacs and horoscopes

As is well known, the great majority of horoscopes preserved on papyri list only the zodiacal signs occupied on the birthdate by the Sun, the Moon, the five planets, and the ascendant point of the zodiac (the ὡροσκόπος). In most cases what we have appears to have been a written record taken away by the client after consultation with the astrologer. But this record obviously does not reflect the full outcome of the consultation since it practically never contains interpretations of the astronomical data in terms of the client's past, present, and future life. The abundant surviving theoretical and instructional literature on astrology informs us of a vast repertory of techniques for obtaining personal predictions from the astronomical data. These techniques often depend on the availability

of precise positions of the heavenly bodies and astrologically significant points of the zodiac. For example, the twelve zodiacal signs were considered to be divided into various kinds of subdivisions (δεκανοί, "Decans"; ὅρια, "Terms"; μονομοιρίαι, "Single Degrees") subject to special influences of heavenly bodies, but these could only be invoked if the longitudes of the heavenly bodies were known to the degree; similarly, astrologically significant points such as the κλῆρος τυχῆς, "Lot of Fortune", which were computed by arithmetical operations on some combination of the longitudes of several heavenly bodies, could only be determined if one had longitudes in degrees.

One might therefore suppose that the papyrus horoscopes that state only the zodiacal signs occupied by the heavenly bodies are, in this respect too, only an abbreviated record of the astrologer's reckonings, omitting technical, numerical details that would have been unintelligible to the client but that the astrologer would have exploited to construct the personal information and advice that the astrologer would have imparted orally. Against this supposition is the fact that derivative astrological data such as Terms and Decans and Lots *do* appear in some papyrus horoscopes, but only in those that state positions of the Sun, Moon, planets, and ascendant in degrees. Their consistent absence in the more common zodiacal-sign-only horoscopes suggests that the astrologer himself was not working with precise longitudes in degrees. Evidently a large part of the astrological activity in Roman Egypt was not conducted at the highest end of technical sophistication.

The prevalence of sign-entry almanacs among astronomical tables on papyrus supports this conclusion. A sign-entry almanac, while imprecise itself, was a product of precision astronomy. Babylonian and Greek astronomy had developed sophisticated methods of calculating the longitude of a heavenly body on a given date; but to compile a sign-entry almanac one has to perform the reverse operation, finding the date on which a heavenly body has a given longitude (specifically 0° or 30° in a zodiacal sign), and no direct methods were developed for doing that. Effectively, one had to compute the body's longitude repeatedly for dates at intervals of one day or, at most, a few days to find the date of crossing the sign's boundaries. It has been established that certain of the earlier sign-entry almanacs were based on Babylonian planetary theory, which involved two stages of calculation, first to find dates and longitudes corresponding to a cycle of phenomena such as the planet's first and last visibilities and stationary points, and second to apply sophisticated interpolation techniques to find the longitudes on intermediate dates[5]. Several of the later almanacs were based on Ptolemy's tables, and include a column for the time of day of the sign-entry[6].

Compiling a sign-entry almanac thus required as much competence in mathematical astronomy as calculating a horoscope with positions in degrees directly from the primary tables such as Ptolemy's, and as much diligence as calculating large numbers of such horoscopes; yet the sign-entry almanac was an instrument by which the precision of the primary tables was degraded to the far cruder level of whole zodiacal signs. It thus makes no sense to suppose that the astrologers who employed sign-entry almanacs in casting horoscopes computed the almanacs themselves. There must have existed specialists who produced and published them. It is not obvious how this could have been profitable in an age of unrestricted manuscript copying. Perhaps the publishers of almanacs counted on competitiveness and professional secrecy on the part of the astrologers to limit their free diffusion.

Institute for the Study of the Ancient World – New York University
Alexander Jones

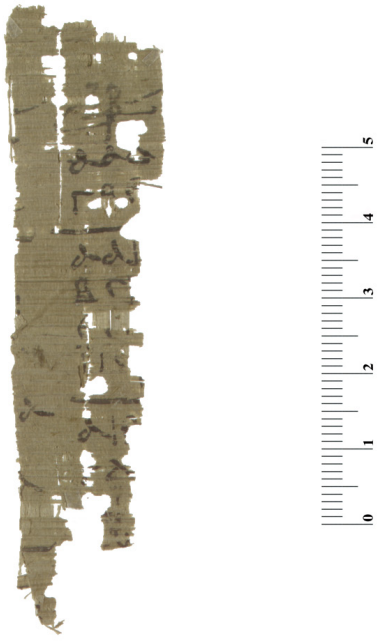
---

[5] B.L. van der Waerden, *Erwachende Wissenschaft.* Bd. 2. *Die Anfänge der Astronomie*, 2nd ed., Basel 1980, pp. 283-288.

[6] Jones, *op. cit.* (nt. 2), p. I.176.

***P.Pintaudi* 7**

(P.Leod. inv. 1 *recto* e *verso* – © Centre de Documentation de Papyrologie Littéraire de l'Université [CEDOPAL] – Liège)



***P.Pintaudi* 12**

(P.Yale CtYBR inv. 3775 – Photograph Courtesy of Beinecke Rare Book and Manuscript Library – Yale University)